

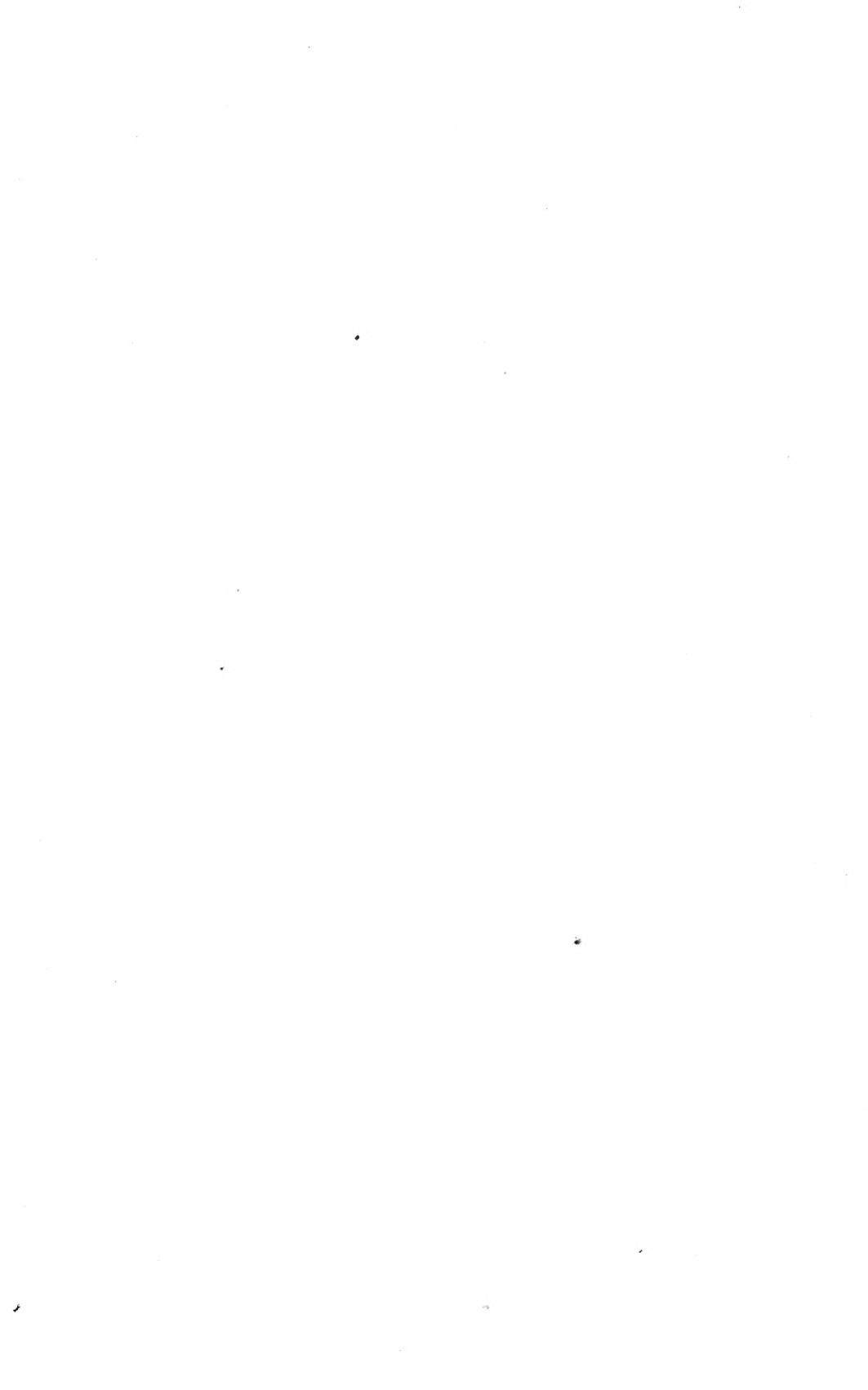
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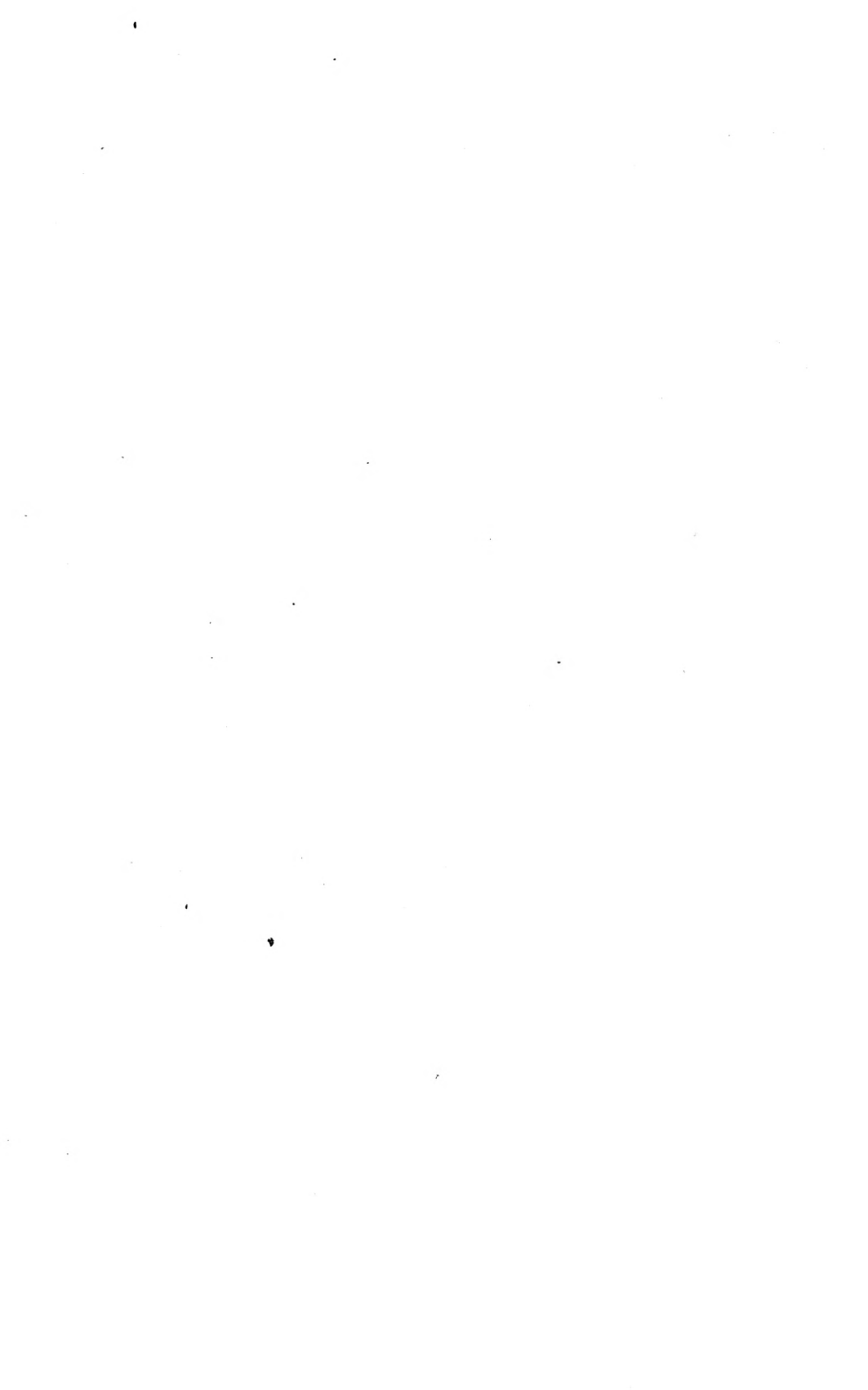
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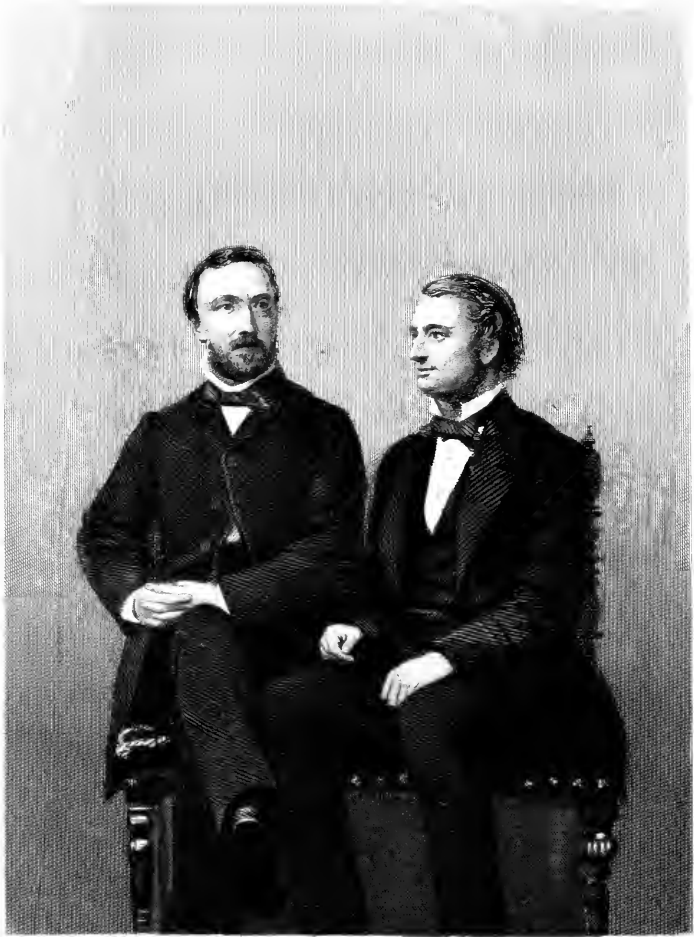












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THE FARMER'S MAGAZINE.

VOLUME THE EIGHTEENTH.

(THIRD SERIES.)

JULY TO DECEMBER, MDCCCLX.

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THE FARMER'S MAGAZINE.

JULY, 1860.

PLATE I.

PORTRAITS OF MESSRS. BURGESS AND KEY,
THE AGRICULTURAL IMPLEMENT MAKERS.

PLATE II.

BURGESS AND KEY'S MOWING MACHINE.

MESSRS. BURGESS AND KEY, THE AGRICULTURAL IMPLEMENT MAKERS.

The firm of Messrs. Burgess and Key originated from one of those accidental meetings between men of business, so happily referred to by Mr. Wren Hoskyns the other evening, at the London Tavern. The two partners were introduced to each other in 1849, and during the same year the association of their names as agricultural engineers was determined upon. The first invention they brought before the public was the American churn, known as Anthony's Patent, and which was exhibited at the Exeter meeting of the Royal Agricultural Society, in 1850. Since then upwards of ten thousand of these machines have been sold, while their use is appreciated not only in England, but extensively in our colonies and elsewhere. They have taken every prize that has been offered by the Royal Society for churns—at Exeter in 1850, in Hyde Park in 1851, at Lewes in 1852, at Gloucester in 1853, at Carlisle 1855, and at Chester in 1858; as well as premiums from the Highland, the Bath and West of England, the Royal Northern, and other societies.

This successful venture was followed up in 1851 with a Reaper, and M'Cormick's American was the one which Burgess and Key determined upon adopting. Such a selection has since been signally confirmed, although in the first instance there were immense difficulties to contend against. It was gradually perfected and appreciated, but it was not

until four years after its distinction at the Great Exhibition the Reaper became a really practical implement. By then Mr. Burgess had succeeded in doing away with the enormous labour of raking off the corn as the machine proceeded, and this with other improvements, were so complete as to warrant the award of the first prize at the trial at Leigh Court in 1855. The judges thus reported of the performance in the Society's Journal:—“M'Cormick's Reaper, improved and exhibited by Burgess and Key: This machine cuts a clear track of 5 feet 6 in., and in every operation in which it was tested exhibited a decided superiority. It cut with great precision both wheat and barley, standing and partially lodged, and in cutting through weeds and grass showed no tendency to choke. The delivery is peculiar to this machine, and is the principal and most important improvement effected since last year; the corn, on being cut, falls on a series of rollers, fitted with Archimedean screws, by which it is delivered in a continuous and well-formed swathe on the side of the machine. This delivery being effected by the machine, dispenses with the attendant necessary in Dray's and Palmer's Machines; and it was proved to be capable of cutting wheat and barley with no other attendance than a boy strong enough to drive a pair of horses. The draught also was much lighter

than any other machine; and the horses were not required to travel faster, or to exert greater power than would be necessary in ploughing in land of medium strength. The superiority in cutting in this machine appeared to be the result of a larger stroke in the knife, equal to 5½ in.; and the reduction in draught and speed, the consequence of a more correct calculation and distribution of power. The judges had no hesitation in awarding to this machine the Society's first prize of £30; and they feel assured that all who witnessed the trials will concur in that decision."

This award was confirmed in 1857 at Salisbury, when the judges said "that the ease and accuracy with which Messrs. Burgess and Key's machine worked, fully entitled them to the First Prize."

From the latter period the success of the reaper might be considered as established; and there are now more than two thousand of them at work in different parts of the globe. In fact, the value of the implement has been almost as generally acknowledged in other countries as in this. It was exhibited at Vienna, before the Emperor of Austria; also at Pesth, in the presence of his Imperial Royal Highness Archduke Albrecht, governor of Hungary, where it obtained the first-class diploma, being declared to be superior to every other machine. It is now in general use in Hungary. In the province of Grosseto (Tuscany), in the presence of the Commissioners appointed by the Agrarian Association, it also obtained a first-class diploma; and several machines are now in use in that district. In the neighbourhood of Milan it had some further success. At Haine St. Pierre, in Belgium, during a trial of three successive days, it was acknowledged to have worked in a most satisfactory manner. Since the Salisbury meeting the Reaper has obtained the first prize at Louth, where Dray's machine was also exhibited. At Hexham, where five other machines were exhibited, the judges unanimously awarded the first prize to this one; and in Scotland, on Lord Kinnaird's estate, it again obtained the first prize of the Highland Society's medal, the other competitors being Dray's Hussey, Bell's original, and two machines of Lord Kinnaird's, Crosskill's Bell being withdrawn. At Osborne this machine was exhibited in successful operation in the presence of the Queen, the Prince Consort, and the Emperor and Empress of the French; and on this occasion, to mark their approval, both the Emperor and the Prince Consort ordered machines for their own use. It has long been in practical use in all parts of England, Ireland, and Scotland, and the most satisfactory evidence is given of its complete success in New Zealand, Australia, and in all parts of Europe. The average quantity cut by the machine is about 15 acres per day, by one man and a pair of horses. Last year no less than seven first prizes were awarded to Burgess and Key for their reaper, including the first prize of a thousand francs, with the gold medal, and another great gold medal of honour for the best machine of the whole, when exhibited before the Emperor of the French in Paris.

The deservedly favourable reception accorded to

this reaper induced Burgess and Key to turn their attention to a companion implement, and last season a mower was launched under their auspices. This also is of Transatlantic production, while it required equal care and study to adapt it to the uses of the English farmer. Immense improvement has been effected since last year, when it was even then sufficiently good to carry off the special prize offered for mowing machines at the Royal Agricultural Society's meeting at Warwick, as well as many other premiums at more local gatherings. This season the chief public trials of the mower have hitherto been in France, and at Caen the award of a gold medal for the invention was ordered. Much more recently a silver medal with five hundred francs was received for its performance on the Emperor's farm at Vincennes, when the only surprise was that Burgess and Key's machine did not take the higher premium. There is no doubt that the decision arrived at was a mistake. In the same week another of these mowers received the prize for some very good work at Norwich, under the countenance of the Norfolk Agricultural Society. A report of this meeting, as well as of that in Paris, will show how public opinion now estimates this implement.

The firm of Burgess and Key has also been instrumental in introducing Parkes' steel digging forks, for which a number of prizes have been awarded by the Royal and other Agricultural Societies. The Works, however, at Brentwood are now entirely devoted to the manufactory of reapers and mowers. A very large number of hands are employed here, while the machinery in use for planing and boring is considered by mechanicians as of a very superior character. Upwards of a thousand implements are turned out annually, but the demand is still far above the supply, and extensive additions are being made to the factory, so that something like three times the number may be included in the year's business.

Mr. Burgess, we believe, was brought up as a solicitor, but he has evinced a great aptitude for mechanics, as the success of the implements selected and the improvements determined on alike tend to show. Sir Kingsmill Key—for the second partner in the firm is a baronet—is a son of the late Alderman Sir John Key, whom he succeeded in 1858. In the print Sir Kingsmill Key sits in profile, while Mr. Burgess faces the photographer. The two bear alike very high characters as men of business, which it is their pride to conduct in the most straight-forward and honourable manner. Certainly, so far, nothing of an inferior or even of second-rate order has been identified with their firm, and, as a consequence, if they have risen rapidly, it has been, *pari passu*, with a trade and a name now thoroughly established.

A print of Burgess and Key's Reaper was given in the "Farmer's Magazine" for May, 1856, and we here associate with the house, as a companion plate, the Mowing Machine, that is just at present perhaps the more in call of the two.

WET SEASONS.

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

After a series of warm dry summers, we are the more inclined to notice the copious rainfall of June 1860. Its indications, with regard to the weather, of ripening and harvest time, naturally excite our enquiry. It will not therefore be unattended with benefit, if we refresh our memories by referring to the rain records of former years. From these we find that the average depth of rain falling during June, in the neighbourhood of London, is about 1.80 inches. There have been strange variations, however, noticed in this downfall during the last quarter of a century. In June, 1849, it was only 0.31 of an inch, 0.88 in 1856, 0.78 in 1858. In 1836, on the other hand, and also in 1852, the fall for the same month was equal to 4.60 inches. It was 3.10 in June 1859, and 5.11 up to June 25, 1860.

The June rainfall however, is by no means an indication of either a dry or a wet year. The rainfall of 1849, which amounted to only about a third of an inch in June, was nearly 24 inches by the close of the year; and in 1856, with only 9-10ths of an inch, it was nearly 23 inches; and in 1838, when the month's fall of June was 4.6 inches, only 5.3 inches fell in the harvest months of July, August, and September, and 24 inches in the whole year. In 1852, with the same amount of June rainfall, the year's depth of rain was 34 inches, 10.6 inches falling during the three harvest months. There is not therefore, any even probable conclusion to be drawn, in our uncertain climate, from any indications of this kind.

The great difference in the amount of water deposited on our soils in wet and in dry seasons, may be put in another way:—viz., by comparing the weight in tons falling in one month, with the corresponding month of other years. Now in the years 1858, 1859, and 1860, there fell in Surrey, during May and June (in 1860 to June 25) the following weight of water per imperial acre:—

	1858.	1859.	1860.
	Tons.	Tons.	Tons.
May.....	194	274	305
June.....	96	162	511

The number of days in which rain fell was—

	1858.	1859.	1860.
May.....	9	9	12
June.....	9	9	19

The influence of a largely increased amount of rain upon our crops is a much better understood portion of our present enquiry. Many observations

have very naturally been made in this field of research. Mr. T. B. Lawes, for instance, has directed his attention to this subject with his ordinary industry and success. He has reported the result of a series of observations carried on for the three years 1844-45-46, on old red Lammas wheat, grown on the same land, the soil of which is rather heavy resting on chalk (*Jour. Roy. Ag. Soc.*, vol. viii., p. 229). In these years the amount of rain which fell during the grain season, from May to the end of August, was as follows—

	1844.	1845.	1846.
May.....	0.26	2.88	1.35
June.....	0.97	0.98	0.64
July.....	1.94	2.16	1.60
August....	2.00	3.32	4.82

So that during the seventeen weeks of the grain season in these years, there fell in 1844 5.17 inches, in 1845, 9.34 inches, in 1846, 8.41 inches. There were 43 days in which rain fell in the year 1844, 71 in 1845, and 45 in 1846. The mean temperature of the same period, in 1844, was 60.3, or 0.9 above the average; in 1845, 58.2, or 2.1 below the average; and 63.1 in 1846, or 3.2 above the average.

Such were the circumstances as regards rainfall and mean temperature in which the unmanured plots of wheat were placed during these three seasons in the Rothamsted experiments. The results of the trials will be found in the following little table—

	1844.	1845.	1846.
Corn per acre in bushells	16	23	17 $\frac{3}{4}$
Weight of corn per bush.	58 $\frac{1}{2}$	56 $\frac{1}{2}$	63 $\frac{1}{4}$
Straw per acre in lbs...	1120	2712	1513
Per centage of corn to straw (straw 1000)..	821	534	797

Thus we see, as Mr Lawes remarks, that the effect of the climate of these three seasons, as indicated in these tables, is quite in accordance with their general character. The lowest weight of the bushel, and the greatest amount of straw, were obtained in that season which had the greatest number of rainy days and the lowest temperature; the least amount of straw with the driest season, and the finest quality of grain in the hottest summer. The summer of 1846, with a mean temperature of more than three degrees above the average of the climate of England, having produced grain weighing 63 $\frac{1}{4}$ lbs. per bushel, upon a soil from which seven unmanured crops had been removed, proves undoubtedly, that high quality of grain to a great extent is determined by climate, independently of the action of manures. We should therefore expect that those countries enjoying a hotter and drier summer than our own, would produce

corn of a superior quality, and such indeed is the case. "In spite," continues Mr. Lawes, "of the wretched system of agriculture which prevails in Spain, Russia, Poland, and Sicily, the quality of their corn will bear comparison with that which the skill and knowledge of the British agriculturist can secure. The climate of Australia combines in an eminent degree the small amount of rain and the high temperature necessary for the perfect development of corn, and the wheat imported from thence obtains a price in the market much beyond those of English growth." Let us just place in juxtaposition a statement of the average amount of rain, and the mean temperature at Adelaide and at London, during the four corn-producing months—

	London.	Adelaide.
Days when rain fell..	60	19
Depth of rain in inches	8.49	3.88
Mean temperature....	60	79

We all know how materially the quality of wheat is influenced by dry and wet seasons, yet how few ever stop to enquire for the explanation of what is meant by the words "quality of wheat"? The question did not escape the attention of Mr. Lawes, "Does it," he asked, "depend upon the weight per bushel, or specific gravity of the grain? and if so, does this specific gravity bear any relation to the per-centage of gluten and albumen; that is to say, to the most highly nutritive constituents of the grain?" The opinions generally entertained on this subject are, that the grain is composed of a variable proportion of protein compounds, gluten and albumen; and carbonaceous compounds, comprising starch, sugar, gum, oil, &c. The protein compounds are employed in the organism of man and other animals in forming flesh, while the carbonaceous compounds supply heat and form fat. The protein compounds being of much the greatest importance to the animal economy, it has been generally supposed that the value of different descriptions of wheat depends upon the amount of gluten and albumen which they contain; that the wheats of hot climates contain a greater proportion of these substances than our own; that for this reason the miller purchases them at a higher price; and further, that by employing rich manures, the farmer is enabled to increase the per-centage of gluten in his corn. But to the agriculturist it is of little importance whether his corn is rich or poor in protein compounds, or any other chemical constituent, unless they increase its value in the market. Now, as Mr. Lawes well enough adds, the millers, who are the growers' principal customers, know nothing about gluten and starch; they judge by the eye alone, and give the highest price for that which will yield the greatest proportion of flour. The following table of Mr. Lawes demonstrates that the value of different samples of wheat does not depend upon the per-centage of nitrogen which they contain. In this table, Column I, gives the different manures applied to the Lammas red wheat; Column II, the per-centage of nitrogen in the dry matter of the wheat; Column III, the then existing prices per quarter adjudged to the different samples by the miller and corn factor.

	I. Specimens.	II. Nitrogen.	III. Price.
1. Grown with super-phosphate of lime		3.03	84s.
2. As No. 1. and with ammoniacal salts		2.65	86s.
3. Liebig's Manure		1.81	96s.
4. Ditto and ammoniacal salts..		1.69	92s.
5. Ditto with rapecake		1.89	88s.
6. Ditto with rapecake and ammoniacal salts		1.88	—
7. Exhausted soil unmanured ..		1.95	92s.
8. Ditto with ammoniacal salts..		2.01	92s.
9. Ditto with rapecake		1.85	92s.
10. Ditto with rapecake and ammoniacal salts		1.93	92s.
11. Australian wheat, No. 1.		—	112s.
12. Ditto ditto No. 2.		1.94	112s.
13. Ditto ditto No. 3.		2.38	112s.

The effect of dryness or moisture of climate on the growth of wheat may be discerned in the varied agricultural produce of different portions of our own island; on whose western and eastern sides a very different amount of rain is received. The average depth of rain, for instance, in June, which is about 1.80 inches at London, is 3.5 at Tavistock, 2.7 at Kendal, and 4.12 at Keswick. The average *annual* rainfall in Hampshire is about 29 inches, in Surrey about 23, in Middlesex about 22, in Essex and Suffolk about 20 inches. Thus a line drawn from Hampshire to Suffolk intersects the driest and best wheat producing of our country's districts. If, on the contrary, we draw a line from Devonshire (with its 30 to 40 inches of rain) to Lancashire (35 inches) and Westmoreland (50 to 60 inches), we pass through the wettest and worst wheat-producing of the English counties, the fact being that the average value of the wheat produced on the western side of England is three or four shillings a quarter less than that yielded by the opposite side of the kingdom.

It is hardly possible even for the most careless observer not to have noticed these things. For, as I have on another occasion observed, a traveller landing on our island on its southern shore, and proceeding through its centre in nearly a direct northern course, speedily remarks, as he advances, a gradual but very considerable alteration in its agricultural productions. He notices in the first place, that the wheat, barley, and oats, the growth of the southern portion of the island, are not only large in extent, but excellent in quality; that the flour produced from the wheat seeds is dry and starchy; that this wheat is ground by the miller with little difficulty in ordinary seasons, and made into excellent bread without admixture with other wheat from drier and warmer districts. Grass lands or natural pastures he finds here limited in extent; or if locally large, chiefly producing a short herbage, best adapted to the pasturage of sheep. As such a traveller progress towards the north, he finds a gradual and steady alteration in the productions of the soil. By almost imperceptible degrees the extent of the barley and the wheat crops decreases; natural grass lands take their place, and these support cattle, as well as sheep; he soon

finds himself, in fact, in a more grazing district. As he still advances northward, less and less wheat and barley occupy the soil; more and more oats take their place: rye in abundance begins to make its appearance. The seed wheat here grown is described by the miller as being "cold" and "clammy." It is materially aided, he finds, in grinding, by admixture with such wheat as is the produce of more southerly districts.

The grass fields now occupy the majority of the soils. Dairying is a chief agricultural operation—sometimes for the production of cheese; at others for the making of butter. The live stock is here pretty generally fattened for the butcher. This progressive change, with occasional exceptions in the case of small districts peculiarly circumstanced, still continues as he advances towards the borders of Scotland, and attends him in his course through that portion of the empire, until he approaches its northern extremity. There indeed he finds at last the growth of wheat only very partially attempted: oats and rye chiefly occupy the arable soils; small and lean cattle are now seen depasturing on the grass lands. The general aspect of nature is in accordance with these changes in the farmer's productions. The trees which he beheld adorning the hedgerows have gradually altered since he began to traverse the island. The oaks, the elm, and the Spanish chestnut of the south, have been supplanted by the larch and the birch. Stone walls have taken the place of the luxuriant hedgerows of southern England.

To such an explorer it might be naturally suggested that, for the rational explanation of these great and general variations in the agricultural systems of the land, something more than the different nature or chemical composition of the soil was needed. For instance, that to some other cause than the siliceous nature of their soils must be attributed the general growth of barley on the sands of Suffolk and Norfolk, and the equally common devotion of the sands of Cheshire and Lancashire to pasturage. To tell him that it was the "custom of the country," which is the common remark, he would feel was merely the statement of the fact, involving nothing which tended to explain it.

These being the general outlines of the observations to be made during such a northerly tour, in the course of five or six hundreds miles, or nine or ten degrees of latitude, it might next suggest itself to such an enquirer to examine and ascertain the effect of longitude, as well as latitude, on the vegetable productions of the island. In other words, he might diverge from the northern and southern line, and travel in a line or lines from east to west.

In this course a new state of affairs, at least in the southern portions of the island, would present themselves. Starting then from a centre point or line, say from the valley of the Hampshire Itchen, he would very generally find, as he travelled towards the east, the growth of corn more and more occupying the attention of the farmer; luxuriant crops of all cereals abounding; artificial grasses extensively supplying the place of natural meadows, which he would here meet with chiefly by the banks of rivers, on lands commonly too moist for the successful cultivation of corn. If, however, he travelled in exactly the contrary direction, and advanced towards the west, he would remark a very different state of cultivation. Decreasing cereal crops he would here note to be gradually giving way to the natural grasses. He would find cheese and butter carrying to market by the landholders instead of corn; the breeding and fattening of fine varieties of cattle occupying the attention of the farmers of the better soils, and smaller breeds of lean stock occupying the inferior lands. In fact, the traveller would note that on the western sides and slopes of the island the nature of the farming and the production of the earth were almost as different, although within about 200 miles, or only three degrees of longitude, as those which he had witnessed in his progress through the ten degrees of latitude which occupied him in his northern tour.

The consideration of this immense influence of varied amounts of rain will not be lost upon us, if we remember how much of the ill effects of too much water may be obviated by good drainage. It is too often indeed supposed that certain soils, especially pasture lands, can hardly be kept too moist. Yet, as to the ill effect of an unusual fall on the grass of many of our heavy soils, the past month of June has read a very unpleasant lesson to too many of my friends. And moreover, there has been another great question vividly and unpleasantly brought before us, during June 1860—the necessity for improving our great arterial drains. I need hardly refer to the thousands of acres of meadow land submerged, and the hay destroyed by the flood waters of the few past weeks. The farmers of the valleys of the Thames, the Severn, the Ouse, and many others, have in this way suffered more or less extensively; and this too, in the great majority of instances, from the effects of dams, deposits of mud, growth of rushes, and other moveable nuisances. We may be assured therefore, that there is much worthy of our often repeated study, in the effect of our rainfalls. And this enquiry may well extend from the time when they shower down fatness over our soils, until they finally drain into the ocean.

A FEW WORDS ABOUT SWEDES AND MANGOLDS.

The uncertain and precarious character of the Swedish turnip crop has deterred many farmers from cultivating it. It has been the source of great disappointment and severe loss to thousands of farmers during the past few years; and from unknown causes—at least, none have

been satisfactorily pointed out. Mildew, fingers and toes, early natural decay, rotting at root, guano, artificial manurings, absence of the usual rainfall, and other causes, have been assigned for the decay of this once invaluable crop. Every practical man knows the crop has failed of

late years, and has deeply deplored it. The main substitute for it has been the mangold wurtzel crop. A farmer ought to possess a most abundant stock of common sense and sound judgment: no class of men find these truly excellent qualities to be in greater requisition. What to grow and how to grow it—what to sow and how to sow it; matters of this kind often trouble one. Farmers are now in great perplexity relative to the Swedish turnip crop: how to sow, how to grow, and how to preserve it. For my own part, I am determined to try it again, and one of the principal reasons which has led me to this decision is the abundant rainfall of the season. It is not for a plain practical farmer like myself to define a variety of reasons for the failure of this crop; this I know, that it has lamentably failed, and I further know that it has become worse and worse during the late years of short rainfall. I am not to suppose it is to be a total failure any more than I may suppose the same of the potato crop. That crop is gradually recovering, and so, undoubtedly, will the Swedish crop be restored; and for aught I know, this very season—so wet, so humid—may be the safe restorer; be that as it may, I am resolved to risk it, and I make bold to advise my fellow-farmers to make the experiment too. Who is prepared to deny that the absence of the chemical ingredients conveyed to the soil by rain water may not be the sole cause of failure?

It is well known that almost all the early-sown crops are attacked with mildew, and invariably suffer much, occasionally to utter annihilation. It would be well, then, to avoid early sowing; get the land into a fair state for sowing, not too fine, lest heavy rains spoil all your work; but it should be in a semi-chequery state, so as to be easily reduced to a fine tilth. Have ready a nicely-mixed compost of artificial manure, well-known to suit the soil and force early vegetation—none better than $1\frac{1}{2}$ to $2\frac{1}{2}$ cwt. of superphosphate to forty bushels of twitch or similar ashes, to be drilled in with five pounds of seed per acre, upon ridges twenty-six inches apart, and well manured with foldyard dung, at the rate of not less than twelve two-horse cart-loads per acre. This, in ordinary seasons, will ensure a good plant, and the subsequent horse and hand hoeings will not fail to produce a satisfactory crop. In the autumn it will be for every farmer to adopt that course respecting the future disposition and consumption of the crop which seems to him best. My own practice is to secure one-half in small heaps or graves, and leave the remainder standing out; this my experience has proved best in my own occupation. We take about twenty-four ridges, throw them into heaps about twenty yards apart, round them up, and cover them with soil about six inches thick: the alternate twenty-four ridges are left standing. The sheep are regularly folded over the whole; the foldings are drawn back as the heaps are consumed. In fine open winter this is preferable, and less loss is experienced. It is a very difficult thing to make the heaps properly safe. If they are covered too thickly they ferment and rot; if too thinly, rains will get through, or, what is worse, the frost will penetrate, and often fatally. These contingencies have led me to adopt the middle course, and I have not repented it yet. It has this further advantage: you always have a store in grave so that, however frozen and hard those exposed may be, you have a resort in this grave. The year before last I had a serious loss in the graves, owing to the unusually warm weather in March causing them to vegetate and ferment before we were fully aware of the extent of the injury. They were speedily uncovered, but too late.

The few words which I desire to say about mangolds is with the view of guarding the cultivators against improper management in this peculiar season. The land

is now saturated with moisture. Mangolds revel and grow most luxuriantly in warm seasons, upon a finely pulverized soil, warm and slightly moistened; but in cold wet seasons like the present, they require great care and good management. In the first place, the finely pulverized soil is just now for the most part converted into one general semi-pulp from end to end; it would therefore be highly injudicious to either horse-hoe or hand-hoe it in that state. It is decidedly the best course to wait a more favourable time: stirring it in a pulpy state, only makes it into small pellets, which will dry into little hard lumps, almost impenetrable to either the sun or rain, and is of no further value for the rootlets as affording receptacles for food. The fields may look slovenly, and denote bad farming; but it is better to permit the weeds to grow, than by hasty measures to spoil the crop. By all means get on with other work in readiness to bring all the force of the farm to bear upon this clearing as soon as the state of the soil will permit it. This every farmer's judgment will readily decide upon, consistent with what I have said above. It is an ascertained fact also that the mangold crop does best in comparatively dry seasons, and on lands not much imbued with moisture; it certainly does badly on wet soils or saturated ridges. It would be well in this rainy season to keep the ridges as high as possible, by no means to pull them down with the hoe as is usual. The higher and dryer they lie in a wet season the better: it keeps the plant warmer, the rootlets find more congenial food, and more of it in the semi-moist soil around them, and a more vigorous growth is thus ensured.

I am aware these remarks are contrary to the general and tolerably correct practice—*i. e.*, to drill upon high ridges, and pull them down as the crop progresses, upon the principle that the root will continue to strike further and further down in search of food; while the upper part is fructified by that process and the atmospheric aid derived through the abundant foliage of leaves. I am only advocating this deviation owing to the exceedingly moist season through which we are now passing, and, upon the principle named above, that the mangold crop does not progress well in or delight in wet weather. The great thing the grower has to mind is to let it alone when wet, and use every exertion to clean it, and stir it when dry. Every stirring in a dry and proper state does much to promote its rapid progress. In this state it opens pores and crevices for the young rootlets to enter and extract their nutriment; but if these stirrings take place while in a wet state, it is manifest that these very pores and crevices will by the operation be pressed together, and closed up like the working or kneading of a brick for the moulder. I am offering no remarks about the culture and preparation of the soil for these crops: my aim is to prevent injury to them by the subsequent management simply, in this very stormy and peculiarly rainy season. I would, however, venture one remark, which I commend to those who have not yet completed their sowings. I would recommend them not to reduce their lands to such a fine tilth as usual, but to be content to put in their crops upon a less pulverized soil. It will not so readily run together in case of a tremendous rain as a fine tilth, and if the season turns out favourable the roller will ultimately reduce it all to powder; and in reference to the Swedish crop, without the slightest injury to the plants, I have frequently rolled—with a heavy roller too—Swedish turnip plants when full six inches high. Mangolds are far more tender; I should hesitate to roll them; but if a full plant, no great danger need be apprehended. The season and state of the soil must of course be the rule for adopting this course; no one would roll plants when the surface is dry and cloddy.

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

A Monthly Council was held on Wednesday, June 6, Lord Walsingham, President, in the chair. Present: Marquis Camden, Earl Powis, Lord Feversham, Lord Leigh, Sir W. B. Bridges, Bart., Sir E. Kerrison, Bart., M.P., the Hon. Colonel Hood, the Hon. W. G. Cavendish, M.P., the Hon. A. Vernon, Mr. Amos, Mr. Raymond Barker, Mr. Barnett, Mr. H. Barrow, M.P., Mr. Caldwell, Mr. J. Druce, Mr. Frere, Mr. Brandreth Gibbs, Mr. Fisher Hobbs, Mr. Hoskyns, Mr. Humberston, M.P., Mr. Lake, Mr. Lawes, Mr. Milward, Mr. F. Neame, Professor Simonds, Professor Spooner, Mr. H. S. Thompson, M.P., Professor Voelcker, Mr. Jonas Webb, Mr. T. B. Western, Mr. Wightwick (Mayor of Canterbury), and Professor Wilson.

Sir John Ratcliffe, Bart., of Wydrington, Birmingham, was elected a Governor of the Society.

The following new members were elected: Ashby, T. W., Rutland Works, Stamford
Asbroft, Thomas, Walford, Eccleshall, Staffs.
Baker, Aune, Grendon, Atherstone
Biddell, William, Hawstead Hall, Bury St. Edmunds
Constable, Rev. John, Principal R.A. College, Cirencester
Dewar, William, Middleton, Bicester
Donovan, John Clarke, Gatwick Mill Hill, Billericay
Dyott, Colonel, Freeford Manor, Lichfield
Edge, Davis, Burslem
Evans, John, Eflington, Salop
Fenton, John Thomas, Thorpe Hall Colliery, Leeds
Fothergill, John, Nottingham
Furnival, Stephen, Napeley Heath, Macclestone, Market Drayton
Gould, Rev. Joseph, Hurst Green
Hickman, Captain, Dollar-street, Cirencester
Holmes, Sleigh, Ellerton Grange, Newport, Salop
Jackson, Richard, Noctorum, Birkenhead
Jervis, the Hon. E. Swinfen, Aston Park, Staffs.
Jones, John, Bryn Adda, Dolgelly
Kirkpatrick, Captain, Monk's Horton, Standford, Hythe
Lintott, William, Holmbush, Slinford, Horsham
Prescott, William, Clarence, Roehampton
Priest, Alfred, Kingston-on-Thames
Shaw, Charles Henry, 55, Charing Cross
Sherborn, Francis, jun., Bedford, Middlesex
Stow, Arthur, Bredon, Tewkesbury
Thompson, William, Weymouth.
Wedgwood, W. R., Heavitree Park, Exeter
Williams, W. R., Dolgelly
Wilkinson, John Sutton, Hungerford House, Madeley, Staffs.
Wilson, Thomas, jun., 20, Gloucester-street, Hyde Park
Woolbough, William, Kingston-on-Thames.

The names of five candidates for election were then read.

FINANCES.—Mr. Barnett presented the report of the Finance Committee, from which it appeared that the current cash balance in the hands of the bankers on May 31 was £4,183 19s. 4d. The Secretary's receipts during the past month had been duly examined by Messrs. Quilter, Ball, and Co., and were found correct. The amount already received on account of implement shedding and entries for live stock at Canterbury amounted to £1,037. The sum of £1,220 has been received during the present year on account of arrears of subscription, and a considerable sum still remained overdue, for the recovery of which the adoption of more stringent means was recommended. At the suggestion of the Committee, the Secretary was directed to prepare a complete list of Members of the Society for publication in the Journal.

PRIZE ESSAYS.—Mr. Thompson, M.P., Chairman

of the Journal Committee, announced the following awards from the Judges of Essays:—

- I. John B. Spearing, of Moulsoford, near Wallingford-Berks, the prize of £50 for the best report on the Agriculture of Berkshire.
- II. John Fulton, of Temple, Mary Hill, Glasgow, the prize of £10 for the best Essay on recent improvements in Dairy practice.

The Essay on the Agriculture of Berkshire bearing the motto "Long Wittenham" is much commended.

CHEMICAL.—Mr. Hoskyns, Chairman of the Chemical Committee, presented the Report, wherein application was made for a grant of £100 for the collection of information on the Manufacture of Cheese in the different dairy districts of the kingdom, as it will necessitate certain outlay in travelling expenses, and the employment of local aid in the tour of inspection. The annual grant of £200 for chemical investigations during the year 1860 was recommended.

CANTERBURY COMMITTEE.—Lord Leigh, Chairman, reported the favourable progress of the arrangements for the Society's meeting on the 9th July and following days. The Local Committee having applied for an extension of the time allowed for the entry of ploughs for the ploughing match, it was recommended that the time be extended to June 30, and that the ploughs be delivered into the trial field by 7 o'clock on the morning of Wednesday, July 11. At the request of the Mayor of Canterbury, the Council considered the question of the advisability of holding a dinner at Canterbury, under the auspices of the Society, and it was resolved, on the motion of Mr. Fisher Hobbs, seconded by Mr. Amos, that the Dinner should take place at 6 o'clock on Tuesday, the 10th July, and that the Council would guarantee a proportion of the tickets at 10s. each, which may be obtained of the Secretary.

The following letter relating to the proposed Metropolitan Meeting of the Society in 1862 was read:—

"Office of Works, &c., S.W.
May 22, 1860.

"MY LORD.—I have the honour to acknowledge the receipt of your lordship's letter, dated the 9th inst., intimating the wish of the Council of the Royal Agricultural Society of England to have their exhibition in the metropolis in the year 1862, and inquiring whether a site in the Regent's Park could be granted for that purpose; and I have to acquaint your lordship in reply, that her Majesty has graciously consented to allow the exhibition to be held in one of the parks of London, and that the Society will be informed of the precise spot, and of the conditions upon which it is to be occupied, whenever it may be necessary for the Council to make their final arrangements.

"I am, my Lord,

"Your Lordship's obedient servant,
"ALFRED AUSTIN, Secretary

"The Right Honourable Lord Walsingham."

On the motion of the Hon. Col. Hood, seconded by Mr. Fisher Hobbs, it was resolved that on the day the Special Council meet in May to prepare their report to the general Meeting of the Society, the election of President for the ensuing year should be considered.

On the motion of the Earl of Powis, seconded by Mr. Raymond Barker, it was resolved that Mr. Edward Price, of the Court House, Pembridge, having been shown, to the satisfaction of the Council, to come within No. 18 of the General Rules relating to exhibitors, he cannot consequently be allowed to compete for any of the Society's prizes.

On the motion of Mr. Milward, seconded by Mr.

Brandreth Gibbs, the Hon. W. G. Cavendish was unanimously elected a Steward of Live Stock.

It was arranged that Professor Voelcker, Consulting Chemist to the Society, would deliver a lecture on "Oilcake" to the members at the Society's house, on Wednesday, the 13th inst., at half-past 12.

A communication was read from Mr. J. C. Morton, inclosing a detailed prospectus, received from Mr. Vanden Bosch, of Wilhelmstadt, near Goes, Holland, of an international competitive trial of Steam Ploughs and Reaping Machines to be held on his farm, when liberal prizes are offered in order to secure a vigorous competition.

The Council then adjourned.

The Weekly Council was held on Wednesday, June 13th. Present: Lord Walsingham, President, in the chair; Sir J. Johnson, Bart., M.P.; Sir E. C. Kerrison, Bart., M.P.; the Hon. Colonel Hood, the Hon. A. Leslie Melville, Mr. Raymond Barker, Mr. Corbet, Mr. Dent Dent, M.P.; Mr. Frere, Mr. Brandreth Gibbs, Mr. Fisher Hobbs, Mr. Holland, M.P.; Mr. W. Hut-ton, Mr. Kingsford, Mr. Lee, Mr. Majendie, Mr. Pain, Prof. Simonds, Prof. Voelcker, Mr. G. H. Vernon, Mr. Weiss, Mr. H. White, Prof. Wilson, &c., &c.

The following lecture on Oilcake was then delivered by Prof. Voelcker, consulting chemist to the Society:—

MY LORDS AND GENTLEMEN,—With your permission I shall endeavour to treat the subject of my lecture in as practical a manner as I can, divested as much as possible of all scientific expressions and of language which is not generally intelligible. You will allow me likewise to begin at once with the subject, without any further introduction, respecting the quantity of cake annually imported into England, and its great importance to the feeder, or introducing similar topics. It is not my object, in giving a practical turn to the lecture to-day, to record any experiments of my own, or in any way to presume to teach the feeder of stock in what way he best expends his money in the purchase of food, but I shall endeavour simply to give to the practical man some indications whereby I hope he will be enabled to form for himself a trustworthy opinion respecting the relative value of different cakes, and likewise, what is perhaps of more importance to him, to introduce some remarks which will enable him to distinguish a good from a bad cake; and, in conclusion, shall allude briefly to the various substances with which oilcakes are at the present time often largely adulterated. Let me, in the first place, briefly point out to you some peculiarities in the composition of oilcakes. A reference to their composition is necessary to the understanding of the remarks which will follow. I would then observe, that what characterizes oilcakes, distinguishing them from all other articles of food pre-eminently, is the large amount of oil that is left in the cakes, obtained by expression of the oil-seeds. If you glance at the diagrams (see tables at the end, A, B, C), you will find that they contain a considerable quantity of oil—from 6 to 12 per cent.; and, in some instances, as in the decorticated cotton cake, even 16 per cent. of oil. I may observe at once, that the value of oilcake, in a very great measure, depends upon the amount of oil which is left in the cake. And I may further say, that the tendency of the manufacturer at the present day is to produce an inferior description of cake, inasmuch as improved machinery enables him to squeeze out more oil than formerly, and thus to render the refuse less fattening, less valuable to the feeder of stock. I am very much inclined to believe that the oil is by far the most valuable constituent of all oilcakes. I am aware that it was the fashion not many years ago to measure the feeding properties, and even the fattening qualities of articles of food, by the amount of nitrogenous or flesh-forming matter; but these views are not supported by any practical experiments, nor indeed by our common day experience, that we have respecting not only human but cattle food. We pay more for food rich in starch, mucilage, and matters capable of producing fat, than we pay for food which, like bear-meal, is extremely rich in nitrogenous matter, but which does not produce so much butcher's meat. It is a matter of much importance to the farmer to know how much he gets back for the money he

expends in the purchase of food? I have no hesitation in saying, that more money is made by the purchase of food rich in oil, starch, or sugar, than in the purchase of food which contains an excess of nitrogenous matters. Still, we ought not to leave unnoticed, that the flesh-forming matters are very important indeed, and that oilcakes are peculiarly rich in them. In one sense they are perhaps most essential—perhaps even more essentially necessary than the other constituents of food which produce fat, or are employed in the animal economy to keep up the animal heat. They are more important in this sense: whereas the animal organism has the power to make fat from gum, sugar, mucilage, and even from young cellulose or young vegetable fibre, it has not the power of making a particle of flesh. Unless, therefore, food is given to animals which contains ready-made flesh, an animal cannot grow: the other constituents of food remain unavailable. It is in this sense that the nitrogenous matters of food are extremely valuable. But in a purely practical sense they are not so valuable as the oil, starch, or sugar of food, because by spending a certain amount of money in food we do not get so great a return in the shape of butcher's meat by purchasing these flesh-forming matters as by purchasing feeding substances, rich in oil or starch. However, in speaking of the relative value of the various constituents, especially the oily and the flesh-forming constituents, we are not to overlook, that the quantity of nitrogenous matter which is not applied for the formation of flesh passes through the animal, and is obtained again in the dung, with the exception of a small quantity that escapes by evaporation through the skin, or through the lungs. A certain quantity of nitrogenous food evaporates through the skin, or with the respiration; but by far the largest proportion—according to some experimenters nine-tenths of the flesh-forming or nitrogenous matters of food—are found again in the dung; according to others the amount is seven-eighths. But, speaking in round numbers, I think we are not far wrong in saying, that we may fairly expect three-fourths of the nitrogenized matters of oilcake back again in the manure; and perhaps we are safe likewise in asserting, that fully one-half of the money value of rape and the best cotton cake is obtained back again in the manure. So we must not put down these constituents, which are called nitrogenous, as useless, because they alone do not produce much butcher's meat; nor must we estimate the value of oilcake entirely by the increase in the life-weight of cattle fed upon the cake; but also, and chiefly, I believe, by the increased value of the manure, which is produced through the instrumentality of oilcake. In the third place, I briefly direct attention to the inorganic matters, or ash of oilcakes. These inorganic matters may be called bone materials; for the ash of oilcakes is particularly rich in phosphate of lime, or the material of which the greater part of the bone is composed. Now the large proportion of oil, next the large proportion of flesh-forming matters, and thirdly, a considerable proportion of bone material, are characteristics that confer a particular value upon oilcake, either directly as food, or indirectly as useful material for increasing the value of farm-yard manure. For, let me observe, that oily matters and substances that make butcher's meat are the most valuable constituents in all feeding materials, and therefore also in an oilcake. On the other hand, the flesh-forming constituents and the bone-forming materials—in other words, the nitrogen and the phosphate of the cake—are the two most valuable fertilizing constituents. We have thus in oilcakes a concentrated state materials that produce butcher's meat, and at the same time yield the most valuable fertilizing constituents. There is no other description of food which unites these useful properties. Having briefly alluded to the various uses to which oilcakes are applied in the animal economy, and spoken of their relative advantages, let me, in the next place, direct your attention to some of the more important descriptions of oilcake. I shall endeavour to confine myself to an hour in the delivery of this lecture, and must therefore leave unnoticed many descriptions of cake that occur occasionally in trade, and some of which you will find placed on the table. You have here, for instance, a specimen of the camellina or gold of pleasure cake, which is not so valuable as lused or rapcake, but may still be usefully employed. There is also a specimen of the sesamum cake—a useful cake, which occasionally can be had at a cheap rate. And there are the sun-flower seed cake and coco-nut cake. There are also several other specimens on the table, and many others that I left at home, which I shall

be happy to show to any members of the Society who will do me the honour of visiting my little food museum at the Royal Agricultural College, Cirencester. Here is a specimen of a nut cake. It is extremely sweet, and made of an African nut that has lately come into commerce. The nut tastes as sweet as an almond, and may be eaten; indeed, it is used as a dessert nut occasionally. There are many other cakes of a similar description, more or less important to the practical agriculturist; but I shall confine myself, with your permission, chiefly to the chemistry of linseed cake, cotton cake, and rape cake.

Linseed cake.—You are all well aware, we distinguish chiefly the following kinds of linseed cake—English cake, American cake, and Foreign cakes. Amongst foreign cakes there are various descriptions. There is the Baltic, the Marseilles, the Naples cake, and various others. We have here an excellent specimen of good English cake. The English cake is made now of two qualities—thick and thin cake; the latter is made in imitation of the American barrel cake, of which specimens are before you. You observe how closely the thin English cake resembles the American barrel-cake. The latter has gained much favour, and therefore the manufacturers in England have found it to their advantage to imitate the form in which it is sold. In the first place, notice, that the American cake occasionally is as bad as English and foreign cakes. It is not every description of American cake which is good; but, generally speaking, as it comes into the market, especially the barrel cake, it is of a very superior character. But the question, whether it is superior to the English cake or not, is one which is not very readily decided. You may get English cake quite as good, if not better than the American cake. Some years ago it was the fashion to buy the English cake in preference to any others; but it is now the fashion to buy the American barrel cake. I can only account for this by the fact, that the English cake, being produced in good quality, was rapidly consumed; the American cake was usually sent in a very damaged condition to this country, coming as it did in bags. Our sharp American friends very soon found that they must send their cake here in a good condition. They dried it previously to sending it over, and imported it in barrels; and this improved condition of the American cake greatly increased its reputation, which has been kept up; so that at the present time in most markets American cake, especially the barrel cake, fetches a higher price than the English. But a reference to the diagram will show you that there is no essential difference between good English cake and good American; indeed, if anything, the advantage is in favour of the specimens of English cake. The difference is extremely small. There is the same quantity of oil in both cases. The proportion of flesh-forming matters is rather larger in the English than in the American. There is the same amount of ash in both. The proportion of sand hardly amounts to one per cent. in the English cake, and in the American it is only a half per cent. These differences are extremely small and unimportant, so that you may get, and often do get, as good English cake as American. And occasionally also you get bad American cakes; but, on the whole, the exporters of American cake are very jealous as to the kind of article they send to this country, especially if they go to the expense of packing it in barrels. So much with respect to the relative value of English and American cake. In the next place I have to notice some peculiarities in the constitution of foreign cakes. I observe that most of the foreign cakes which come from the south of France and from the Baltic are very inferior. It is difficult indeed to get a good foreign cake; and a great deal of mischief is done by these bad cakes. Animals do not get on well when fed upon them, and frequently they suffer injury—injury which can only be ascribed to deleterious seeds, with which almost invariably the foreign cakes are mixed. We know but little of the physiological effects which many of the weed seeds have on the animal constitution; but we know at least that several of the weeds occurring in foreign cakes are violent purgatives. Many English weeds also possess this property; for instance, the *limm catharticum*. If you examine closely the foreign cake, you will find in it, as in the case of the specimen I hold in my hand, a considerable quantity of seeds that are evidently not linseed. Moreover, it is another characteristic property of foreign cakes, that they are often very hard pressed; they are frequently ground over, and pressed again a second time in this country. Several of the foreign cakes are badly pressed in the country where they are made, and are re-crushed

in this country, being mixed at the same time with the sweepings of warehouses, with charlock, with rape seed, and refuse seed containing a little oil, and the whole mess is then sold as cake, to the great injury of those who feed it. I know for a fact, that occasionally oily refuse seeds, which would have no great value in an expressed state in the market, are pressed with foreign cakes. Here is a sample of Marseilles cake, in which you can see the foreign seeds very plainly. That the foreign cakes are often re-crushed, appears to me to be proved by the almost complete destruction of the shape of the linseed. In this cake you cannot possibly ascertain from what description of seed it is made. It is so finely ground that you can hardly recognize the structure. This, of course, is not the case with every foreign cake; but many of the cakes are so finely ground and hard pressed that it is impossible to say what kind of cake they are, unless you examine them very carefully. While speaking of the different kinds of linseed I would allude to the various adulterations of linseed cake. The first and by far the most common one is adulteration with the seeds of weeds, the sweepings of warehouses, refuse oil seeds of various kinds. In the second place, an adulteration by no means uncommon is that of bran. The bran is added with a view of getting an additional quantity of oil out of the cake by re-pressing it. This spring I have had about half-a-dozen, if not more cakes, sent to me, which were adulterated with bran; and cakes mixed with seeds of weeds have been sent to me, I am sorry to say, in a very much larger proportion than pure unmixd linseed cake. Thirdly, linseed cake is sometimes mixed with rapeseed. A sample of such cake was lately sent to me by Mr. Hudson, of Castleacre. Examined by the microscope, rapeseed is unmistakably seen in this cake. This adulteration perhaps is not so objectionable as many of the others which I have noticed; but still as rapeseed sells at a much lower price than the American or English linseed cake, I would advise all who like to buy the mixture to buy the two cakes separately. Then again, chaff and the seeds of cereals occur in cakes, especially in foreign cakes. Even an unpractised eye will easily recognise in the sample of Naples cake, which I hold in my hand, the seeds of cereals, refuse barley, and grass seeds. These are all mixed up with the cake, and the whole is pressed together. A very injurious adulteration which occasionally occurs is that of castor-oil beans. A member of this Society some time ago lost a valuable animal by giving it Marseilles cake, in which I detected these castor-oil beans. Another very injurious adulteration is that which occurs—not very frequently, but I have seen it—an adulteration of a cake, which is occasionally sold as manure, under the name of nut-cake. It is produced by expressing the seeds of *Cercus* beans—a very drastic seed which comes from the Cape de Verde Islands. Only a few months ago a cargo of these beans came into Bristol, and a bag of them got open by accident. A number of street boys rushed after the beans, and, finding them very sweet, partook of them. About a dozen of them had to be carried half an hour afterwards to the infirmary. They are violently drastic beans. They have an agreeable sweet taste, but are very poisonous. These are some of the more important adulterations that have come under my notice. Leaving linseed cake, I proceed with the next description, namely, with *Cotton Cake*. We distinguish now principally two kinds of cake; the one made of the whole seed, and the other of the shelled seed. The difference in the two qualities of cake will at once become intelligible by an examination of the seeds, or the raw materials from which the cakes are made. The decorticated or shelled cake is made of the kernel of the cotton seed; the whole cake, in which we recognise an abundance of the husk, is made of the entire seed; and inasmuch as the cotton seed contains full half its weight, and some descriptions contain as much as 60 per cent. of the hard husk, we must not expect that the cake made of the whole seed should be as valuable as the decorticated cake. There are several specimens of cotton cake on the table. There is very little value in the husk itself; the difference in the two kinds of cotton cake, then, arises from the different modes in which they are made. The one, the decorticated cake, is made from the kernel; the other kind is made from the whole seed. The difference in the composition of the two kinds of cake is very great. The decorticated cotton cake contains 16 per cent. of oil (more than any other description of cake), while the whole seed cake contains only 6 per cent. The proportion of albuminous or flesh-

forming matters in the decorticated cake amounts to 41 per cent.; in the whole seed cake it is only 23 per cent.—just one-half. So with respect to the other constituents. The proportion of woody fibre is very much larger in the whole seed cake than in the other. The husk in the whole seed cake for a long time was a great impediment to the general use to which cotton cakes now applied in this country. I remember when the first cargo of cotton cake came into England, before the decorticated cotton cake was known. Trials were made of it, which proved quite unsuccessful. People did not like it at all; and I believe the cotton cake would never have been extensively used if it had not been for the invention of a very useful machine patented in America, by means of which the hard husks can be removed from the kernel. The use of this machine gives us a superior oil and a superior cake. The cotton-seed oil, made from the kernel alone, is a very useful article, and so is the cake; whereas the oil expressed from the whole seed is dark-brown in colour, and cannot be used except for the commonest purposes for which oil is employed. The difference in the value of the two descriptions of cake is so great that I almost think 2 tons of the oilcake made of the whole seed does not go further than 1 ton of the best decorticated cotton seed cake. Moreover, there is a certain danger in using the whole seed cake. Several cases of so-called poisoning have been brought under my notice within the last year or two. Animals that have freely partaken of the whole seed cake have died suddenly, and people have imagined that there was something injurious in the husk; but examination has shown that the effect produced is very much like that which is occasionally produced in the case of boys who die from inflammation of the bowels in counties where cherries are very abundant. Being very greedy, and eating the cherries with the stones, they get a stoppage of the bowels, and so die from inflammation. There is nothing poisonous in the husk of the cotton seed, and when given judiciously, no injury will result; but if animals are supplied with an unlimited quantity of dry food with the whole seed, there is indeed a danger. The hard husk is indigestible, and may roll together in such large masses that inflammation of the bowels will ensue. There is no such danger, however, in the use of decorticated cotton cake. The decorticated cake occurs of various degrees of quality. And allow me to observe, with respect to all kinds of cake, that not only the composition, but even in a higher degree the condition of the cake determines in a great measure its value. I have here a specimen which you would hardly recognise as of the same description as another specimen, also on the table, of a very beautiful character. It is the same kind of cake, only it is in a bad condition. I say, then, the condition of a cake determines everything. Some time ago I was very gratified in finding what great care Mr. Stratton, of Broad Hinton, the celebrated shorthorn breeder, takes in selecting the very best of American barrel cake for his stock. We often forget that animals have appetites as we have, and that they like food in a good condition better than food in a bad one. The composition of two samples of the same food may not vary much, yet the practical effect produced by them may vary exceedingly. There is nothing remarkable in this, for we know that if we get good wholesome bread, which is one or two days old, we do well upon it; but if it remains in a damp cellar, and gets mouldy, stale, and moist, it loses its fine flavour, and in this condition may do us harm. So it is with stale, mouldy cakes. Animals never do well on very old cakes. In examining, therefore, the different cakes, we ought to examine particularly their condition. I allude especially to the examination of cotton cake, because every person has the means of examining its condition with very little trouble. It is not so easy to examine the condition of linseed; it presupposes an extensive acquaintance with various descriptions of linseed cake. You must have seen a great many samples of cake before you can give a trustworthy opinion. Not so with decorticated cotton cake. In this the colour affords an excellent criterion as to its freshness. The freshest cotton cake is as yellow as mustard. I hold a piece of cake in my hand, the exterior of which is brown, but if I cut away a portion you will observe that the interior is bright-yellow—very different from the part that has been exposed to the air. This was an excellent cake when we first got it for feeding purposes, and we are feeding it extensively in our farm at Cirencester. When we first had it it was of a bright yellow colour, but you observe how it has since changed. From this we may learn a very useful lesson—that

we may take the colour as a guide to the condition and age of the cakes. If we are presented with a cake which is as brown as the specimen before me, and if you find on cutting it that the brown colour has penetrated deep into the interior, we may at once conclude that it is a stale, old cake. The deeper it has penetrated, the older the cake, and the more it has suffered by bad keeping. If it is kept in a damp place its colour and condition are rapidly deteriorated. I now hasten on to speak briefly of rapecake. The best rapecake, which however is rather scarce in commerce, is green German rape. I believe it is as good as linseedcake for store cattle. It may not be perhaps quite so useful for cattle that you want to bring up for the Smithfield Show—rather tasty in their appetites; but for store cattle I believe the German rapecake is in every respect as good as linseed cake. The difference in their composition is very trifling. As you see by the diagram, the proportion of oil is nearly the same; and in many samples of rapecake you find a larger proportion of oil than in the specimen from which this analysis was made. Unfortunately, however, rapecake is frequently made of very dirty seed. Some foreign cake, more especially Indian cake, is often made of seed which is full of mustard. Several cases of poisoning have occurred from its use. Not long ago Mr. Greville lost four cows by the use of this cake. It has been maintained that all Indian rapecakes are pungent. That is the case to a certain extent, but it does not follow that every description of Indian rapecake is poisonous, or so pungent as to produce injury. I find by a more extended examination of rapecakes made from Indian rape seed, that some are very useful indeed, and can be used without hesitation, while others are downright injurious. It is made of the brown or yellow Guzarat seed, which I hold in my hand, it is good; but when made of dirty seed, which is often full of mustard, it may produce injury [several specimens were exhibited]. I have sown some of the inferior seed, and got a mixed crop of mustard, and the plant from which the Indian rapecake is made. To give an idea of the injury that may be produced by using inferior Indian rapecake, I have mixed some cake with water, and will pass it round. You will have no difficulty in smelling the mustard. I have also a bottle containing some of the essential oil which I have extracted from the cake, the smell of which is of course still more powerful. It produces blisters on the hands; and the effects of a mustard poultice applied inside may be readily imagined.

Let me, in conclusion, briefly point out how you may examine cake, so as to be able to form some opinion as to its qualities. An excellent way of examining all descriptions of cake is to reduce them to powder. I should recommend for the purpose a common kitchen grater. You should grate it till you have about half an ounce of powder. It is better to powder it in the way I have mentioned than to reduce it in a mortar to a fine powder, for in that case you would be likely to destroy the character of the seeds of weeds, and reduce the bran, if there is any present, into a condition too fine for examination. The powder should be mixed with about five ounces of water. With good American cake the mixture is transparent, light coloured; it produces a stiff jelly, which is very agreeable to the smell and the taste. The cake is so nice that one might almost eat it with pleasure. If, however, you examine foreign cakes, which in nine cases out of ten contain other descriptions of oilseeds besides linseed, you will find the jelly to have a very disagreeable smell, often very much like a canary bird-cage—it smells like the refuse of canary bird seed. This peculiar smell arises chiefly from the camelina seed in such cakes. Then I would also observe that the colour is quite different in good and in bad cake. The latter has a dirty grey colour, and if you examine it with the pocket microscope you discover readily the particles that are not linseed. By diluting the thick paste with water, and stirring it up, you can recognise the seed, which then subsides better. Then above the sand generally floats the bran, which can be recognised by its structure. Indeed, by the simplest solution, or rather suspension in water, you can recognise a great many foreign matters in cake, and to some extent likewise recognise its condition. Then, in addition to this examination, I would observe that in the case of rapecake you ought to take half an ounce of the powder and mix it with six ounces of cold water, keeping the mixture in a stoppered bottle, and then examine it after the lapse of 24 hours—not before. It is a singular fact that rapecake, even when containing a very large proportion of mustard, has no smell whatever, nor is the smell developed

immediately on mixing with water. The fact that the smell of mustard does not appear within an hour, or even two or three hours, does not prove the absence of mustard. But if you place the bottle in a tolerably warm room, or even in a common sitting room, and do not find a strong smell after the lapse of 24 hours, you may safely conclude that there is not an injurious quantity of mustard present. If the smell is very strong, more particularly if the taste is strong, mustard is present in injurious quantities. I lay particular stress upon the last remark, "if the taste is strong," because all rape cake is to a certain extent pungent, indeed all the seeds belonging to the brassica species develop a strong smell, but you do not get anything like that pungent taste in the specimen I have sent round. It bites you on the tongue, and ragesed never does that. Of course there are occasions when a more perfect examination is required; and there are other tests of a more chemical character which I might have noticed, but as they are more difficult of manipulation, I thought it best to remain silent respecting them, pointing out only the simple test which I have given—one that is really very useful, and can be handled by every man. I have given you a brief outline of the method which, after all, I am myself frequently obliged to follow, in addition to the chemical examination to which I submit the cakes when sent to me for that purpose. With these remarks I conclude this lecture, thanking you for your kind attention.

COMPOSITION OF LINSSEED AND OF OILCAKES.

	Linseed.	Linseed Cake.	Rapecake.	Mustard Cake.	Cotton Seed-cake (made of whole seed).	Poppy Seed-cake.
Water	7.50	12.44	10.68	11.90	11.19	11.63
Oil	34.00	12.79	11.10	6.69	9.08	5.75
Flesh-forming matters	24.44	27.69	20.53	23.48	25.16	31.46
Heat-giving constituents	30.73	40.95	40.90	52.14	48.93	33.18
Inorganic matters (ash)	3.33	6.13	7.79	5.79	5.64	12.93
	100.00	100.00	100.00	100.00	100.00	100.00

COMPOSITION OF LINSSEED CAKE.

	ENGLISH.	AMERICAN.
Water	13.20	11.61
Oil	10.30	10.43
Woody fibre	12.90	14.26
Albuminous compounds (flesh-forming substances)	29.75	24.01
Mucilage, gum, &c. (respiratory compounds)	28.23	31.41
Ash	5.62	5.22
	100.00	100.00
And containing phosphate of lime and magnesia (bone earth)	2.78	2.90
Alkaline salts	1.85	1.90
Sand and soluble silica .....	.98	.42

COMPOSITION OF—

	COTTON SEED CAKE.		BEAN MEAL.	BRAN.
	Decor-ticated.	Whole Seed.		
Water	8.29	11.34	11.80	13.86
Oil	16.05	6.18	—	5.55
Albuminous compounds (flesh-forming matters)*	41.25	23.72	23.30	13.50
Gum, mucilage, sugar, &c. (heat-producing substances)	17.44	30.98	48.59	59.17
Woody fibre	8.92	21.24	10.0	11.59
Mineral matter (ash)	8.05	6.54	3.4	6.11
	100.00	100.00	100.00	100.00
* Containing nitrogen.....	6.58	3.79	3.73	2.20

A discussion followed the delivery of the address; and a vote of thanks was awarded to the lecturer.

The Council then adjourned to its special meeting on the 19th June.

A Weekly Council was held on Wednesday, June 20, Mr. T. Raymond Barker, V.-P., in the chair, present—Marquis Camden, Earl of Powis, Lord Leigh, Hon. Col. Hood, Hon. W. G. Cavendish, M.P., Hon. A. Vernon, Sir E. C. Kerrison, Bart., M.P., Mr. J. Dent Dent, M.P., Mr. Dashwood, Mr. Frere, Mr. Brandreth Gibbs, Mr. Majendie, Major Munn, Mr. Murton, Mr. Neame, Mr. Simpson, Mr. Wightwick, and Professor Wilson.

PRIZE ESSAYS.—The Chairman of the Journal Committee reported the following awards from the Judges of Essays:

To Henry Evershed, Gosfield, Halsted, Essex, the prize of £10 for the best Essay on the proper office of Straw on the Farm.

To Professor Tanner, Queen's College, Birmingham, the prize of £10 for the best Essay on the condition of Seedbed best suited to the various agricultural crops.

Some well-grown Wheat brought from Tasmania was exhibited by Mr. Ashhurst Majendie, of Heddingham Castle, Essex.

The Council then adjourned to its weekly meeting on the 27th June.

GLASGOW AGRICULTURAL SOCIETY'S EXHIBITION.

The weather was very unfavourable. The judges of implements were Messrs. John Donaldson, Paisley; James Drennan, Ayr; and a committee of directors. All the following prizes have been gained by Alex. Jack and Son, implement makers, Maybole: Norwegian harrow—premium silver medal; consolidating land-roller—premium, silver medal; harrows for heavy land—premium, silver medal; harrows for light land—premium, silver medal; sowing machine for turnips—premium, silver medal; one-row sowing machine for beans—premium, silver medal.

CATTLE PRIZES.

Ayrshire cow in milk.—1st, Laurence Drew, Merryton, Hamilton; 2nd, John Marshall, Airblies, Dalziel; 4th, James Wilson, Old Mill, New Cumnock.

Three-year-old cow.—1st, John Meikle, Brownhill, Tarbolton; 2nd, James Wilson, Old Mill, New Cumnock; 3rd, John Stewart, cattle dealer, Strathaven.

Pair of three-year-old cows.—1st, John Parker, Nether Broomlands, Irvine; 2nd, John Stewart, cattle dealer, Strathaven.

Cow in calf.—2nd, John Stewart, cattle dealer, Strathaven.

Two-year-old quey, yeld and not in calf.—1st and 2nd, John Parker, Nether Broomlands, Irvine; 3rd, John Stewart, cattle dealer, Strathaven.

One-year-old quey.—1st, John Stewart, cattle dealer, Strathaven; 4th, John Parker, Nether Broomlands, Irvine.

Bull calved before 1st January, 1858.—1st, Ivie Campbell, Dalgie, New Cumnock; 2nd, John Parker, Nether Broomlands, Irvine; 5th, John Stewart, cattle dealer, Strathaven.

Two-year-old bull.—1st, John Parker, Nether Broomlands, Irvine; 2nd, John Stewart, cattle dealer, Strathaven.

To the breeder of the best of all the prize Ayrshire cows, the gift of Sir E. Colebrooke, Bart., of Abington, M.P., a silver medal—Laurence Drew; to the breeder of the best of the prize bulls, a silver medal—Ivie Campbell.

HORSES.—Three-year-old filly or gelding.—Highly commended, George Scott, Barr, Largs. One-year-old filly.—1st, Wm. Kirkwood, Shankston, Patna. Two-year-old entire colt.—3rd, John Lockhart, Kirkminnoch, Stranraer. One-year-old entire colt.—1st, Matthew Kerr, Cree, Beith. Roadsters.—Pony, suited for sweet milk cart, not exceeding 14½ hands high.—1st, Wm. Campbell, Beltrees, Lochwinnoch.

SHEEP.—Cheviot: Tup of any age.—1st, 2nd, and 3rd, William Tod, Glenred, Lamblash, Arran. Pen of three ewes, lambd after 1st January, 1858.—1st and 2nd, William Tod, Glenree, Lamblash, Arran. Blackfaced: Pen of three tups, not more than three shear.—3rd, Robert Stewart, Drumore, Campbellton. Pen of five ewe hogs, lambd after 1st January, 1859.—2nd, A. Lusk, Craiggaffie, Stranraer.

NORFOLK AGRICULTURAL ASSOCIATION.

MEETING AT NORWICH.

The most direct proof of the Agricultural Societies of this era having attained that object for which they were established is afforded in the return of the anniversary meetings. These continue, almost without exception, to improve in their character. They are now always better and better. The entries are larger, and yet the stock is more generally good. The admission receipts, again, are announced to be greater than was ever known before. In fact, the influence of the Association is telling in all ways. New men are brought out, and older hands reap their reward in herds and flocks of recognized excellence. The public are no longer wont to deride such exhibitions, but rather to feel how home a question their success must be to us all. Quality and quantity advance with equal steps under such auspices, and town and country combine to do honour to the occasion.

As in Essex last week, and in Dorsetshire the week before, the show of the Norfolk Association was still pronounced to be progressive. Not, however, that it improves at all points. There may be more animals, and there are, no doubt, many better than usual. But these are yet in the names of a comparatively few exhibitors, and Lord Leicester, Lord Sondes, and Lord Walsingham continue to have the best of it. This illustrious trio, moreover, would seem to have come to some accidental arrangement to divide the chief honours of the meetings. Lord Leicester excels in Devons, Lord Sondes in the polled cattle, and Lord Walsingham in Southdown sheep. And so they ring the changes, from Norwich to Swaffham and from Swaffham to Norwich, while the famous Norfolk farmers, the Hudsons, the Overmans, the Aylmers, and others make but feeble stand against so formidable an alliance, well content with an occasional commendation, or, happily, a second-best. The prize-list of sixty tells the customary kind of story, and by this test makes the County better known for landlords than even for tenants.

Not but that the *general* improvement of the stock of the district is clearly observable. Nearly all the most fashionable breeds are now being fairly tried here. There are distinct classes for Shorthorns; the agricultural horses number many of the best Suffolks; and well-selected long-wools vie in excellence with the longer naturalized Downs. A judicious extension of privilege has let in certain friends and neighbours, and what the Society proper cannot do for itself, Mr. Barthropp, Mr. Crisp, Mr. Badham, and Captain Barlow with their horses, Mr. Sexton with his sheep, and Lady Pigot with her cattle, may ably stand answerable for. In fact, the Norfolk show, as now constituted, owes no little of its pre-eminence to such collateral aid, while the most favourable of results must surely follow from the adoption of such a course. Let us look to the first instance we have offered. A few years since and there was hardly a cart-horse of any acknowledged breed in the county. Nowhere, considering the high system of cultivation employed, were the plough teams made up of rougher pairs. But the Suffolk element has been gradually introduced; and, as a consequence, never before were there so many good draught horses seen at a Norfolk Meeting. Mr. Barthropp sent Hercules, Mr. Crisp Marquis, and Mr. Badham his mare Matchett, and they backed these

well-known ones with some equally good entries in the younger divisions. As some proof of how superior these horses were, Mr. Henry Overman's stallion, that has previously taken a prize on every occasion of his being exhibited, was not even noticed by the judges. The point of preference was entirely between Mr. Crisp and Mr. Barthropp, and it was decided in favour of clearly the best looking, but by far the worse, actioned of the two. Marquis is a very compact, powerful, cheerful looking nag; whilst Hercules, with more size, is a little high on the leg and slight in the thighs. But he is a wonderfully catching horse when moving, especially when put to a smart trot, whereas the Marquis went very fumbly and foot-sore. Mr. Pratt's third-prize horse is a son of Hercules, who was sold by Mr. Barthropp during the day to go into Nottinghamshire. The Butleigh Abbey first-prize three-year-old was the second special-prize of his age at Warwick. Like the Crettingham young one in the next division, he is a horse of a good-sounding *wearing* colour, while his second was a light yellow chesnut, and even in more important respects "no ways" up to the form of his stable companion. Mr. Barthropp further emphasized the strength of his stud with two remarkably fine roomy fillies, one by Hercules and the other by the Rarified Hero. They were, either, of excellent quality and very handsome to look on, despite a badly broken knee, which the authorities, however, were too good judges to take much notice of. Mr. Badham backed these with his beautiful mare, and Lady Pigot with the bay Suffolk and her Emperor foal that we queried at Dorchester.

If the Suffolks are coming on here, the famous Norfolk trotting horses are most assuredly going out. There was scarcely one of that useful, wearing, strong, and stout stamp, the world was once so familiar with, to be seen on the Show-ground. They have been clearly crossed into something bigger, if not better. The hackney and hunter classes were hardly to be distinguished. In fact, there were some much more "likely" hunters amongst the hackneys than were to be found in their own proper ranks. The latter made up a very middling lot of four, with in reality not a prize nag amongst them; but it will be seen both the premiums were awarded. The fifteen hackneys were far better; not that we imagine the Judges cared much to define what a hack meant, but simply went to pick out the best-looking ones brought before them. Many of these had a direct strain from the thorough-bred horse in them; and the first prize mare had a sneaking cross-country look about her that argued as much or more for the field than the road. She was sold twice over before night, and the first time for a hundred. Mr. John Overman's two entries also went at a hundred each. Still, notwithstanding the increasing call for his services, the thorough-bred stallion came in no great numerical force. Revenge, Flagellator, and Strathern comprising the entry. The first of these—Captain Barlow's handsome horse—was far too fat, and his big carcase caused him to look a little light-timbered. Many yet preferred him to the prize, a four year old, that when he drops to his leg and furnishes a hit more, is sure to be better liked. He is finely topped, has a good flat leg, and the walk of a race-horse. A long way the best specimen of a hackney was to be found in "the next de-

gize," but Captain Barlow had to travel all the way into Yorkshire for North Star, a very clever horse, with power, symmetry, and colour to recommend him. He should, further, have action; but with a shoe loose, there was no opportunity of seeing him out. Although the show of this kind of stock was strong, it had little or none of those distinguishing features the stranger would expect to find in the land of dumplings, turkeys, and trotting horses.

The cattle come more decisively to the fore. The red-poll Norfolk have long been famous, or infamous, for something or other. They have indisputable excellence for dairy purposes, while they associate with this a far more comely appearance than many good milkers. Take, for example, Lord Sondes' first-prize two-year-old heifer—a very even, shapely, good-fleshed animal, that would go to promise well for the butcher. Mr. Hammond's cow, again, was very commendable, and the prize-bull quite a curiosity. Like the Devons—and some of the polled beasts are getting very like the Devons about the heads—these cattle are uniformly of a red colour, although lighter in the coat, than the more fashionable families of the West. They were led off here, however, by a really fine, but gaudy, parti-coloured bull, so variegated in white and brown and red as to drive any man who went for uniformity fairly out of his senses. But the Suffolks, after all, do not depend on the whole colour. Mr. Gayford's bull, indeed, is said to have a pedigree that goes two hundred years back, and that was as orthodox as anything on the show-ground. The shorthorns, perhaps, might be inclined to question this, but shorthorn dicta have not much weight with a Norfolk man. Had not Lady Pigot been considerate enough to scud something, this section would have been far below mediocrity. As it was, one good class of cows was made up, and this her ladyship headed with Lady Sarah, from Mr. Ambler's herd. Then in the succeeding row of them she had the beautiful, if not grand, Empress of Hindo-tan, that for quality, size, and symmetry was unmistakably the belle of the day. It was almost impossible to find fault with so fine a heifer. Amongst the local exhibitors Lord Walsingham is coming on with a shorthorn herd, which he traces back to Mr. Parkinson's blood, but somehow or other the black noses are creeping out amongst his stock. Otherwise, or alone Pretty is a very creditable cow. Mr. Gooch's prize bull was fortunate enough to get third at the Warwick Show last year. He was now far away the best of his lot, while none of the yearlings were worth notice, and Lady Pigot's sample of her own breeding does not say much for what they can do with the Durhams at Chippenham Park. As far as the county was concerned, the best Shorthorns were discovered under the hedge at the end of the line, where they made up the display of fat stock. Both Mr. Gooch's and Lord Walsingham's cows were remarkably good. The entry of Devons was almost entirely confined to Lord Leicester and Mr. Blomfield. Of the five cows my Lord had three and the commoner two: three of the six heifers in calf were from Holkham, and two were sent by Mr. Blomfield, and of the five yearlings they numbered two each. The best lot were Lord Leicester's cows: the yearling heifers, on the contrary, were indifferent, and altogether, when we remember what the Norfolk Devons have done in London and Birmingham, as well as at the Royal shows, we confess to some disappointment at what we saw here. With the run of people the polled have evidently still the preference. The Holkham herd, however, would now appear to be established, as every one of Lord Leicester's entries were of his own breeding.

The sheep show was remarkably good, and hortwools and longwool alike in favour. Amongst the former the recent improvement of Lord Walsingham's flock is very noticeable. His lordship is now fast approaching the high standard of what a Southdown should be. The heads of his sheep are getting more and more the proper tint and shape, while they run heavy without coarseness, and handle admirably. One of the shearling ewes was very near perfection in form, and with some of the rams will go on to Canterbury. Of course the Merton Flock has all the best of it, but in some cases, for lack of sufficient competition, the second premiums, by the rules of the Society, could not be awarded. In the longwools, Cotswolds, and Lincoln crosses, the general advancement was yet more satisfactory. The judges commended the whole class of aged rams, sixteen in number, and with every justice. Mr. Sexton with a Cotswold, and Mr. Aylmer, were the especially distinguished. Mr. Sexton, indeed, has in a few years done wonders with the Wold sheep; and his first prize ram, for grandeur of appearance, true symmetry, flesh, and wool, would hold his own anywhere. He was far superior even to the Saffron Walden ram that beat the Babraham Downs the other day, but which could reach no higher here than the "general commendation." Mr. H. Aylmer is as well known for his longwools as another Mr. Aylmer for his shortwools, and both have a call in the county. Mr. T. Brown's flock is also making him a position; but Mr. Beale Browne must have behaved very honourably at his sale, and let all the best of them go. There was certainly nothing at Norwich worth sending so far from home.

Suffolk made up a very small show of pigs, but Messrs. Crisp and Sexton's improved blacks commanded a good deal of attention. It is with the winning sow here that Mr. Sexton has accepted the somewhat grandiloquent challenge issued, under the auspices of the Suffolk Society, of some gentleman to show his pig against the world! He has not had to go out of his own county for a customer, and it will be amusing, as it is quite possible, that he may be beaten. Indeed, this new variety of the Suffolk swine have many things in their favour, these points were well brought out by the larger breed, strangely enough, also exhibited by Mr. Crisp. With long, lean, hungry heads, high arched, sharp backs, with harsh hair, coarse flesh, and unkindly looks, it is difficult to say for what the judges could award them prizes: Award them, though, they did, probably out of respect to sheer size, and what they might measure over that high range of back-bone from the ring in the snout to the tag of the tail. Still Mr. Crisp finds a market for this sort in France, Hungary, and Prussia, where a hog pays a tax, be he big or little, and so the heavier he dies, the lighter the impost.

Neither poultry nor flowers added to the attractions, and consequently, despite a most favourable day rendered yet more favourable in the way of a contrast, there was scarcely a lady from either town or country who graced the ground with her presence. The "other" department, however, was declared to be progressing in an equal ratio. The society had never had so good a display of implements, supported as the entry was by such firms as Clayton and Shuttleworth, the Garretts, the Ransomes, Coleman of Chelmsford, Turner of Ipswich, Gardner of Banbury, Woods of Stowmarket, Prentice and Boby of Bury; while of course Holmes, Barnard and Bishop, Stevens, Burrell, Baker, Smith and Taylor, and Howard, Riches, and Watts were amongst the more local exhibitors. Burgess and Key were also represented by Messrs. Kemp and Riv, and their mower won the only competitive

trial, against that now in the hands of Prentice. The crop was considered a very trying one, of "black and white," or in other words sainfoin and rye-grass, and the work of the winning mower was very efficient. To the terror of Mr. Palmer, the judges brought him a medal for Clayton and Shuttleworth's straw elevator, that "under the circumstances" he respectfully begged to decline. The firm was not there in competition for prizes, and so the return list puts another in place of them. Holmes, Burrell, Clayton and Shuttleworth, Garretts, Ransomes, Turner, Howard and Riches, had their engines at work and some thrashing machines in operation; while the more handy houses made up a goodly show of Collections, amongst which Holmes of Norwich was pronounced to have the best assortment. Gardner's new chaff-cutter, never seen here before, deservedly took a medal for the ease with which it does a deal of work; and Coleman's clod-crusher, also with some recent improvements and adjustments, had the commendation of the judges. Of course Bohy's admirable corn screen gets a *nota bene* whenever it is asked for, and Ransome's portable engines have their worth yet further confirmed. Old Mr. Garrett was himself upon the ground, but a Badham Junior, on behalf of the Orwell Works, put the manifold advantages attendant on the purchase of "one of our engines." Mr. Burrell was conspicuous for the traction-engine, still more of "a novelty" than anything else; and Smyth with a *y*, and of Peasenhall, entered drills, with a high reputation to fall back on.

If the noblemen of Norfolk supported the show of the Society with their entries, they were not, this year, so ready to countenance the concomitant dinner with their presence. The Duke of Wellington, the president for the occasion, could not preside in consequence of his coming duties with the Volunteers in Hyde Park. Lord Leicester, the Lord-Lieutenant of the county, is salmon fishing in Norway; Lord Walsingham, the president of the Royal Agricultural Society, sent his agent and his excuses; Lord Sondes did not make even this sign, and Lord Albemarle, alas! will be heard no more. The farmers of the county, the Everitts, the Englands, the Aylmers, the Overmans, the Cobons, the Ewings, the Freemans, with S. Gooch, R. Leeds, Fulcher, Reeve, Sewell Reade, and others, mustered in considerable force, while the only man of title amongst them was Lord Suffield, who kindly consented to take the chair. He was backed by a few other country squires, and more especially by Mr. Antony Hamond, of Westacre. Mr. Hamond, indeed, was the great feature of the entertainment. It was last year, if we recollect aright, that this gentleman signalized himself by making a fair, sensible speech, and he now would seem to have taken to this kind of thing as his peculiar "mission." Whenever anyone else sat down, Mr. Antony Hamond got up. Whatever else was advanced Mr. Antony Hamond had to confirm or contradict. It was his duty to put the Chairman himself right, or to put somebody else wrong. He was to the well-served dinner at the Royal Hotel, Norwich, something what the gallant Colonel Sibthorpe or the late lamented Mr. Drummond was to the Commons House of Parliament. People cheered him and laughed at him. He was thoroughly original, too, in his manner, and delivered stale truisms and obsolete clap-traps with an emphasis that was truly charming, either for its artifice or simplicity. He had long-dwelling imposing pauses—ere he came to his "points." There were curious intonations and droppings of the voice, seasoned with such spontaneous expletives as "by Jove!" "deuced well," and "devilish strange." And then, whenever the fun flagged there was a word or two about fox-hunting, and and as of course everybody had a cheer for this, a halloo

for'ard set him going again. And yet, notwithstanding the "By Joves!" "the preservation of foxes," and the assumption of a certain heartiness of expression, Mr. Antony Hamond's several addresses were as little like the few straightforward sentences of an English country squire as it is possible to imagine. Let us cull a little of the best of what he did say. In the first place, in proposing the health of the Chairman: "Mr. Hamond was very glad that noble dukes thought it right to pay to the yeomanry and gentry of this country the compliment of presiding at meetings of this sort—a proper tribute to those men by whom their graces got their bread—(laughter and "Hear, hear")—and secondly, because the success of this society was not only proved by the meeting of this day, but its future success was guaranteed by that meeting, which, in his opinion, exceeded in excellence the early shows of the Royal Agricultural Society (cheers). He thought it was a great advancement when a single county could produce a show which, 12 and 14 years ago, a society embracing the whole of England was extremely proud to have an opportunity of showing to its uneducated friends (laughter)". Then, in responding for the Royal Agricultural Society, "Mr. Hamond thought it was only reasonable that such an acknowledgment should be made of the great services rendered to agriculture by the Royal Agricultural Society. Its council was composed of men of little knowledge of agricultural matters—(laughter)—but of great zeal, and great zeal went a long way towards producing great knowledge. The agriculturists of this country were greatly indebted to one class of men than whom none had had to contend with greater prejudices—he meant the implement makers. No men had more successfully combated those prejudices than these implement makers, who, as they all knew, had raised themselves from mere blacksmiths to a class not to be surpassed by any class of manufacturers in the world (Hear, hear). But, (pause)—what society had produced these men?—(long pause)—The Royal Agricultural Society." Next, in reference to Mr. Mechi and the proposed Agricultural Benevolent Association, "Mr. Hamond did not think that these meetings were exactly the occasion for raising the cry of 'Recollect the unfortunate widows and orphans of distressed agriculturists!' He was not fond of these benevolent societies, more especially of a benevolent society originated, as this was, by their good friend old Mechi (laughter), to whom the agriculturists of Norfolk were so very much indebted. (Great laughter.) (Long pause.) Well, they were indebted to him. Why? (Pause.) Because he set them thinking, and that was one of the greatest benefits that could be conferred on a farmer, or any other reasoning man. It struck him—(pause)—that this 'benevolent association' was so monstrously like an advertisement of the Leadenhall-street establishment, that (dropping his voice) he would rather not have anything to do with it. (Laughter.)" Again, when the chairman gave the health of Lord Walsingham as the most successful exhibitor of short-wooled sheep, and Mr. Woods was about to respond, Mr. Antony Hamond insisted on being heard; for "though the noble lord did not take any personal interest in the charming amusement of fox-hunting, he had honourably fulfilled his promise to preserve foxes; and—(long pause)—his covers were never drawn without a fox being found!"

Subsequently the proceedings promised to become really useful and interesting. Mr. Atkins, in responding for the Implement Judges, spoke strongly in favour of Burgess and Key's mower and its performance the previous day. Whereupon Lord Suffield, in proposing the next toast, very modestly and becomingly gave his last year's experience of this mower. His

lordship had not found it to answer. He had tried it under his own supervision, and taken much pains to have it worked properly; but he found it saved neither time nor expense, as it was heavy in draught and utterly inefficient where there were any inequalities of surface. Lord Suffield, in saying thus much, trusted that Messrs. Burgess and Key's agent was present; and Mr. Kemp rose in answer to the call. But he was kept back—of course, by Mr. Antony Hamond, who felt called upon to interfere chiefly, as it seemed, because he had never seen a mower at work; and further, as "it was a pity these implements should be rejected by well-intentioned infernally stupid fellows (laughter), who thought the machines were useless, when the fact was they did not know how to use them (laughter)." Mr. Hamond, then proceeded to expatiate on the merits of the reaper, the value of which was never called in question, and that only interfered with the real matter before the meeting, the practical value of any mowing machine at present in use. Mr. Hamond, however, at length permitted the discussion to continue in something of this wise:—

Mr. J. Kemp thanked his lordship for having introduced the subject, and Mr. Hamond for the testimony he had borne to the efficiency of Burgess and Key's mower, which had already been satisfactorily established by the experience of at least twenty gentlemen present in that room. He suggested, as a means of accounting for the failure of the machine on Lord Suffield's park, that the park might have been full of old grass in the bottom, through not having been grazed. In the case of a noble lord in Lincolnshire, to whom a machine was supplied, more difficulty was found, for a similar reason, in cutting the grass on the park than any other part of the estate, for though the grass had been mown regularly twice a-year, it had never been grazed, and consequently there was a great deal of rough herbage at the bottom, which was very hard to cut. He (Mr. Kemp) was under no special obligations to Burgess and Key. He was a farmer as well as an agent, and the implements which he introduced he first tried on his own farm. His determination was to introduce the best implements, irrespective of who the makers were, and if he ever saw any better mowing or reaping machines than those of Burgess and Key's, he should abandon Burgess and Key's and introduce the improved ones. He always guaranteed the machines, and would return the money if they did not answer.

Lord Suffield said he was glad that Mr. Kemp had had an opportunity of defending his machine, but he was still of opinion that it was not a useful one. No doubt, it would cut well on level table land; but it could not be considered a perfect mowing machine unless it were available wherever a scythe could cut.

Mr. Reeve (the Steward of Implements) said he had thrown out a challenge in the Royal Hotel the previous night, that he could produce men who could cut cleaner and cheaper than Burgess and Key's mowing machine could, and that challenge had not been accepted. The machine cut the silt up with the grass, and he was sure they would not be satisfied with hay mixed with silt. The farmers were extremely indebted to Messrs. Burgess and Key for their unexampled industry and skill in producing useful implements, but he (Mr. Reeve) could not admit that their mowing machine as yet belonged to such a class.

The discussion was stopped at this point. Our own opinion is that Lord Suffield was perfectly justified in all he said, and unwarrantably interfered with by some of those who had actually not his own experience. Since last season Burgess and Key's mower has been essentially improved, and what was then a comparatively imperfect implement promises now to be a very serviceable one. It is, indeed, only right to add, as we heard Mr. Reeve make his challenge at the Royal Hotel, that where he lives

labour is still cheap, and the land he proposes for the trial almost covered with stones. As it was, the topic so well introduced by Lord Suffield must do good, while the debate would have been still better had it been strictly kept to the question.

PRIZES FOR STOCK.

CATTLE.

JUDGES.—T. Dickens, High Oakum, Notts.
C. Howard, Biddenham, Beds.

The best Shorthorn Bull, first prize of 10 sovs. and silver medal, S. Gooch.

Second, 5 sovs., Lord Walsingham (Earl de Grey).
Commended.—Sir W. Jones.

The best Yearling Shorthorn Bull, prize of 5 sovs., J. L. Barrett.

The best Devon Bull, first prize of 8 sovs. and silver medal, J. Blomfield.

The second, 4 sovs., R. Wortley.

Commended.—Mr. John Overman.

The best yearling Devon Bull.—No merit.

The best Polled Bull, first prize of 8 sovs. and silver medal, S. K. Gayford.

The second, 4 sovs., H. Birkbeck.

The best Shorthorn Cow, in calf or in milk, first prize of 5 sovs. and silver medal, Lady Pigot (Lady Sarah).

Second, 3 sovs., Lord Walsingham (Pretty).

The class generally commended.

The best Devon Cow, in calf or in milk, first prize of 5 sovs. and silver medal, Lord Leicester.

Second, 3 sovs., Lord Leicester.

Commended.—Lord Leicester.

The best Polled Cow, in calf or in milk, first prize of 5 sovs. and silver medal, J. Hammond.

Second, 3 sovs., J. Hammond.

Commended.—Lord Sondes and T. M. Hudson.

The best Shorthorn in-calf Heifer, not above three years old, first prize of 5 sovs. and silver medal, Lady Pigot (Empress of Hindostan).

Second, 3 sovs., Lord Walsingham.

The best Yearling Shorthorn Heifer, prize of 3 sovs., Lady Pigot (Magnolia).

The best Devon in-Calf Heifer, first prize of 5 sovs. and silver medal, Lord Leicester.

Second, 3 sovs., Lord Leicester.

Highly commended.—J. Blomfield.

The best Yearling Devon Heifer, 3 sovs., R. Wortley.

The best Polled in-Calf Heifer, prize of 5 sovs., and silver medal, Lord Sondes.

The best Yearling Polled Heifer, prize of 3 sovs., Lord Sondes.

Highly commended.—Lord Sondes, for another heifer.

The best pen of three Calves of any breed under six months old, having been bred in Norfolk, prize of 5 sovs., Lord Sondes.

The best Fat Steer of any breed under three years old, prize of 5 sovs. and silver medal, R. Wortley.

The best Fat Cow or Heifer, prize of 4 sovs. and silver medal, S. Gooch.

Highly commended.—S. Gooch, for another.

Commended.—Lord Walsingham.

SHEEP.

SOUTH-DOWNS.

JUDGES.—H. Fookes, Whitchurch, Dorset.

H. Hart, Beddingham, Sussex.

The best Shearling Ram, first prize of 8 sovs. and silver medal, Lord Walsingham.

Second, 5 sovs., Lord Walsingham.

Third, 3 sovs., Lord Walsingham.

Commended.—Lord Walsingham, for another ram.

The best ram of any age, first prize of 5 sovs., the Society's premium of 3 sovs. and silver medal, Lord Walsingham.

Second, 5 sovs., J. B. Aylmer.

Third, 3 sovs., Lord Walsingham.

The best pen of five Shearling Ewes, first prize of 5 sovs. and silver medal, Lord Walsingham.

Second, of 3 sovs., Lord Walsingham.

The best pen of ten Southdown Ewe Lambs, first prize of 4 sovs. and silver medal, Lord Leicester.

Second, 3 sovs., Lord Sondes.

The best pen of three Shearling Southdown Wethers, first prize of 5 sovs. and silver medal, Lord Walsingham.

Second, 3 sovs., not awarded.

The best pen of twenty Wether Lambs, from a flock of not less than five score ewes, the prize of 5 sovs. and silver medal, Lord Sondes.

The best pen of twenty Southdown Shearling Ewes, not to be separated from their flock of ewe hoggets earlier than the 1st day of June, nor clipped before that day, the first prize of 5 sovs., the Society's of 2 sovs., and silver medal, Lord Leicester.

Second, 5 sovs., Lord Sondes.

LONG WOOLS.

JUDGES.—W. Bennett, Cambridge.
R. Woods, Osberton, Notts.

The best Shearling Ram, first prize of 8 sovs., and silver medal, H. Aylmer.

Second, 5 sovs., T. Brown (Marham).

Third, 3 sovs., T. Brown.

Highly Commended.—H. Aylmer.

Commended.—T. Brown.

The best Ram of any age, first prize of 8 sovs., and silver medal, G. M. Sexton.

Second, 5 sovs., H. Aylmer.

Third, 3 sovs., T. Brown.

Highly Commended.—H. Aylmer.

The Class generally commended.

The best Pen of Five Shearling Ewes, first prize of 5 sovs., and silver medal, H. Aylmer.

Second, 3 sovs., H. Aylmer.

The best Pen of Ten Wether Lambs of any breed, first prize of 5 sovs., and silver medal, J. L. Barratt.

Second, 3 sovs., L. Rodwell.

Commended.—Lord Leicester.

The best Pen of Three Shearling Wethers of any breed (except Southdown), first prize of 5 sovs., and silver medal, J. Overman.

Second, 3 sovs., Lord Leicester.

The best Pen of Ten Ewes of any age or breed, from a flock of not less than five score, having brought up a lamb or lambs to within three weeks of the day of exhibition, the prize of 5 sovs., and silver medal, Lord Leicester.

Commended.—T. Beale Browne.

HORSES.

JUDGES.—John Clayden, Littlebury, Essex.
Professor Simonds, Royal Veterinary College, London.

The best Cart Stallion, not under four years old, having covered at least thirty mares during the season, first prize of 10 sovs., and silver medal, T. Crisp (Suffolk, Marquis).

Second, 7 sovs., N. G. Barthropp (Suffolk, Hercules).

Third, 5 sovs., R. Pratt (Suffolk).

The best three years old Cart Stallion, having covered at least fifteen mares during the season, first prize of 8 sovs., and silver medal, T. Crisp (Suffolk).

Second, 5 sovs., T. Crisp (Suffolk).

The best two years old Cart Stallion, first prize of 6 sovs., and silver medal, N. G. Barthropp (Suffolk).

Second, 4 sovs., W. Wilson (Suffolk).

The best thorough-bred Stallion, having been used for breeding purposes during the season, the prize of 7 sovs., and silver medal, T. Hill (Strathern).

Highly Commended.—Captain Barlow (Revenge).

The best Stallion for Saddle or Harness, first prize of 7 sovs., and silver medal, Captain Barlow (North Star).

Second, 4 sovs., W. Drane (St. Francis).

The best Hackney Mare or Gelding, above 14 hands and not exceeding 15½ hands high, first prize of 10 sovs., and silver medal, F. Gardner.

Second, 5 sovs., R. B. Aylmer.

Third, 3 sovs., T. Brown.

Highly Commended.—S. K. Gayford.

Commended.—J. Overman.

The best Mare or Gelding for hunting purposes, first prize of 5 sovs., and silver medal, H. Birkbeck.

Second, 3 sovs., J. Savory.

The best Brood Mare for Saddle or Harness, to have had a living foal within twelve months preceding the day of exhibition, the prize of 5 sovs., and silver medal, W. Rose.

The best Cart Mare and Foal, the prize of 6 sovs., and silver medal, Lady Pigot (Suffolk).

The best Cart Mare, first prize of 5 sovs.; the society's of 2 sovs., and silver medal, G. D. Badham (Suffolk, Matchett).

Second, 5 sovs., J. Smith (Suffolk).

Third, 3 sovs., Rev. J. Holmes.

Commended.—P. W. Rose.

The best three years old Cart filly, the prize of 6 sovs., and silver medal, N. G. Barthropp (Suffolk).

Commended.—E. L. Glead (Suffolk).

The best two years old Cart Filly, first prize of 5 sovs., and silver medal, N. G. Barthropp (Suffolk).

Second, 2 sovs., Captain F. Barlow (Suffolk).

Commended.—E. L. Glead (Suffolk).

The best Cart Foal, first prize of 4 sovs., and silver medal, E. L. Glead (Suffolk).

Second, 2 sovs., H. Overman (Suffolk).

The best Pony, not under twelve, nor above fourteen hands high, the prize of 5 sovs., and silver medal, G. K. Cooper.

Highly Commended.—C. Girling.

PIGS.

JUDGES.—W. Bennett.
R. Woods.

The best Boar of large breed, first prize of 4 sovs. and silver medal, T. Crisp.

Second, 2 sovs., T. Crisp.

The best Breeding Sow of large breed, first prize of 4 sovs. and silver medal, T. Crisp.

Second, 2 sovs.—Not awarded.

Commended.—T. Crisp.

The best Boar of small breed, first prize of 4 sovs. and silver medal, T. Crisp.

Second, 2 sovs., T. Crisp.

Highly commended.—G. M. Sexton.

Commended.—T. N. Waite, jun.

The best Breeding Sow of small breed, first prize of 4 sovs. and silver medal, G. M. Sexton.

Second, 2 sovs., T. Crisp.

Highly commended.—T. Crisp.

The best Litter of not less than Eight Pigs on the Sow, prize of 3 sovs.—Not awarded. *No merit.*

IMPLEMENTS.

JUDGES.—C. C. Atkins, Coston, Norfolk.
S. Gayford, Wretham, Norfolk.

The best collection of Implements for the purpose of Agriculture, first prize of 6 sovs., Holmes and Son.

Second, 4 sovs., G. Stevens.

Third, 2 sovs., Woods and Son.

The best Mower, prize of 10 sovs., J. Kemp (Burgess and Key).

SILVER MEDALS

To R. Boby, for a Corn Screen.

To C. Burrell, for an Eight-horse-power Portable Traction Machine.

To C. Brunel, for a Combined Thrashing, Shaking, Riddling, and Blowing Machine.

To J. Gardner, for a Chaff Machine.

To Howard, Riches, and Watts, for an American Grist Mill.

HIGHLY COMMENDED.

A Combined Blowing and Dressing Machine, by John Baker.

A Double-haft Thrashing, Shaking, Riddling, and Final Dressing Machine, by Ransome and Sims.

An Eight-horse-power Portable Steam Engine, by Ransome and Sims.

Iron Fencing, by J. Sainty.

COMMENDED.

A Clod Crusher, by Coleman and Sons.

Screw Lifting Jack, by Howard, Riches, and Watts.

A Counterbalance Leger Horse Rake, by St. John & Taylor.

THE COUNTY OF KENT

IN

THE PRESENT AND THE PAST.

BY THE LATE JOSHUA TRIMMER, F.G.S.

[The following article was written and finished, for the proprietors of this work, by the late Mr. Trimmer, just previous to his decease. On the eve of the capital of Kent receiving the great national society of the country, it is thought that such a paper, or rather such a series, will come peculiarly appropriate. It will be found further, that ample opportunity has been afforded Mr. Trimmer, from his researches in the district, to dwell on his favourite study—that of geology. In this respect, indeed, the history of Kent, as here written, will have more than ordinary value, both from the material it offers and the authority of him who has had to deal with it. Very few alterations have been made in the original manuscript:—]

“Kent,” says Shakespeare, “in the Commentaries Cæsar writ, is called the civilest spot of all the isle;” and certainly, if, with the general advance of civilization since the days of its naked and woad-painted inhabitants, it no longer maintains that proud pre-eminence, it can still boast of being one of our most beautiful and interesting counties. There is none whose geological structure—of which more hereafter—has given rise to such varied and picturesque scenery, or such a variety of agricultural produce. There is none more fertile in historical recollections—none which has been the scene of more stirring events since the days when Roman, Saxon, and Dane landed on its shores, and William the Norman marched through it from Hastings.

What can be more lovely than the sight which gladdens the heart of the traveller, whether his journey be made in the spring or the autumn; whether along the northern or central line of communication with our eastern coast; whether, in the days of post-chaises and stage-coaches, he took the Rochester or the Maidstone road; or whether, in these days of rapid and restless locomotion, he is whirled along the North Kent or the London and Dover railway? We will take the former line as far as it goes, stopping as anything presents itself worthy of notice; and when the railway fails us, we will trust to our legs. What can form a fairer and more varied country than that which we shall traverse? What an ever-varying succession of copse and corn-field, meadow and orchard! In the spring, where shall we see hedges richer in primroses and orchises, harebells and violets—violets both the blue and the white—the white the most abundant, the largest, and the sweetest of the two? We have seen violets elsewhere; but nowhere do they appear in such profusion as in Kent, unless in some parts

of its neighbour, Surrey. And then its nightingales! We have heard them elsewhere; but nowhere do they appear to sing in such numbers, and with such energy, as in Kent. We have been told the same of Devonshire; but there it was never our fortune to hear them. The nightingale is essentially a southern bird, and near its northern limits even in the South of England. A few have been heard, or are supposed to have been heard, in Norfolk; but north of Trent the nightingale is unknown. There, the chief herald of the spring is the ubiquitous cuckoo, which ranges even to the Highlands of Scotland; and it must be owned that a cheerful herald of the spring he is.

Do we make our journey in the autumn, the orchards, which in the spring were a sheet of purple and white with the blossoms of the apple and the cherry, are now bending beneath the weight of their fruit. We pass fields waving with corn, and hop-grounds more beautiful than any vineyards except those of Italy, amidst bowring hedges, festooned with the graceful and white-blossomed clematis, well named the “traveller’s joy.” Well does it deserve that name, for its beauty, apart from the popular tradition (to which we do not subscribe) that it is never seen a mile from a dwelling, and is therefore a welcome sight to the weary wayfarer. What is certain is, that it is only an inhabitant of a calcareous subsoil, and is not seen on the clays even of Kent. Let us not forget the beautiful large campanula, the Canterbury bell, associated with Kent even in name.

And then the buildings which give life and animation to the landscape! Where else shall we see such a succession of venerable churches, snug parsonages, and comfortable farmhouses, meet abodes for the wealthy yeomen of Kent? Where such a succession of lordly halls and mouldering castles and abbeys, with two hoary cathedrals of Canterbury and Rochester, which have survived both castle and abbey? What historical recollections crowd upon the thoughts as we journey on! They accompany us at starting; they follow us as we advance. We leave the great Babel by the majestic bridge which bears its name, the triumph of engineering skill and science. What a contrast does it present, in its simple, majestic grandeur, to its picturesque old structure, which many of us can remember, with its steep ascent, its narrow roadway, its massive sterlings, with their foaming cataracts, to shoot which was an exploit scarcely less formidable than to descend the Falls of Niagara! Even that old structure, as we remember it, with all these deformities, spoke of modern improvement, compared with that which we know only from tra-

dition, when it had its gate on the Southwark side, adorned with the heads and limbs of traitors, or patriots so called; its narrow pathway, overhung with a street of shops and houses, which enumbered its parapets. If we have improved in nothing else, we have certainly improved in our *beau idéal* of a bridge. We cross the splendid bridge which now spans the traffic-crowded Thames. Above it, what a flotilla of boats and barges and steamers, for pleasure or for business! below it, what a forest of masts! Yet, crowded as the Pool is now, it is clear, compared with what it was when the trade of London was less considerable, but the docks were not constructed which receive all the vessels engaged in the foreign trade of London, and not a few of those engaged in the coasting trade. The construction of the earliest of those docks was one of the wonders of our boyhood which have been eclipsed by the Thames Tunnel, by our railways, and by the Menai and Victoria bridges.

We catch a view of the dome of St. Paul's, where lie the ashes of Nelson and Wellington. Further west arise the pinnacles of the Abbey—the crowning-place of our kings, and the burial-place of the bards, the patriots, the statesmen, and heroes of a thousand years—the Westminster Abbey, or Victory of Nelson. Higher than those pinnacles rises the Victoria Tower, marking the spot where our laws are made and administered. There all remaining that is ancient is the Hall of Rufus; and there ancient institutions have been adapted, and will be still further adapted, to modern times.

We are approaching the Kentish side of the bridge. Let us not forget St. Saviour's Church, and its Lady Chapel, whence the martyrs of the Reformation were sent, rejoicing, to the stake. We are leaving behind us "London's lasting shame," the palace-fortress of the semi-barbarous sovereigns of a semi-barbarous age, where they retired for safety till the coronation, and where they consigned their rivals and disgraced favourites to the dungeon and the block.

We pass Deptford and Sayes Court, where Evelyn loved to plant holly-hedges, and Peter the Great to drive through them, to work in its dockyard, and guzzle beer in its alehouses. There is the oldest of our English dockyards. There was built the Great Harry—as great a wonder of naval architecture, in those days, as the Duke of Wellington, the Great Eastern, and others of our largest screw steamers are of these. There was laid up, as a trophy, the Golden Hind, in which Drake circumnavigated the globe, and which Elizabeth visited in royal pomp, in honour of the achievement. There the Tudor sovereigns had their palace; there were born the Sixth Edward and Elizabeth. Thence started that gorgeous procession with which Henry presented Anne Boleyn, as his Queen, to the citizens of London; and there was held the tournament, whence she was consigned to the dungeon and the block. The revels and intrigues of the Palace of Placentia are departed; and on its site has arisen a prouder palace—the palace-hospital of our naval veterans, the work of Wren, and the suggestion of the amiable Mary, after the battle of La Hogue.

We pass Woolwich Arsenal, of modern growth—"Woolwich Warren," as it was called in our boy-

hood, though for what reason we could never imagine, till we lately learned that up to the time of George the Second it was the site of a rabbit-warren. How would its former inhabitants be astonished at all the munitions of war—the shot, and the shells, and the rockets, the Armstrong cannon, the mortars, and the Enfield rifles—which now crowd its stores. There, too, is the academy for the training of the officers of the Artillery and Engineers. There the great Armstrong smithy. What study is required for the destruction of human life! what an advance in civilization, since the days when they shot one another with bows and arrows, or knocked out each other's brains with clubs and battle-axes!

We pass Dartford, whose ruined abbey was once a royal residence, and where, some say, Elizabeth ate that goose which she pronounced a marvellous good one.

We cross the Darent—the "silent Darent" of Pope, "red with Danish blood." The exact site of the battle in which Alfred routed the Danes was probably a little higher up the stream, near Sutton-at-Hone; for there skeletons have been found, together with a battle-axe of peculiar form, similar to one which we have seen, from another battle-field on the Brent—not the common of that name, near Dartford, but the river Brent, in Middlesex, where the Danes sustained another defeat from Edmund Ironsides.

The first paper-mill in England was erected at Dartford, now converted into powder-mills. Printing and gunpowder—what revolutions have they wrought in peace and in war! The printing press, however, is the most powerful of the two.

We pass Swansecombe. It would be a pity to inquire too closely into the story of the treaty made there between the conquering Norman and the unconquered men of Kent, by which they preserved their gavel-kind and other Saxon privileges, to say nothing of the white horse on their shield, and their motto—"Invictus."

We pass Gravesend. Who does not, from his boyhood, remember Tilbury Fort, on the opposite shore, and the spirit-stirring address of Elizabeth to her troops! Some of the helmets of the warriors of that epoch adorn the townhall of Gravesend.

We are approaching Rochester, and the Medway, with its bridge and cathedral and castle so picturesquely grouped. The bridge by which the Medway has hitherto been crossed was one of those which, like the old bridge of London, appear to have been constructed as dams across the stream, the passage of the river being a secondary object. There is nothing ancient, however absurd, which has not its advocates; and there were some who gravely contended that the obstruction in the stream caused by the sterlings of the old London-bridge were necessary to the navigation, and proofs of the wisdom of our ancestors. This venerable structure at Rochester has bowed to the onward march of utilitarian ideas, and has given place to an iron bridge of three arches, with a swing-bridge to permit the passage of larger craft. We hail the commodiousness of the present structure, while we lament the picturesque effect and time-honoured associations of that which it has superseded.

We thread the long street of Rochester and Chat-

lum. We pass the celebrated Chatham Lines, behind which we were to have made our stand against the First Napoleon, but as is now well known he would have turned, by landing in Tor Bay, if he had landed at all. Here we see in juxtaposition the ancient and the modern methods of fortification, and the change which gunpowder has wrought in that department of the art of war. There rise the high walls, the higher turrets, and the still higher keep of the Norman castle, strong against the bow and arrow and the battering-ram, but which must speedily have surrendered to one or two rifled guns upon the hill which commands it. There, too, we see the long and scarcely-perceptible slope of the modern glacis.

Where the Medway joins the Thames lies Sheerness, the most recent and most important of the dockyards of the Thames. But a few years have passed since we there saw the leviathans of our war-ships, "reposing," as Canning said, "on their shadows, and slumbering in their strength." Another war arose—our former foe our ally, and our former ally our foe: the hulls of our war-ships awoke again from their slumber, and bristled again with guns and masts and spars. Another peace has been won, and another war has closed, with a naval review by a British Queen, which will be as memorable in history as that by Elizabeth of her troops at Tilbury. But what a contrast was presented by that magnificent fleet later reviewed at Spithead, with the most celebrated of its predecessors! What a contrast between our present first-class, in their size and armament, and those which Nelson led to victory at the Nile and Trafalgar! What a difference, again, did the fleet of Nelson present, to the light pinnaces with which Drake and Forbisher defeated the unwieldy vessels of the "Invincible Armada"! Again, what a contrast between our men-of-war of the Elizabethan age, and those flotillas of boats—for they were little better—in which our Edwards and Henries transported their armies to Cressy and Agincourt—those hundreds of vessels, which look so formidable on paper, till we reflect what they really were! Our most splendid fleet, which was laid up in ordinary almost before its powers had been tried, may be said to combine the naval armaments of the two periods. There are huge ships of the line, larger and more heavily armed than at any former period; while the pinnaces of former navies are represented by the gun-boats and the mortar-boats, now brought so prominently before Parliament, for ascending rivers and for entering shallow harbours, and for grappling with fortifications which were too strong for Nelson at Copenhagen, weak as the fortifications of those times were, compared with those with which we should now have to contend. Then, again, what a contrast with the powers of locomotion conferred on our modern screw-steamers, which render them in a great measure independent of the winds and waves that have robbed many a hard-fought naval battle of its results! What an advance, too, in the science and practice of rifled gunnery, with its bombardments at the distance of three miles, as compared with the tactics of Nelson, whose principle was to close with his opponent, while the sole art of gunnery consisted in loading and firing as quickly as possible! What a

change, since the lieutenants of one British ship, at Trafalgar, depressed their guns, lest the shot should pass through their opponent, and damage one of our own ships on the opposite side, while a man stood by to dash a bucket of water on the shot-hole, lest the enemy's ship should be set on fire by the discharge, and communicate the flames to our own! The application of steam to navigation has effected as great a revolution in naval warfare, as the invention of gunpowder did in the hand-to-hand conflicts of the men-at-arms and yeomen of the days of chivalry.

But, lest the glories of the above naval review should render us too proud, there are humiliating and salutary recollections connected with Sheerness. There began the Mutiny of the *Nore*; and there was Van Tromp seen sailing up the Thames, with a broom at his mast-head, in token that he had swept the English from the sea.

We are trudging it as pilgrims to Canterbury. To our left lies Faversham, whence James the Second fled the realm, having thrown the Great Seal into the river.

We pass the wooded table land of the Blean, the scene of the fanatical outbreak of Courtenay. We pass it with many a mortifying reflection on the state of education among the peasantry of our rural districts, which could have enabled a mad impostor to acquire an ascendancy over them, in the 19th century, which would not have surprised us in the days of Wat Tyler or Jack Cade. The turrets of Canterbury Cathedral are rising before us. We enter the city by its barbican, and wend our way through its streets, agricultural pilgrims to the monastery of St. Augustin, the shrine of à-Beckett, the tomb of the Black Prince, and the throne of the kings of Kent. Let us not forget the little church of St. Martin's, one of the oldest in Britain. Dover, however, is our destination, and we may not now linger in Canterbury. We must traverse the narrow ridge of Barham Downs, and, as they possess little of interest, we will diverge for a time to the left, to visit Bourne, where Hooker literally as well as metaphorically fed his flock, and was found, book in hand, tending his sheep on the common, at the bidding of a scolding wife. We will visit too the beautiful little Norman church of Barfreston.

As there is so little else of interest between this and Dover, we may be permitted to dwell a while on the history of its little church, as narrated by the sexton and corroborated by the quaint sculpture on its doorway. It appears, from the joint authority of these two witnesses, that there was a certain squire of old, who owned the neighbouring lands, and was as much addicted to the chase, as many squires have been before and since. It chanced, however, that on one occasion his horse, setting foot on a rolling stone, fell with the squire and injured his shoulder so severely that he was obliged to give up hunting; and, for the good of his soul, built this beautiful little church. On the sculptured doorway the accident is represented, not forgetting the rolling stone, as well as the rejoicings which it occasioned among the foxes, hares, and other animals, to whom the squire had been such an enemy.

And now we will return into the high road, and make the best of our way to Dover. Forning the

point of departure for the continent, Dover has seen the arrival and departure of many illustrious travellers on errands of state, or of business—of peace or of war. The only two events, however, which we shall notice are the reception of Henrietta Maria by Charles the First, and the Surprise of the Castle a few years afterwards by the Parliamentary forces. With all their faults, how different might have been the fate of Charles and Henrietta had they lived in times when the boundaries had been as well established as at present between the prerogatives of the Crown and the rights of the People! That patronage of the arts which adorned the early years of the reign of Charles might then have given us something like an English school of art. The design of Inigo Jones might have given London a palace worthy of the name, and the banquetting house might never have witnessed a royal execution. At Dover we may study the progress of the art of fortification through all its phases, from the tower called Cæsar's, and certainly built in front with Roman bricks, to the subterranean barracks and modern citadel of the western height. At Walmer, where Wellington died, Deal, and Sandown we may study it under the phase it assumed in the time of Henry VIII., when gunpowder was in its boyhood. We may see the celebrated Martello towers with which Pitt lined the Kentish and Sussex coast, as well as the more valuable parts of the shores of Ireland. With respect to the latter, an English traveller, who inquired their object of a car-driver, received in reply that he did not know, unless it was to bother posterity with, like the round towers of old. The Martello towers of the Kentish coast, constructed at an enormous expense during the early part of the war, were abandoned at its close to the coastguard or to decay. They take their name from the bay of Martello in Sicily, now so full of Garibaldi, where one of them, with its single gun, beat off one of our frigates, hulling her at almost every shot, and drawing from her captain the exclamation that firing at that tower was like firing at a tallow candle, there was nothing to hit. They are now regaining their importance. Steam navigation has deprived us in a great degree of the immunity from invasion afforded by our insular position and naval superiority. It has taught us that, though the march of England is still, as Campbell sung, o'er the mountain wave and her home in the deep, she cannot dispense altogether with towers along the steep and other bulwarks than those of her native oaks. Such were the truths which our greatest master of the art of war laboured to inculcate, and for a long time laboured in vain. We are at length awakening to a sense of its importance, and are fortifying our dockyards and the most valuable parts of our coast, to say nothing of the aid of our volunteers.

Lying in the track of continental visitors, Kent has lain also in the track of every invader. Cæsar landed somewhere near Deal: Hengist and Horsa came into Pevensey Bay, and laid the foundation of that Anglo-Saxon dominion which has sprung out of the Heptarchy, colonized North America and Australia, and reigns on the banks of the Indus and Ganges. We say that Cæsar landed somewhere near Deal, for while the antiquaries have much difficulty in settling the exact spot, the geologist believes the

coast to have undergone such alterations in the interval which has elapsed, that it is probably now either submerged beneath the waves or more inland than the present shore. The Isle of Thanet is no longer an island. The straits through which the Roman fleet sailed is a marsh, while their former existence is testified by the Roman castles of Silchester and Reculver, which guarded the entrance. In the walls of the former, blocks of stone are to be seen, which must have been brought from the opposite extremity of the strait, and, if there were no other evidence, would go far to establish the existence of a navigable inlet, where there are now rich grazing grounds. Equal changes since Roman times in the estuary of the Yare are attested in like manner by the present position of the Roman castles which guarded its entrance, by the ancient anchors found in the marshes, and by the Saxon map in the town chest of Yarmouth, which represents the site of that town as a sandbank at a little distance from the land.

In our journey through North Kent we bestowed a passing notice on spots which have been rendered memorable by some of the most important events in our history. Let us not forget others which the poets have peopled with the creatures of their imagination. Who, in passing Gad's Hill, can divest himself of the idea that the adventures of Prince Harry and Fat Jack really occurred there? Who has not looked out at Dover with intense interest for the first sight of Shakespeare's Cliff, and has not been disappointed to find it falling so far short of his description, as to render it evident that the poet painted, not the actual cliff of Dover, even the highest, but a lofty cliff as seen by his mind's eye, the prototype of which must be sought elsewhere, amidst the precipitous cliffs of our Alpine districts? Neither can we cross the Medway without being reminded of Spenser's beautiful lines on her marriage with the Thames.

The line by which we have traversed the country has been from the earlier periods of our history the great line of communication with the continent, and therefore abounds the most with historical reminiscences. Had we taken the central line, we should have passed through a country equally beautiful, and not without its historical recollections; but its beauties are of a different character. Our route would have lain through the Weald, or Wild, the remains of a forest which once extended through the counties of Kent, Sussex, and Surrey. It was one of the seats of our infant iron trade, which has now assumed such gigantic proportions. The strata of the Weald contain ironstone of good quality, but no coal. It was smelted, therefore, with charcoal, for the double purpose of making iron and clearing the forest. The rails round St. Paul's are said to have been made from some of the last iron smelted in the Weald. As the clearing of the woods advanced, charcoal, though the best fuel for the manufacture of iron, became too expensive; and the iron trade migrated to the forges of Staffordshire and South Wales, where ironstone abounds, in close connexion with the fuel and the limestone necessary for its reduction. The forest has disappeared: the Weald is no longer celebrated for its gigantic oaks, specimens of which may be seen in the large tables

of some of the old farm-houses of the Weald, made from a single slab.

Still the aspect of the low tract of the Weald, as viewed from an eminence, is that of a forest, from its numerous woods and coppices, and the wild hedge-rows of its small fields. In this wooded region many old customs and primitive manners have lingered longer than could have been expected, in a district so near like metropolis, although great innovations have been made on them of late. In the Weald of Surrey, not more than thirty years back, and not more than as many miles from London, the Mummers went their rounds at Christmas, with their quaint vases and the wassail bowl. A corpse was received at the church with a peal of bells. In some of the churchyards the graves were planted with roses. There were no metalled roads except the turnpike road to Brighton; and the wife of the Churchwarden, the principal farmer in the parish, had never been farther from home than the neighbouring market town, distant some five miles.

Remote, however, as the Weald or central region has lain from the main tide of affairs, it is not without interesting historical reminiscences. On its northern skirts lies Maidstone, which has had its battles and sieges, though not of any considerable importance. It was taken by Cromwell; but the battle had no great influence, like some of his other battles, on the result of the war. He mentions some prisoners having been taken in a hop garden. There is a hop ground there, which has been long under hops, and supposed to have remained a hop ground from that date. Allington castle, in part a ruin, in part a farmhouse, most beautifully situated on the Medway a little higher up the stream, with all the charms that wood and water and hill can afford, was the property of Sir Thomas Wyatt, one of our early poets, and of his son, whose protestant rebellion against Mary precipitated the execution of the Lady Jane Grey. Higher up the Medway, near its source, is Penshurst, with its venerable oaks and ancient hall, for centuries the property of the Sidneys—of the gallant Sir Philip, the flower of chivalry, the poet, the warrior, and the courtier; and for a time the abode of the other Sidney, the stern republican martyr, in the last great struggle for English liberty. Hever Castle, hard by, must not be forgotten, the birth-place of Anne Boleyn, which became the property of Henry by his marriage. They occasionally resided there, and he granted it to another of his queens, Anne of Cleves. This castle remains in the same state as when it was a royal residence, and bears witness to the fact that whatever may have been the splendour of the dresses, and the retinues, and the sumptuousness of the banquets of the kings and nobles of those days, their abodes were destitute of those comforts and conveniences which are to be found now even in the cottages of our peasantry. This thought forcibly struck us, when, soon after visiting Hever, we saw a tramping family making their breakfast and their toilette at the same time on a Kentish heath. For the breakfast there was a tablecloth spread on the grass, there were tea, white sugar, white wheaten bread, Staffordshire pottery, and Sheffield cutlery. For the toilette table there were a looking-glass, soap, and articles of wearing apparel which Queen

Elizabeth would have pronounced to be marvellous delicate wear, and James the First would not have disdained to borrow from one of his courtiers, to say nothing of large drop-earrings of quasi-gold for the lady, and a watch for the gentleman tramp, which Charles the First might have envied, if we may judge from the clumsy, warming-pan, catgut-wound affair of a watch, which was exhibited at the Crystal Palace in Hyde Park, as that which he gave to Juxton on the scaffold, and which was placed side by side in that exhibition with some of the most delicate and highly-finished specimens of the modern watchmaking art.

Let us now take a rapid glance at the geological structure of Kent, so interesting to the scientific farmer, to which it owes its varied and beautiful scenery, and the rich variety of its agricultural produce.

In tracing its geological history, we shall discover that of a long series of events of which it was the scene, when, as the proverb says, it was neither Kent nor Christendom. We shall see the rise and fall of a succession of dynasties long before the days of Boadicea and Caractacus. Let us first take the Ordnance-sheet which contains the county, and exhibits only its physical features. We shall see, a few miles north of the Thames, a steep ridge, curving at its eastern extremity towards the south, and broken by two transverse gorges. To the south of it lies a narrow and level tract, then a line of hills of some elevation, but less strongly defined than the northern ridge; then, again, a level tract, and, to the south of it, another hilly region, terminating on the coast in the cliffs of Folkestone, and losing itself in a range of low hills near Hythe, now so celebrated as a school for rifle practice, which have evidently once been sea-cliffs. Between this range and the sea is the rich and level tract of Romney Marsh, lying below the level of high water, and defended from the sea by the celebrated embankment known as Dimchurch Wall.

If we now refer to a geological map, these valleys and ranges of hills will be found to coincide with geological areas; and if, again, we compare the geological map with the agricultural maps of the county—published long before the construction of the first geological map by the celebrated William Smith—it will be found that the geological and the agricultural areas coincide in a most remarkable manner. We must not, however, push this generalization too far; for while the strata—which by a necessary convention our geological maps represent as the surface—define the general agricultural characters of a district, there are upon every rock a great variety of soils of all values, from the highest to the lowest: those variations are dependent upon the depth, composition, and distribution of the superficial deposits. These, by a necessary convention, are supposed to be removed, in order that the rock nearest the surface may be represented as the actual surface. Kent is one of those districts in which the influence of the regular strata on the soil is the greatest, and that of the superficial deposits the smallest; but, even there, it is very considerable.

The tract which, on the Ordnance-map, we remarked as having an abrupt face towards the south, and a slope towards the valley of the Thames, is the

chalk range of the North Downs, partially covered on the north by the clays and sands which form the lowest group of the tertiary series, as the strata above the chalk are called. The narrow valley of Holmsdale, which skirts the base of the chalk escarpment, is composed of the gault, a dark, tenacious clay, which crops out or emerges from beneath the chalk, the strata not being horizontal, but inclined at a small angle.

The broken range of hills which lies to the south of the valley, and forms the picturesque country about Seven Oaks, is the lower greensand. The upper greensand, in this part of its range, is merged in the chalk, or forms a very thin band at its base, concealed under the debris of the chalk escarpment. Further to the west, in the neighbourhood of Farnham, it expands into strata of considerable thickness. The sandy beds of the lower greensand have been worn away by the denuding action of marine currents to which they were exposed when the land was emerging from beneath the sea, while their harder portions have resisted that action and form the hills. South of this range lies another clayey tract, the basis of which is the Weald clay. From beneath that clay, again, rises the central ridge of the Hastings sands, so called from the sea cliffs which they form near Hastings. From this central ridge the strata dip away both to the north and south, so that we have a repetition of the same strata, forming similar areas on each side of it, the gault and the lower greensand sinking in opposite directions under the chalk which forms the ranges of the North and South Downs.

One remarkable feature of the Wealden area is that all its rivers, instead of flowing in the same direction as the Thames, escape to the north and south through gorges in the chalk. Those which rise south of the central ridges of the Hastings sands empty themselves into the sea on the southern coast, while those which flow northwards from it—as the Darent, the Mole, and the Wey—pour their tributary streams into the Thames.

The succession of beds which have been described as emerging from beneath one another in the centre of Kent form, however, only a small portion of the stratified series. Below them are many great groups of strata, consisting of numerous alternations of sand, clays, and limestones, having a collective thickness of several miles. For the purposes of classification, these have been divided into four great natural groups, which are distinguished from each other by peculiarities in their fossil contents. These four principal groups are again divided into minor groups—systems, as they are called—distinguished in like manner from one another by minor differences in their fossils. All these beds have been, during long periods, successive sea-bottoms; and the fossils which they contain are the remains of plants and animals which lived on the land or in the waters while the strata were being deposited from the waste of pre-existing land.

By forces acting from below, these successive sea-beds have been raised out of the water and converted into dry land. We have also evidence not to be mistaken, afforded by the fossil contents, that the same areas have been repeatedly elevated above the sea-level, and again depressed below it.

From below the stratified rocks thus spread out in broad sheets, other rocks have been protruded; sometimes in a solid, sometimes in a molten state, similar to those which are now forming from the melted lava poured out from volcanic craters, either on the land or beneath the sea. These outbursts of melted matter, which constitute the irregular masses of the unstratified rocks, have at different periods in the earth's history thrown the once horizontal sea-bottoms into highly-inclined positions, and have formed the different mountain-chains by which the surface of the earth is so beautifully diversified.

By means of these fractures and dislocations, and by means of the sections exhibited in sea-cliffs, we obtain a knowledge of the structure of the earth to depths beyond those of the deepest mines. From those parts of the stratified series which have been disturbed in each chain of hills, and those parts of it which repose upon them horizontally or abut against them, we obtain a knowledge of the curious fact that different chains of mountains and ranges of hills have been thrown up at different periods. The fracture of the chalk which exposed the strata below it, forming the surface of the Weald, was one of the most recent of these disturbances.

The four great groups into which the stratified series is divided, beginning with the lowest, are, 1, the azoic, or strata destitute of organic remains; 2, the palæozoic, or group of ancient life; 3, the mesozoic, or group of middle life; 4, the kainozoic, or group of modern life, more generally known by its long-established but less appropriate name of the tertiary series.

We are sorry to be obliged to use hard names, but there is no help for it. Compounds from the Greek and Latin express, in one word, a brief description of the thing referred to, which in our language can only be expressed by several, and are therefore the best when new names are required. Scientific names, moreover, are designed for use in all parts of the world, and require to be such as can be understood by the educated classes of all nations.

As the azoic or non-fossiliferous strata have, in many cases, undergone considerable alteration from contact with heated subterranean masses, some contend that they once contained fossils, which have been obliterated by the heating process; but as there are, in many places, a considerable thickness of strata of this kind which have not undergone any heating process, and are equally destitute of organic remains, that opinion cannot be maintained.

With respect to the different classes of animal life which distinguish these four great groups, the palæozoic era was the epoch of fishes. They were the most highly organized class of vertebrate animals called into existence during the period of which those rocks record the history. The mesozoic, or group of middle life, was the era of a more highly organized class of vertebrates. The dynasty of the reptiles, and the tertiary or kainozoic, was the era of warm-blooded animals, the mammals or sucklers. It was not till the close of these four great periods that man became a denizen of earth.

The four principal groups above-mentioned contain many minor groups, distinguished in like manner by minor peculiarities in the fossil contents. The azoic group, for instance, is composed of a suc-

cession of strata, called gneiss, mica slate, quartz-rock, and crystalline limestone or marble. Gneiss is a stratified rock, containing the three constituents of granite—quartz, felspar, and mica—arranged in separate layers, instead of irregularly, as in granite. Quartz-rock is a siliceous rock, having the aspect of a very hard sandstone. Crystalline limestone is too well known as statuary marble to require description.

So much for the divisions of the azoic strata. These, and in fact the whole of the stratified series, consist of numerous clayey, sandy, and calcareous strata, frequently repeated, of different degrees of hardness, and combined in different proportions. According to the peculiarities of these fossil contents they are divided into minor groups or systems. The palæozoic division consists of four systems: 1, the Cambrian; 2, the Silurian, upper and lower; 3, the Devonian; 4, the Carboniferous; 5, the Permian. These names, with the exception of the carboniferous, are all geographical; that is, they are derived from those countries where they are best exhibited, or were first described. These are called their typical regions. The lower part of the Silurian system is disputed territory. Sir Roderic Murchison and the government geologists restrict the term Cambrian to that thick mass of non-fossiliferous strata which contains the celebrated roofing slates of Bangor, Llanberris, and Pfestiniog, in North Wales, and of Skidaw in Westmorland, in which no fossils have yet been found. They extend the base of the Silurian system down to the *lingula* bed, which contains the first known traces of organic life in the form of shells of the genus *Lingula*. Professor Sedgewick, on the other hand, who was the first to investigate this lower part of the stratified series, makes the Cambrian system include the lower half of the Silurian system, where a change takes place in the character of the fossils. We believe this to be the most proper division; but in science, as in other matters, possession is nine points of the law. The government geologists are in possession of this lower part of the fossiliferous rocks, and appear likely to retain them—at any rate, for the present.

The Devonian, which reposes on the Silurian system, has only risen into its due importance of late. It was long considered destitute of fossils, and deemed a subordinate member of the carboniferous group under the name of the Old Red Sandstone. It takes its present name from Devonshire, where its rocks are highly fossiliferous, though so much altered by contact with igneous masses that they have assumed the characters of the older slates, and were long mistaken for them. In Herefordshire and Scotland it is of great thickness, and occurs under its original name of the Old Red Sandstone, where it has been rendered famous for the fossil fishes with which it abounds, which have acquired celebrity from that delightful little work of Miller—"The Old Red Sandstone, or New Walks in an Old Field."

The carboniferous system takes its name from the coal strata, of which it is the seat. The rich beds of coal in most parts of the world belong to this part of the series. The carboniferous era was one of rank vegetation of a peculiar character, whose accumulated remains have produced the valuable coal fields of England and North America. There are a few instances of thin and inferior beds of coal in

other parts of the series, but they have rarely been worked to advantage, and never in districts accessible to the produce of the true carboniferous series. The sums of money which have been squandered in fruitless trials for coal, from the want of this knowledge, are incredible.

The Permian system takes its name from the province of Perm, in Russia, where it covers extensive areas, and is richer in fossils than elsewhere. In England, it is feebly represented by our magnesian limestone; that, and the trias above it, were formerly grouped together under the name of the New Red Sandstone. As its fossils were better known, it became evident that they belong to different periods of organic life—the Permian system to the palæozoic, the triassic to the mezozoic.

We come now to the systems or groups which compose the mezozoic or division of middle life. These, in the ascending order, are the triassic, before mentioned, the liassic, the oolitic, and the cretaceous. The triassic derives its name from the threefold division of this part of the series in Germany, where it is more extensively developed, and more fossiliferous than with us. The liassic is so called from the lias, a provincial name for clay, of which in England it chiefly consists. The name of oolitic was given to the next group of rocks at a time when names founded on mineral characters were more in vogue than at present. It is derived from a Greek word, signifying an egg, in consequence of some of its limestones being composed of round concretions resembling the roe of fishes. The well-known freestone, of which St. Paul's and some of our public buildings are constructed, is one form of its limestones. The crumbling stone, of which many of the colleges in Oxford are unfortunately built, is another. The Yorkshire paving stone is a siliceous form of one of its subordinate divisions, which in the south of England is calcareous. The cretaceous system is so called from the Latin name for chalk, which constitutes one of its principal formations.

Up to this point we have not enumerated the subdivisions, or formations, composing the different systems, because they are not exposed on the surface in Kent. In our ascent, however, through some miles of strata, we have now reached Kentish rocks, and we will remind our readers of the subordinate divisions of the cretaceous group which have already been mentioned as constituting part of the strata of the Wealden area. These are the chalk, the upper greensand, the gault clay, and the lower greensand. In Kent the upper greensand is merged in the chalk, or forms a very thin band at the base of the chalk escarpment. The strata of the Wealden area, viz., the Weald clay and the Hastings sands, are a local deposit formed in the delta of some large river, like the deltas of the Nile and Ganges. As they contain only the remains of the land and freshwater, it is doubtful whether their contemporaneous beds are to be sought in the chalk or in the oolites. The French geologists—for the Wealden strata extend into France—have established a group, to which they refer it under the name of the Neocomian system. They consider it intermediate between the chalk and the oolites, and as forming the marine representative of the Wealden

rocks. The majority of English geologists, however, regard the Neocomian fossils as those of the lower greensand, and as having a greater affinity with the cretaceous than the oolitic group.

Let us now examine the details of the tertiary or kainozoic series—the series more recent than the chalk. Up to the termination of the cretaceous epoch, all the species, and most of the genera, are extinct. In the tertiary series existing species begin to make their appearance, and continue to increase through a thick succession of deposits, which indicate a long lapse of time; until at length, in more recent deposits, we meet with that group which is cotemporaneous with man. This change was gradual. Old races became extinct, and new ones were introduced to supply their places.

From these facts, the tertiary series has been divided into four groups, according to the proportion of shells belonging to the existing species which they contain.

Having been deposited in seas of more limited extent than those in which the strata of the earlier epochs were formed, the order of superposition—that infallible test of age—is not always available; nevertheless it is sufficient to confirm the correctness of the classification founded on the increasing proportion of existing species. Arranged and named on this principle, the divisions of the tertiary series, commencing with the lowest, are the eocene, miocene, pleiocene, and pleistocene. We again apologise for the Greek words from which these names are derived. They signify that, in the eocene, in which there are only ten per cent. of the species now living, we see the *dawn* or commencement of existing races; that in the miocene, in which they amount to twenty per cent., they are still in the *minority*; while in the pleiocene, or *more recent*, they constitute the *majority*, for only about ten per cent. are extinct. In the pleistocene, or *most recent*, the proportion of extinct species does not exceed five per cent.

The eocene, or *older*, tertiaries of England occur in two separate areas, known as the London and Hampshire districts. From the intervening detached portions, in geological language “outliers,” which occur in the intervening space up to the very edge of the chalk escarpment, it is evident that these two districts were once united. We have thus evidence that the fracture and denudation of the chalk, and the exposure of the inferior strata in the Weald, took place during some portion of the tertiary era. We shall show hereafter that it was towards the close of it.

The lower eocenes comprise the following division in the ascending order:—1. The Thanet sands; 2. The Reading beds, called also the plastic or mottled clay; 3. The Woolwich beds, or basement beds of the London clay; 4. The London clay, or Bagshot beds. The middle eocenes comprise:—1. The lower Bagshot or Bournemouth sands and clays; 2. The middle Bagshots or the Brackleshams sands and Barton clays; 3. The upper Bagshots or the Headon-hill sands.

The first in each pair of names in the preceding list is that by which they are known in the London district: the second is that of their Hampshire equivalents.

This classification and nomenclature of the eocene strata of England has only lately been established, and are not to be found in any published geological maps or elementary treatises. It will be seen that Kent is the typical region where many of these deposits may be best studied.

In Alum Bay, and in Whitecliff Bay, in the Isle of Wight, the whole of the eocene series is exhibited within a short space, having been thrown into a vertical position, which gradually resumes its original horizontal state in the northern side of the island, and in Hampshire. All the eocene strata are applied to a variety of important economic uses. There is the glass-house sand of Alum Bay, so named because from some of its clays alum was formerly made. The London plastic clays, in the London and Hampshire districts, are largely employed in the manufacture of bricks and tiles. Beautiful white bricks, equal to those of Suffolk, which are also derived from clays of the eocene tertiaries, are manufactured from the calcareous clays of the upper eocenes.

The beds of the pipeclay of the lower Bagshots are largely exported from Poole to the pottery districts, and the refuse clay from the same pits—too much contaminated with metallic salts to burn of a pure white colour—is now much in demand for making the stoneware employed for bottles, and for the vessels capable of resisting the action of acids required by the manufacturing chemists. This inferior clay is also in great demand for the manufacture of draining-pipes so extensively used of late for the smaller sewers of towns.

Let us now take a rapid glance at the changes in organic life indicated by the period from its commencement in the lower part of the palæozoic division to the close of the older tertiaries. It has been already stated that during the palæozoic epoch fishes were the dominant race.

The earliest known fishes make their appearance in the base of the upper Silurian rocks. Between this period and that of the lingula bed, at the base of the lower Silurians, there had been a large development of invertebrate life—of molluscs, to which the oyster, the whelk, and the limpet belong—of zoophytes (corals, and other animals allied to them)—crustaceans, or animals of the class to which the lobster, the crab, and the shrimp belong. The seas had swarmed with them in still increasing numbers, both of species and individuals, through the whole series of deposits, the most highly and the least organized of each class making their appearance simultaneously, and thus refuting the dogma so industriously circulated of late, that one was derived by descent from the other. Fishes at length make their appearance at the point of time which we have elsewhere designated. They became very abundant during the formation of the old red sandstone. In the coal measures some of the large predaceous fishes were of a higher organization than most of the existing races—approaching the reptile class in some points of structure.

The old red sandstone, once deemed destitute of fossils, has yielded to the researches of Agassiz, the great authority in the natural history of fishes, nearly as many species as are known in our present seas. They differ widely, however, in structure

from existing fishes; for the details of which we must again refer to the "Old Red Sandstone" of Hugh Miller.

The mezozoic era was that of reptile life. The earliest known remains of the reptile class are found, however, towards the close of the paleozoic strata. During the mezozoic era it became enormously developed. It continued to flourish up to the close of the cretaceous period, and declined during that of the tertiaries, till it is represented in the present state of the world only by our crocodiles and alligators—by a few harmless turtles and tortoises—frogs, lizards, and salamanders; and a somewhat extensive group of snakes. We cannot enter into the details of the astonishing variety of reptile life which prevailed during the mezozoic epoch—its ichthyosaurs and plesiosaurs—its megalosaurs, iguanodons, and pterodactyls.

Their names, however, their enormous size, and their strange forms must be familiar to our readers, from their figures of them exhibited in the Crystal Palace, at Sydenham, as restored by Professor Owen. Their fossil skeletons must be equally familiar, from the specimens to be seen in most of our museums. To these, the pits and quarries of Kent, and the adjoining portions of Sussex, have yielded a rich harvest, as well as of the shells which accompany them in the cretaceous system and the Wealden group.

The fossil remains yielded in rich profusion by the eocene or older tertiary strata of Kent, prove that at periods recent in the earth's history, but remote compared with that of man, the site of England and the adjoining parts of Europe formed a group of spice islands. Turtles frequented their shores, crocodiles haunted their streams, boas coiled round their trees, and monkeys gambolled among their boughs. The nautilus floated on the waves which bathed their shores, or, when danger impended, scuttled his little bark by opening the valves of its air-cells, and sought refuge in the ocean depths.

After a long interval, there was a subsequent period, that of the pleistocene, or newest tertiaries, when England formed the western promontory of Europe, and was roamed over by the rhinoceros and vast herds of elephants of a now extinct species, (*Eliphas punigenius*) which was common then to America and Europe, ranging in the former country from lat. 33.50 to the polar regions, and extending thence through Siberia into Europe. An icy climate and an icy sea advanced over the land, as it slowly subsided. Its mammalian inhabitants migrated to lands beyond the reach of the glacial submergence. The land was re-elevated; the banished animals returned. They inhabited the country for a long period, and then disappeared, we know not how, leaving their remains in pools and hollows on the surface of the land, where they are covered by loam, sand, and gravel, and associated with shells which are exclusively those of the land and fresh water. They differ from the shells contained in the erratic deposits in this—that whereas the latter contain about ten per cent. of species not known in a living state, and are of a more arctic character than those of our present seas, and are all marine, the shells associated with the warp drift are exclusively those of the land and fresh water, and are identical with the group now inhabiting the

neighbourhood, with the exception of two or three, which are unknown or very rare here, but are common in France, while one inhabits the Nile.

England continued united to the continent by a low and wooded region, covered with forests of oak, fir, birch, and hazel, and frequented by the beaver, the red deer, and those other animals which were common to the forests of England and Germany when Cæsar landed, and found our ancestors in much the same stage of civilization as that in which the New Zealanders were found by Captain Cooke.

The evidence on which the history of these wonderful changes rests was given in a former article, on the question whether there is any geological evidence of the Deluge. In that article we traced the progress of our knowledge respecting the superficial accumulations, and the proofs afforded by the nature of the organic remains which they cover and contain. To that article, then, we will refer, in proof of a glacial climate having extended, at a very recent geological period, over Europe down to the 45th parallel of latitude, and over America 8 or 10 degrees further south. We also stated our reasons for preferring the term "erratic tertiaries" for these deposits, to that of "northern drifts," or the more general and vague name of "drifts," which classes together a number of deposits of different origin, and formed in different portions of a long period, during which the same group of animals lived upon the land and in the waters. The erratic tertiaries within the latitudes above mentioned were contemporaneous with the pleistocene strata of Sicily, which have been raised on Etna to the height of 3,000 feet above the sea, and consist of a thick mass of limestone frequently as compact as marble, together with sandstone and conglomerates, alternating with lava and tufa, the series of deposits having an aggregate thickness of more than one thousand feet.

In the article before alluded to, we adverted to a line of transported blocks beyond the limits of the erratic tertiaries, which had been transported outwards from the higher regions of the Alps as a centre. These erratics have travelled northwards into France and Switzerland, eastwards into Austria, and southwards into Italy. From the lower portions, however, of the Alpine regions, as in Carinthea and Carniola, there are no such indications of transport. It was upon these facts, and the observed effects of glaciers, that Agassiz founded his theory, which attributed the formation of the erratic tertiaries in other parts of Europe and America to the action of terrestrial glaciers. He even went so far as to suppose that the whole of the regions which are covered with erratic deposits, if not the whole world, were at this period enveloped in a vast sheet of ice, and that the extinct large mammalia of that period were frozen to death.

Although this glacial theory of Agassiz is inadmissible as a general explanation of the erratic deposits, the observations of that able naturalist on the phenomena of the glaciers of the Alps are of great value, as regards their bearing upon questions respecting the origin of the erratic tertiaries and phenomena produced by the action of ice. The polishing, grooving, and scratching of rocks, such as is caused by the descent of a glacier down a valley, may be equally produced by large icebergs, which,

floating with five-sixths of their bulk submerged, must frequently touch the ground, and, grinding over its rocky bed, must produce effects very similar to those produced by the descent of a glacier down its valley. Or it may be produced by masses of shore ice, like those of the arctic regions, advancing over slowly-sinking land. Glaciers, it will be remembered, bear on their surface large and small fragments of stone, which the frost has detached from the bounding rocks. In the slow descent of the glacier, some of these are deposited on its sides, where they form what are called lateral moraines; but the more important accumulations of this kind are the terminal moraines, which are formed where the glacier reaches a point having an elevation of not more than 3,000 or 4,000 feet above the sea, where the temperature is such that it can advance no further, but melts and deposits a confused heap of boulders, gravel, and mud. The mud is formed by the grinding of the glacier over the rocks; the water which escapes from beneath a glacier is charged with it. Hence the rivers which descend from valleys occupied by glaciers are rendered turbid during the summer by the melting of the ice. It is shown by the position of most of these terminal moraines in the Alps that the glaciers had formerly a greater prolongation into the valleys. Their fluctuating limits are well known, as it is on record that in the seventeenth and eighteenth centuries they began to reach points to which they had not extended in the eleventh and fifteenth centuries.

The extension of a glacier down a valley not unfrequently dams up the river of a transverse valley, and forms what is called a glacier-lake. When the icy barrier bursts, the descending torrents disperse the terminal moraines in the main valley, and re-arrange their materials in a rudely stratified mass, not unlike some portions of the erratic tertiaries. The grooving, polishing, and scratching of the rocks beneath them, is another feature common to the terrestrial glaciers and the erratic tertiaries. The surface of the rocks beneath a glacier is grooved, polished, and scratched in the same manner as the surface of the rocks beneath the boulder clay of the erratic tertiaries. The furrows on the rocks beneath the glaciers are produced by large blocks frozen into the under edge of the ice; the sand between the glacier and the rock polishes the surface of the latter, and the small pebbles set in the ice produce scratches and striae.

The blocks which the deposits of glaciers and the glacio-marine erratic tertiaries contain are also polished and scratched in a similar manner by the same processes. This appearance is frequently manifested only on one side, which has ground over the rock in the descent of the glacier; while the other, which has been imbedded in the ice, is sharp and unabraded. A remarkable difference, however, must be noticed in these two very similar glacial deposits. The boulder clay of the erratic tertiaries contains marine shells, and exhibits a much greater amount of stratification. It is a common mistake to represent the boulder clay as unstratified. This arises from a crust of earth washed down by the rain, which generally covers the face of a cliff of this clay, and conceals the stratification. When, however, a clean section is obtained, distinct marks of stratification may be very generally observed. There are

also unstratified heaps of transported materials in the boulder clay. In Norfolk, these generally consist of chalk and Kimmeridge clay, which appear to have been shot down in separate heaps, as we might suppose them to have been, from rafts of melting ice. On the flanks, however, of these masses, we find the same materials finely comminuted and re-arranged in a stratified form. This may be attributed to the action of the sea washing on these heaps of ice-transported matter, by which their outer portions have been re-arranged. Another distinction between the materials of moraines, re-arranged by the bursting of glacier lakes, and the boulder clay, it is usual to represent the latter as destitute of shells, except in Norfolk, where they are supposed to have been washed out of the crag. In that district there may be some ambiguity arising from this cause; but we have seen the same kinds of broken shells in the boulder clay in so many parts of Wales, Holderness, and Ireland, that we must regard that deposit as generally but irregularly fossiliferous. The general rarity of shells, and the paucity of species, is another fact in accordance with the arctic character of these erratic deposits.

Passing, however, from this digression on the points of distinction between glacio-marine deposits of the erratic tertiaries and the detrital deposits of glaciers on the land, let us proceed to the consideration of the transport of erratic blocks outwards from the central region of the Alps.

The great valley of Switzerland, which separates the Alps from the Jura, is fifty miles broad, and the average height of the Jura is about one-third that of the Alps; but everywhere on that chain, as well as on the higher regions of the Alps, where there are no glaciers at present, all the indications of former glacial action are observable, such as moraines and rocks with polished and rounded, grooved, and striated, surfaces. These appearances are likewise observable far below the present limits of the glaciers. Immense blocks of granite, gneiss, &c., which can have come from nowhere but the Alps, are lodged on the flanks of the Jura, to which they must have travelled a distance of fifty miles, across one of the deepest valleys in the world. These travelled blocks are of immense size, some of them containing 50,000, 60,000, and one as much as 161,000 cubic feet. From the mineral composition of these transferred blocks, it is easy to determine the parts of the Alps from which they have been derived; and it appears that they have crossed the valley in a direction nearly at right angles to its length. These facts are strongly opposed to the supposition of their having been transported by currents of water. Preceding naturalists had supposed the glaciers of the separate valleys of the Alps to have had an extension to the Jura, when these blocks were transported. Agassiz, on the contrary, supposed the whole valley to have been filled with ice, which extended in a continuous mass from the Alps to the Jura. Others suppose the blocks to have been transported on floating ice, when the greater part of the chain and the whole of the Jura were under water. The absence from the valley of Switzerland of marine deposits of the period when these blocks must have been transported appears a formidable objection to this explanation.

Let us now trace the distribution of the erratic deposits over the British Islands. We shall find that a large portion of them has been covered with transported matter, which must modify considerably the characters which the soil would derive exclusively from the rock immediately below it. We shall find, moreover, that those portions of the country to which the erratic tertiaries have not extended are covered by another and subsequent deposit, indicating some amount of transport from a distance, and which modifies considerably the characters which the soil would derive from the rock on which it rests if it were composed wholly of the detritus of that rock. This deposit, to which the name of "warp-drift" has been given, is not only spread over the denuded surface of the erratic tertiaries, but, where they are absent, is spread over the regular rock-formations of all parts of the series.

Kent is one of those districts which have been exempt, in a great measure, from the operations of the erratic tertiaries, but in which the warp-drift has produced considerable modifications of soil. As regards the distribution of the erratic tertiaries over Great Britain, we find, commencing in the north, that there are very deep and extensive accumulations of them in Scotland; but as we cannot speak of them in that district from personal observation, we will trace them southwards from the Scottish border. From that point they extend on both sides of the central chain popularly known as the Backbone of England, or the Yorkshire and Derbyshire hills, and called by geologists the Penine chain, from its having been the Alpes Penine of the Romans. On the western side of that chain which forms the watershed of England, whence the rivers flow to the sea in opposite directions, there are considerable accumulations of these deposits, and in Holderness or the eastern part of Yorkshire. These deposits extend, with some interruptions, from more recent alluvial deposits over Norfolk, Suffolk, Essex, and part of Cambridgeshire, to the edge of the Valley of the Thames. There the boulder clay terminates abruptly, at a high level. The erratic deposits of this part contain numerous blocks of stone and smaller fragments, which have been transported from Scotland and Norway, mixed with others of northern origin, but not derived from such great distance. They form the tail of a stream of detritus, which may be traced from Norway and Sweden, through Denmark, Holstein, Pomerania, and Westphalia; while a similar line of transported blocks derived from Lapland extends over Russia and Poland.

Then, again, on the western side of the Penine chain there are considerable accumulations of transported matter, which may be traced, in like manner, to their parent rocks in the lake district of the North of England. Those blocks are of peculiar mineral characters, and being derived from small and well-defined areas, are easily identified. The deposits containing these blocks and shells of existing species extend as far south as Bridgnorth. Smaller erratic detritus, derived from the same quarter, may be traced still further, till it is lost in the fine alluvial detritus of the lower part of the valley of the Severn. This line of erratic blocks has crossed the central ridge at one point, and one point only, and that the lowest pass, which opens directly to the west, namely, the Pass of Stainmoor. Descending thence the valleys of the Tees and the Humber, they become mixed with the transported matter which has been before described on the eastern side of the chain, so that blocks of rocks derived from Cum-

berland are found on the coast at Redcar and in the Vale of York. In the same way the Cambrian erratics have travelled eastwards to the mouth of the Tyne along the depression caused by the Tynedale fault, at the northern termination of that chain; yet the streams which flow in that direction are quite unconnected with the mountains from which these blocks have been derived, thus clearly establishing the fact that they have not been transported by the action of existing rivers, under the present conditions of drainage; while it is equally certain that the general configuration of the surface, as regards hill and valley, was established before the distribution of the erratic deposits. Notwithstanding this general drifting from north to south, the erratics have in one instance been borne northwards, namely, along the valley of the Eden to Carlisle. There they are mixed with blocks of granite, which have been transported from Scotland across the Solway Firth. This partial transport northward is an important fact in corroboration of the formation of these deposits beneath an arctic climate. In such seas, loaded as they are with ice, the action of tides is unimportant; and, besides a general deep current having a constant direction southwards, there are minor capricious movements of the ice in an opposite direction, caused by superficial currents set in motion by the winds. In the narratives of the polar expedition, we find frequent instances of the large ice-bergs, which float with five-sixths of their bulk under water, drifting steadily southward with the deep under current, while the lighter floes were carried in an opposite direction by superficial currents set in motion by the wind.

One peculiarity in the gravel on the northern and southern flanks of the chalk escarpments demands notice. That is the slight degree of abrasion which the flints composing it have undergone. They are of the largest size, and have undergone no degree of wear when they are found imbedded in that clayey deposit in the summits of the chalk hills, which in parts of Kent bears the local name of "cledge." There is a slight diminution of size with every stage of descent, but scarcely any increase of abrasion till the alluvial deposits of the valleys are reached. These facts are difficult of explanation, if we suppose the flint gravel once to have formed a continuous sheet at the higher levels, and to have been slowly removed to the lower levels by ordinary denuding action. It would rather indicate rapidity in the movements of elevation, which appear to have taken place by pitches. Perhaps, also, this condition of the gravel may be the result of some modified glacio-marine action by no means so intense as that which formed the boulder clay north of the Thames.

Lastly, there is the angular flint gravel associated with the loamy deposit of the warp-drift, which frequently passes into masses of such gravel, mixed with fragmentary chalk, somewhat more water-worn, but still only slightly abraded. By some geologists, who have not made sufficient distinction between this angular flint gravel, and the slightly worn-gravel before-mentioned, this fracturing of the flints has been attributed to violent movements, by which they suppose the chalk to have been broken up, and the denudation of the Wealden area to have been effected. This angular flint gravel, however, is associated with mammalian remains, and with shells, as well those of the land as fresh-water shells, which are, as was previously stated, all of living species, and identical with the group now inhabiting the neighbourhood, with the exception of one or two species, which are not known, or very rare in this county, but inhabit the opposite parts of the continent, while one species is found no nearer than the Nile.

For the formation of this angular flint-drift various explanations have been offered, none of which can be considered satisfactory. It has been already stated that the boulder clay does not extend further south in England than the northern skirts of the valley of the Thames, when it terminates abruptly at a high level. There are, however, on the southern flanks of the chalk of the North Downs, and on the southern skirts of the South Downs of Sussex, considerable accumulation of gravel, composed of flint, slightly worn, and of pebbles of rounded waterworn-flints, which have been derived from the gravel beds of the eocene or older tertiaries of the London and Hampshire districts. These were formerly called basins; but that term conveys the erroneous impression that the tertiary deposits of those two areas were formed in detached seas. There is evidence, however, in the detached portions of the lower beds, which occur on the summits of the chalk hills of Kent up to the very edge of the escarpment, that the eocene deposits were once continuous over the whole area, and that the fracture and denudation of the Weald took place within the tertiary period. From the abrupt termination of the boulder clay at high levels on the northern skirts of the Thames valley, that denudation would appear to have taken place late in the glacial or erratic epoch.

Within the wealden area, there are several accumulations of similar gravel, generally near the base of the chalk escarpment. The central ridge of the Hastings sands is exempt from them. This area has also its boulders, but they are different from those of the erratic deposits north of the Thames, in containing no blocks of northern origin. They consist of blocks of sandstone, derived from the lower beds of the eocene tertiaries. They are found imbedded in the superficial deposits on the summits of the chalk hills, and they are also found in the wealden area, chiefly near the base of the chalk escarpment, and at the opening of the gorges, through which the waters of the wealden escape into the Thames. The cromlech called Kitsecotty House is formed of them. The position of these blocks at the base of this escarpment, and at the opening of the gorges, is precisely such as they would occupy if they had been floated on ice towards the close of the glacial period. On the southern coast, at Brighton, in what has been called by Dr. Mantel, the Elephant Bed, and in Braceleshire Bay, as described by Mr. Austin,

there are found, in the superficial deposits, boulders of granite and other crystalline rocks, which appear to have come, not from the north, but from the east. In this we have evidence that the glacial period continued, though probably with abated intensity, after the fracture and denudation of the wealden area; while this form of boulder deposits skirting on the south gives evidence of floating ice on the coast after the fracture and denudation of the weald was complete, and its surface converted into dry land, inhabited by the great mammals which had migrated southwards during the period of submerging. Most of the valleys of England north of the Thames were valleys anterior to the erratic period, for they have been filled with the boulder clay through which the streams are excavating channels, which in many cases have cut their way down to the rock. The valley, however, in which Old Father Thames holds his "silver winding way" is, probably, one of the oldest on the face of the earth.

While the mammalian remains found in the ancient wide-spread alluvium of the Thames and its tributaries prove a large terrestrial epoch after the desecration of the bed of the glacial, this long epoch, subsequent to that of the erratic tertiaries, was closed by the distribution of the warp-drift, and the disappearance of the great mammals. To this warp-drift, as we have said, various names have been given, and various causes assigned for its production, none of which appear to be satisfactory. The action which produced it appears to have been transient, violent, intermittent, and suddenly arrested, and with its distribution the disappearance of the great mammals appears to have been connected. It has had considerable influence in modifying the characters which the soil derives from the stratum immediately below, whether one of the regular strata or a member of the erratic tertiaries.

Kent is one of those districts where, from the total absence, as we have said, of the boulder clay, and from the very limited and partial presence of the upper erratic, the influence of the rock upon the soil is the greatest. Hence, the agricultural map of the county was in effect a geological map, though published long before such maps were thought of; yet even in those agricultural districts dependent for their general characters on the nature of the rock below, there are soils of very different values, and those variations arise from the varying depth and composition of this warp-drift.

HADLEIGH FARMERS' CLUB.

In redemption of a promise expressed in our last impression, we return to the proceedings at the Anniversary Meeting of this Club. Mr. Gurdon, judge at the Essex County Court, who has recently devoted much attention to agricultural as well as legal pursuits, discoursed pleasantly and ably on bullocks and pleuro-pneumonia. Mr. GURDON said: At the Autumn Meeting of the Club some observations were made by Mr. Hawkins and himself on this subject, which had elicited comments from a very kind friend, not, he believed, an entire stranger in this country, and probably therefore known to some of the company present. Their Secretary had been kind enough since he recalled the matter to his recollection, to send for a letter, which he (Mr. Gurdon) then held in his hand. Though it did not pretend to penmanship it was a remedy, and he thought it as well, when they were all assembled, that they should have the opportunity of knowing what the man said.

He told them therein that he had had thirteen years' experience in the management of stock, and had rarely lost an animal. The letter was dated "Stanstead Place," which was in Essex, he believed, and was from Richard Marsh, who described himself as a bailiff. It gave him (Mr. Gurdon) great pleasure to see a man in his position of life taking notice of such things, and recollecting a district with which he was formerly connected, and coming forward to help them, as he expressed his wish to do, merely out of kindness. The letter said: "Seeing the report of your Farmers' Club Meeting in the *Mark Lane Express*, and that the subject chiefly brought under notice was pleuro-pneumonia or lung disease in cattle, likewise the remarks of Mr. Hawkins, and the great loss sustained by him from the same complaint, and also the great loss of members with their lambs and young sheep, and having had great experience with all kinds of stock, and wishing to do good to every

one,"—a sentiment which he was sure they would all respect and thank him for—"I here send you a statement of my mode of treatment, which I have followed for the last thirty years with the most extraordinary success, having never known it fail in any one instance, if properly carried out, as a preventive of that fatal disease. The disease is generally most prevalent in the Autumn, caused no doubt by the atmosphere, and foggy and hoar-frosty air. I therefore in October give all our neat stock Stockholm tar and salt, two or three times, let them be well or ill. It has an immediate effect upon the mucous membrane of the throat, which is the first seat of the disease." In consequence of stock lost in their district, a very able surgeon and practitioner, Mr. Martin, of Holbrook, took rather an interest in this matter, and got a butcher to shew him some of the insides of animals that he had slaughtered; and that gentleman informed him he had a very strong suspicion that as to several of them the disease was not what was called pleuro-pneumonia, but bronchitis—that is, inflammation of the bronchial membrane passing down to the lungs. On their being attacked, no doubt, if the inflammation was not attended to and subdued, it would descend to the lungs; therefore it would be found that the disease in the animal commenced with bronchitis, and ended in pleuro-pneumonia and death. This letter said that the membranes of the throat were the first ones attacked, and it went on to state that he gave to a full-sized bullock or cow, of Stockholm tar and salt a half-pound of each, and half a pound of linseed oil. "To a year-old half that quantity; at the same time rub some tar up the nose. Thus have I saved all the stock I ever had anything to do with; and I have recommended the remedy to many neighbours, who have found it to answer well." Then the writer alluded to having published a letter on January 17, 1859, but said he supposed as it came from a poor bailiff it was not noticed. Now, if this person should see the report of their proceedings that day, if he should read the *Mark Lane Express*, he would find that the poor bailiff was not altogether overlooked. He himself was more convinced than ever that if it should please the Almighty to continue this scourge amongst them—sometimes these murraings came for a time and went for a time, just as they saw insects infest their trees; whether the intention was to make people exert themselves was a subject too high for them to enter upon, but there was certainly no reason why they should not be free agents in this respect—they should do all in their power to discover a remedy. It was an old saying, "God helps those who help themselves," and they would never, so long as this disease continued—unless it happened to leave them like the cholera—they would never, he believed, get to the bottom of it, so that it should not scare them out of their propriety, till they had fathomed the disease by really scientific means (applause). To do this experience must be largely imported. It was no use to ask a scientific man about a disease he had never seen. They knew that persons employed in the metropolis of London and other great cities took up one particular department, and became the more successful when they had greater experience and knew the character of a disorder. As he had said on a former occasion, he should like to see their Agricultural Society doing something to forward this object; or he had no objection if the Chancellor of the Exchequer could spare a few thousands upon it. He knew not if their

hon. friend Major Parker would second this or not; but if he did so he did not think he would deserve ill of them; and he did not say this in joke, for, if they remembered it, when this pleuro-pneumonia first came to us, like cholera, a great many men were sent abroad and a great deal of money was spent to investigate the disease in every part of the Continent. The gentleman he himself sent for was sent at great expense to try to ascertain what this great scourge was; but now people seemed to think that it did not deserve further notice, they had become familiarized with it, and were to meet it as best they could. He would suggest that some animals should be killed directly they were affected, and even where an animal recovered he would suggest having it killed, to ascertain how far it was diseased. In fact, he thought animals ought to be killed in various stages of the attack, in order that the investigation might be more complete (applause). He had that morning eaten a steak from a very good rump of beef, off a bullock which had an attack of the disease, and was blistered, and recovered; and he never wished to eat a better piece of beef. He saw the animal's lungs; one was quite shrivelled up—the one that lay nearest the blister. Whether the animal recovered from the blistering he could not say, but his bailiff would confirm him in saying that the only remedy tried in this instance was the blister and one of Cupiss's balls. He had some drinks from a man in the north of England, which were very successful, working by thinning the blood very much—some people adopted bleeding. Perhaps he had detained the Meeting rather longer than he ought to have done, but he knew the importance that this matter must be, and he thought it well worth their consideration whether anything could be done before the next season (he thought it was about the end of August or in September that the disease began to make its appearance) to see if they could not attack the disease and find out a way to treat it (applause).

One or two other observations made at the Meeting also call for reproduction. Mr. JOSEPH RAND, in responding to one of the toasts, said he remembered very well when the farming in that neighbourhood was very different to what it now was: they knew it was greatly and constantly on the improve, and where bushels once were grown within his memory he might say those bushels were doubled in number on some occupations, and he had no hesitation in saying this was in a great measure owing to such societies as theirs (applause). As far as the breed of their stock went, as they all had the pleasure of viewing that day, it was so much improved that he was quite sure that they profited by it who bred and grazed. A few years ago they were always advocating the breeding of stock with a view to early maturity. It might be to their interest to do so, but was the consumer of meat to pay dearer for it, that they, the graziers and breeders, might profit? There was a time when they never thought of selling a sheep under two years old, and it weighed perhaps ten stone. Now it was the fashion to kill year-old hoggetts. This was all very well, but they were diminishing their numbers. They did not breed sufficient to meet the loss of the extra weight, while there was an increased consumption of meat by more people being in a situation to obtain it, which was a happy thing to know: it was certain that our labourers, mechanics, and the whole community perhaps had meat now every day, when before they seldom got it more than once a week. Under these circumstances, it was necessary for those who filled the occupations of breeders and graziers to

know how they were to increase the supply of meat according to the consumption. If they were to kill stock of about three-quarters of the weight they did formerly, at the present consumption they must increase the supply somehow. No doubt they were very short of stock: the probability was that meat would be very dear, and that very soon. They must endeavour to make up the deficiency. No doubt the turnip crop had had a very considerable effect this year, but they had their mangolds to resort to. This was the time of the year to think of this, and he wished to remark that they had land and acres enough to grow much more than they did at present. He knew farms, heavy lands, which it used to be thought would not grow beet; but they had learned how that heavy lands were as adapted to grow mangolds as turnips. He was quite sure it was for their own interest, and for their country's interest that they should grow more roots and have no clean fallows, and produce more meat, or they would have very high prices.

Mr. E. Cook, another speaker, said he took credit to himself for having been the first to introduce long-wooled

sheep into the neighbourhood seven years ago. It was a gratification to him to see crosses from that stock increasing at these shows, and not only so, but generally that the sheep in the neighbourhood—not only from his stock but from Mr. Mumford Sexton's and others—were much improved. There was no better way, he thought, in which mutton could be procured than by the cross he had adopted. He ventured to say that the cross from the Cotswold and a good black-faced ewe was one of the most productive that could be, both as regarded wool and meat. It had been said that it was a waste to produce more meat, but the consumption was, as Mr. Rand had said, daily increasing, and the manufacturers were in such a state that they would require more wool, and there could not be better. He had sold hoggets for nearly £3 out of the wool, and had cut 14lbs. of wool at 1s. 6d. per pound, and such sheep were therefore a profitable sort to adopt.

Altogether, it will be seen that the company derived instruction as well as amusement from the proceedings of the evening.

ORIGIN OF SPECIES.

SIR,—The theory of Nature's law of selection and origin of species as explained in Mr. Darwin's late work having met with some opposition, I forward the following remarks respecting it, with some notice of hostile reviewers.

The great law of nature in organic life is competition, with a variation-power in accommodation to circumstances: a law not fitted to earth alone, but I have no doubt extended to the whole of the orbs of space that are in a condition to support material life. Perhaps the following brief account of this law (extracts from my vol. "Naval Timber and Arboriculture") may be interesting to those who have not seen Mr. Darwin's work.

"There is a law universal in nature tending to render every reproductive being the best possibly suited to its condition that its kind or that organized matter is susceptible of, which appears intended to model the physical and mental or instinctive powers to their highest perfection, and continue them so. This law sustains the lion in his strength, the hare in her swiftness, and the fox in his wiles. As nature in all her modifications of life has a power of increase far beyond what is needed to supply the place of what falls by Time's decay, those individuals who possess not the requisite strength, swiftness, hardihood, or cunning, fall prematurely without reproducing, either a prey to their natural devourers or sinking under disease, generally induced from want of nourishment, their place being occupied by the most perfect of their own kind who are pressing on the means of subsistence." * *

"This principle is in constant action, it regulates the colour, the figure, the capacities, and instincts; those individuals of each species whose colour and covering are best suited to concealment or protection from enemies, or defence from vicissitude and inclemencies of climate; whose figure is best accommodated to health,

strength, defence, and support; whose capacities and instincts can best regulate the physical energies to self-advantage according to circumstances—in such immense waste of primary and youthful life, *those* only come forward to maturity from the strict ordeal by which nature tests their adaptation to her standard of perfection and fitness to continue their kind by reproduction.

"From the unremitting operation of this law acting in concert with the tendency which the progeny have to take the more particular qualities of their parents, together with the connected sexual system in vegetables and instinctive limitation to its own kind in animals, a considerable uniformity of figure, colour, and character is induced, constituting species; the breed gradually acquiring the very best possible adaptation of these to its condition which it is susceptible of, and when alteration of circumstances occurs, thus changing in character to suit these, as far as its nature is susceptible of change." It is against this principle of selection that college-taught, closet-bred critics cavil, but which we think every sensible farmer who knows something practically of the subject will at once admit.

In the fields of nature we have economy in the highest possible degree. From the plastic quality of life, no space of earth's surface, not even the hardest perpendicular rock, is left vacant of life; including also the ocean, and even the atmosphere. It is, indeed, probable that the atmosphere had been inhabited before the crust of the earth or the ocean had become sufficiently cooled and stable to be habitable.* Wherever moisture

* There seems to be a vacuum around all solid bodies, on account of the air not coming quite in contact, which in very minute bodies is sufficient to float them: instance the motes in the sunbeams and the suspended steamer-smoke

as the vehicle of floatage-motion in the tubes and cells of life is sufficient, and the temperature not too high, there organic life, adopting every possible form and character in accommodation to circumstances, extends.

The scheme of animate existence (man in some degree excepted) is the greatest possible number of living things in the highest possible health and perfection. This can only be attained by the seeming severe, but inflexible, necessity in following out the power of variation, along with the principle of selection by competition in species. The laws of nature are necessarily inflexible and unchangeable. Wisdom and provision in man depend entirely upon Nature's *truth*—upon the unalterable security of these laws. Wisdom, or even common sense, could not exist were these laws modifiable in any way whatever. For what is wisdom but a knowledge of these laws? So great is the economy of Nature in multiplying organic life, that even death itself is made to subservise to life; the cause of death in a larger organism being not unfrequently the invasion, under the name of infection, of animalcule life extending to millions—permeating the whole body of the larger; while, again, the process of resolution of the dead body into its gaseous and earthy elements affords existence to millions more: and even the healthy living animal is so far inhabited.

I challenge anything of Bridgwater prize origin, or of any other higher origin, as showing grandeur of design—means to end—display of infinite wisdom equal, or to be compared to the great self-modifying-adaptive scheme of Nature which I many years ago pointed out in "Naval Timber and Arboriculture," and which Mr. Darwin has in his recent work so ably brought forward. To some this law of nature may appear rigorous, ruthless, inexorable. But it is necessarily so—could not be otherwise to effect the purposed end—to group all nature in innumerable distinct species, each of the most admirable fit-

cloud (particles of soot) at sea. Electricity has also a power of suspending minute particles, and which it seems probable that minute life such as the aerial spider can produce and avail itself of, as a power of suspension and locomotion. I once had an opportunity of witnessing the floating effect of the parachute or pappus appendage of thistle-seed. Having found that the annual, or rather biennial cow-thistle (*Sonchus oleraceus*) was very much relished by cows, horses, and pigs, I gathered a quantity of the ripe heads before the seeds had taken to flight, and laid them to dry in a large empty room; shut up, lest they should get away. After remaining so for a few weeks, I went into the room to gather up my dried seeds, but no seed remained where I had laid them, only the receptacles or basement seats of the seeds. On looking around, not a seed was to be seen, but turning my eyes upwards I discovered they had all gone aloft, and were adhering to the ceiling, and especially clustered about the members of the cornice. This aerial fancy of the seeds put me out of conceit of my plan of thistle culture, and I did not sow them as I intended. Were this plant cultivated in drills, and horse-hoed between, the quantity of bestial food would be great. In my rich soil many of this sow-thistle reach 3 feet high and 1½ inch in diameter of stem as weeds. The pappus is easily destroyed by friction in a bag, which renders the seed manageable. When afloat in the air, the night dew, the fog of a cloud, or a few drops of rain, bring them to earth, where they adhere.

ness to circumstance and position, spread out and covering the glad face of earth.

Look around at the vegetable creation! No space is left unoccupied, with the exception of the arid desert and the frozen Poles. The whole habitable earth is closely covered with innumerable shapes of beauty, "that toil not, neither do they spin; yet the Queen of Sheba in all her glory was not arrayed like one of these;" the green mead bestrewn with flowers of richest dye and sweetest perfume, "painted with delight;" the magnificent trees, the graceful shrubs, in vesture of green, jewelled over with blossoms, all fresh and pure as the blushing morn, breathing incense, sweetening the atmosphere—though so pure themselves, purifying it of poisonous or corruptive matter prejudicial to the higher orders of animal life. We cannot believe that those compound beings, those charming clusters of life, when they wake from their quiet slumbers at the dawn, to haquet upon dew-drops and bask in the first sloping rays of the glorious sun, are without a glad sense of existence, a sense of their innocent life—do not partake of nature's joy. The ancient Slavonic deity Ligho was the Goddess of Spring and flowers and joy. Is a family alliance to be repudiated with those most gorgeous floral developments which embellish nature in the warm climates all the year round; the magnolias, Victoria lily, lily of the Nile, &c., and those magnificent blossom festoons depending from climbers (woodbines) which so gracefully decorate the tropical forest? Is a relationship not to be coveted with those most interesting denizens of nature, which in our colder climates come to visit us in spring: the primrose and the daisy, the violet, hyacinth, and wild thyme, so sweet in beauty, fragrance, and purity—sweet from memories—sweet from associations with spring, and youth, and joy. As instance of the desired connection, we name our fairest pet-children Rose, Lily, Dilly, Flora, Olivia, Susanna, and we plant a rose upon their grave.

In the last number of the *Edinburgh Review* I observe a critique upon Mr. Darwin's work, in which the writer tries to throw distrust upon the law of the origin of species. In the old sly way of hackney critics, he attempts first to appear candid, by *generously* conferring on Mr. Darwin some modicum of praise in regard to some not-important fact stated in his work—just enough faint praise as damn the work. He then proceeds to exhibit his own extended information of the arcana of natural history, collected from every naturalist writer of note, and from the excess of which he seems to suffer from indigestion. Having swallowed so much knowledge as a naturalist, his crowd of ideas appear to have got into confusion, so that he can come to no conclusion about anything whatever, excepting that there is no advance in the knowledge of Nature's laws in Mr. Darwin's work. This critic, naturally querulous, and uneasy from repletion, will neither do anything himself nor allow that others do. His condition is to be pitied:

"A surfeit of the sweetest things
The greatest loathing to the stomach brings."

I hope that this naturalist will not yield so much to an insatiable appetite, and masticate a little better, so as to be in a condition to assist in our advance in this field of natural science, of which we yet remain so ignorant. But he, like the greater part of naturalists, may, like my professor, be afraid of the cutty stool—(see *Gardeners' Chronicle*, May 12, 1860). Instead of differing with this naturalist, as he seems disposed to do with us, I agree with him that there is in nature a vast field of discovery, but of rather difficult attainment, yet within the compass of human science. But, to advance, something else than

cowardice, bigotry, or shamming, or a combination of all three, will be required.

I also notice a critique in the *British Review* upon Darwin, of which, perhaps, the less said, the critic will fare the better, and to which I wonder the editor gave place. This writer naturally adopts the style of ridicule and low charlatanism generally resorted to by critics when they have no good intentions, and when facts are too strong against them. It is perhaps enough for me to quote the following few words: "*Who would place much faith in their conclusions, when, with the appalling fatuity which characterizes all infidel philosophy?*" Here we have a good specimen of the furor caused by the *odium theologium*. I would ask the reader, Does this contempt of philosophy—for all philosophy is "infidel," and admits nothing on faith—not bear upon its face that the writer sees his false position, and tries to avail himself, by means of clericalrodomontade, of bigotry and prejudice? Had such a critic lived two or three centuries ago, and had he had the power, he would have met Mr. Darwin's work with the torture and the faggot. In every case where a writer has attempted to model science to, or make it subserve, religious doctrine, he has wrecked his work as a work of science.

Critics may carp at, bigots and shamners—or the usual mixture of both—may insult and denounce, Ignorance may not know, and Stupidity may not comprehend, this universal law of nature; but I defy the intelligent, even those who most oppose, to say that they entirely disbelieve it—that it is not true; and I leave these last, like Pistol, to eat the leek and swear.

PATRICK MATTHEW.

Gourdie Hill, Errol, May 19.

FARMING ECONOMIES.

No. II.—RAPE CAKE.

STR.—I know of no more striking proof of the prejudice and want of calculation in British agriculture than the non-use of rape cake as a profitable feeding stuff. Having, during the last seven years, used more than 100 tons of it, I can speak of its value with certainty. Mr. Pusey's evidence on this subject, in the "*Royal Agricultural Society's Journal*," vol. x., p. 247, ought long since to have carried conviction to the agricultural mind. Professor Way's analysis shows (vol. x., p. 494) that its elements have all the value of linseed cake, and I have proved practically that, weight for weight, it will make as much meat as linseed cake, although it costs less than half the price. Its residuary effect in manure, according to Mr. Laves, gives it a superiority over linseed cake to the extent of 20s. per ton. Above all, its use as a destroyer of wire worm should commend it especially to the farmer of light lands where, this season, many thousands of acres of corn have been crippled or destroyed. On my light land, which used to be particularly subject to wire worm, by feeding sheep with rape cake, my wheat crop, to follow clover, is this year in full and luxuriant plant, whilst those of many of my neighbours are seriously injured. A friend of mine who farms loose light lands in the neighbourhood of Reigate, assures me that he has almost cleared his farm of wire worm by the use of 5 cwt. per acre, either ploughed in, or sown broadcast on the surface. By the latter mode he saved his clover crops, which the wire worm was eating, the rape acting also as a most valuable manure. As one of my sources of profit, rape cake is an important element, enabling me to produce my meat at 50 per cent. less than other farmers

Of course, if they were as convinced of its value as myself, the price would rise to an equality with linseed cake. A recent trial so alarmed agriculturists as to its use, and so annoyed the firm who had to pay the damages, that they decline warranting any for feeding purposes, and thus its price is kept down. I continue to feed my sheep and bullocks with the same sort of cake which was made the subject of the trial, and which I have bought of the same firm for many years, to the extent of 100 tons. It is made from East Indian seed, a sort of mustardy, hot, oleaginous seed. It should not be given to the animals fresh made; they will not then eat it; but after keeping for a month or two, sheep and cattle relish it. My fat sheep are now eating 1½ lbs. per day each. Bullocks will eat from 3 lbs. to 5 lbs. It is most excellent for cows, Mr. Horsfall being also of that opinion (see Society's "*Journal*"). It would be wrong to give it immediately to animals just brought in, after much driving and excitement; but when comfortably settled, and recovered from their fatigue, begin with a little, and gradually increase it. I trust that the saving of £50 out of every £100 will tend to remove prejudice in this matter, and thus increase the farmer's profit. I see no reason why it should not be very nutritious for horses, and shall carefully try it on one to satisfy my mind.

J. J. MECHE.

Tiptree, May 28th, 1860.

P.S.—I have at length succeeded in convincing a neighbour of mine. His lean sheep and mine came in the same day. He gave oil cake; mine had rape cake. When both were fat at the same period, the butcher offered most money for mine. He is now a rape cake feeder. As I now use about 40 tons a year, my saving, as compared with linseed cake, is fully £160 per annum, or near 20s. per acre. Surely my farming friends can now understand how I make my profits. Sheep that have been fed on linseed cake will not eat rape cake unless starved to it.

SELECTING CALVES FOR REARING.—Use judgment in selecting such heifer calves as are to be reared. Select only those whose mothers are good milkers, and whose sires have come from good milking stock; at the same time, the calf itself should have those characteristics that indicate an aptitude to develop good milking qualities, viz.: small, fine head, rather long in the muzzle, bright eyes, thin, tapering neck, small, well-shaped legs, long body, large hind-quarters, set wide behind, soft skin, fine hair—the colour of which is immaterial—and above all, the milk mirror, or udder veins, should be large and well developed. The raising of bull calves for breeders had better be left to those who have time and means to devote their attention to it, and procure the best animals to begin with. It would be no loss to the country were the numerous specimens of scrub bulls, too often seen, condemned to perpetual exile. But there is no reason why a portion of the male calves, at least, should not be reared as bullocks, either for the team or the butcher; and it is important that such as are reserved for this purpose, should possess certain points indicative of future excellence, viz.: well-shaped head, small ears, short, thick neck, deep basket, broad chest and shoulders, fine bone, long body, well rounded behind the shoulders, straight back, wide loins, full quarters, tail thin and tapering, skin soft and not too thin. It is too often the case, that animals are selected for rearing from their being of a pretty colour, that takes the fancy of some member of the family; or the calf of some pet of the dairymaid—without attention being paid to its defects or excellencies. Not infrequently, valuable calves are fattened for veal, simply because their colour is unpleasant to the eye.—*New Jersey Dollar Newspaper.*

THE GROWTH OF FIBROUS PLANTS IN INDIA.

The old proverb of "Give a dog a bad name" would seem still to be in full force. There have been few more abused personages than the East India officials. Every shortcoming—every failure—every abuse has been attributed to their neglect or misrule. Persecution, torture, grinding taxation, neglect of the resources of the country—want of fixity of land-tenure, absence of roads, droughts—mutiny, panics—every calamity and misfortune has been laid to their charge. No doubt where there is smoke there is fire, and in the torrent of obloquy there will be some shadow of truth. Still the abuse is carried beyond legitimate bounds; and now that a new rule is inaugurated, the sins of omission and commission of John Company should be permitted to die with the old East Indian Government.

Any one who will take the trouble to look calmly into the matter will find that the Indian Government have not after all been so utterly indifferent to the best interests of India as they are commonly represented. Public works have been carried out as extensively as the finances and the wide extent of country to be served would permit. Of this the network of railways now forming of 5,000 miles, and already in successful operation for 600 or 700 miles, with the existing canals and irrigation works, are sufficient evidences. So with the experimental cotton cultivation, tea culture, and other industries set on foot in the presidencies and the local exhibitions of native products.

The blue books on cotton cultivation in India, the official works of Dr. Roxburgh, Dr. Royle, and of his successor Dr. Watson, are further evidences of the zeal of the India House in the matter of developing the industrial resources of India. And yet whenever there is a deficiency felt of cotton, flax, wool, or some other great staple of commerce, immediately the manufacturers fall foul lustily of the Indian Government, and blame them as the cause of the deficiency. Of the truth of these observations, there was a practical instance afforded at a recent meeting of the Society of Arts. The subject of the deficiency in the supply of fibres to meet the wants of manufacturers has long occupied attention, and has been frequently alluded to in our columns. The Council of India, desirous of contributing all the information possible on this diffuse subject, instructed their official reporter on products, Dr. Watson, to prepare a paper on the subject. In conjunction with the Society of Arts, at an outlay of several hundred pounds for chemical experiments, maps, diagrams, specimens, wood-cuts, microscopic examinations, printing, &c., a most valuable essay was prepared and read to the members and visitors of the Society of Arts at one of their ordinary meetings, Mr. Thomas Bazley, M.P., presiding. And yet even all this could not satisfy the querulous and bigoted, for even here the old charges of neglect and mismanagement were revived. It is not with these, however, we

desire to deal, but rather to give an abstract of the paper, which had many points of special interest that will command for it extensive circulation, both at home and abroad. After treating firstly of the botanical classification of the fibre-yielding plants into endogens and exogens, and affording practical illustrations of these, Dr. Watson proceeded to remark upon the mode of separating them from the parent stem. "He had," he stated, "in his possession no less than 180 specifications of patents bearing upon this important subject. But to understand," he observed, "the process of cleaning Indian fibres, it must be remembered that we have to deal with a climate in which fermentation and putrefaction readily succeed each other in the freshly-cut plant. A forgetfulness of this fact has acted injuriously upon their value. The common practice has been to steep the plant in water, until the sap is decomposed. Labour is thus saved; but in India the fibres are often irreparably discoloured and weakened for manufacturing purposes. It is therefore obvious that steeping, if employed, should be for the purpose of loosening and dissolving the binding constituents of the plant." He then went very fully into a description of soil and climate, and the analyses of soils submitted were most extensive and valuable, forming an admirable and sure guide to the cultivator, whether in Europe or the East. "Nature has, with very few exceptions, provided every plant with fibrous materials, which, when separated, may be turned to some account; but it is not every plant which will pay the expense of such manipulation by affording a marketable commodity. No doubt numberless plants have, in the lapse of ages, been tried and found wanting, not having stood the test of experience. Looking at the matter from this point of view, those fibrous substances which have either been employed for the longest period, and which are now most commonly in use, are likely to be exactly those most worthy of attention. Of this kind are flax and cotton, which have been employed from the earliest ages."

And first with regard to flax. At present it is almost entirely cultivated in India for the sake of its seed. India furnishes a very large proportion of the supply of this seed to the United Kingdom. The quantity imported amounts to 97,000 tons.

But besides the exports of linseed, it is largely used by the natives. These facts, therefore, indicate the existence of a wide-spread cultivation of flax for at least one purpose. But, although grown chiefly for seed, the capability of certain parts of India to furnish fibre of the most valuable description has at last begun to be fully appreciated, and this partly through the attention which the subject has received from the Indian Government, partly through the report of the local agricultural societies, and partly through individual efforts. As the declared object has been the cultivation of seed, the

flax has been sown sparsely; consequently the plant has thrown out abundance of lateral branches, and produced a first-class seed for oil. Indeed, Indian linsced rules the market here. In spite of many failures, and of much partial success, there is no ground for believing that flax of good quality may not be grown in many parts of India when once cultivated with that end in view. That flax is an exhaustive crop there is no reason to doubt. It requires much of the alkalies, potash, and soda for its full development; but where these are abundantly present, as in the great alluvial soil of India, the mechanical texture of the soil is of less moment than suitability of climate. In order to produce good fibre it is essential that the seed should be sown thickly, so as to cover the ground. Thus the deposition of excessive ligneous matter is presented. In India flax is a winter crop; in the northern parts it is sown in October and November, arriving at maturity about the beginning of April. With respect to seed, successful culture would seem to depend much upon frequent change. This certainly is the case with us in Ireland and England, resort being had to various parts of the Continent for the purpose. On a hasty examination of the subject, we should suppose a similar importation necessary for India; but when we reflect upon the varieties of soil and climate, no such necessity exists beyond a frequent interchange of seed between the various districts. We must, however, admit that certain experiments which have been made in India with imported seed, have furnished results in agreement with our European notions. A better fibre has been the consequence. In the beginning of this century, Dr. Roxburgh, under orders from the Court of Directors, instituted a number of experiments on the growth of different plants, and on the preparation of their fibres. The results of these experiments were then, as now, appropriately brought under the notice of the Society of Arts. Since his time, although numerous experiments have been made, we have not obtained many fresh results of practical importance.

Fibres from exogens, from their superiority, occupy the first place. These may be divided into those which, from their strength, flexibility, and other practical qualities, are fitted for spinning and manufacturing purposes. Of fibres belonging to this class, *flax* deservedly occupies the foremost place. Next to flax stands the *Rhea*, or "China grass" fibre. Thirdly, we have the Neilgherry nettle, called also vegetable wool. Fourthly, the *Mudar* (*Calotropis gigontea*), and, lastly, the *Bedolee sutta*, or vegetable silk from Assam.

In the next division may be placed a selection of fibres fit for spinning and manufacturing purposes of a certain kind, but possessed of such inferior lasting qualities that they cannot be legitimately employed for purposes likely to subject them to much wear and tear, or to the action of water in the ordinary operation of washing. This class of fibres fulfil many important uses, but when either of them, on account of their cheapness, are surreptitiously used in cases which demand the superior qualities of the first group, they may then be fairly said to occupy the place of adulte-

rants. To this class belongs the well-known jute of commerce. Secondly, the *Bariala* (*Sida rhomboidea*) of Assam and Bengal; and, thirdly, the *Ambaree* (*Hibiscus cannabinus*) of Western India.

In the second group were placed those fibres which are chiefly useful for the manufacture of cordage, twine, &c., but which may be, and are occasionally, used for the purposes to which the three fibres last mentioned are suited. At the head of this class stands the true hemp (*Cannabis sativa*); then, 2nd, we have *Sunn* (*Crotalaria juncea*); 3rdly, the *Dhunchec* (*Sesbania aculeata*) of Bengal; and 4thly and lastly, the *Jetec* (*Marsdenia tenacissima*), a fibre possessed of certain qualities which may eventually entitle it to a higher place. And the same remark applies to hemp, which, after certain manipulations, has been occasionally brought into a state of fineness and flexibility nearly equal to that of good flax.

We now come to the fibres furnished by Endogens. Of these there are two divisions. In the first we have various white fibres of varying qualities, furnished almost without exception by the leaves of different plants; and in the second we have dark-coloured fibrous substances of a rough or bristle-like nature. With respect to the 1st division:—No rigid separation of these, in accordance with the purposes for which they are suited, can be effected; for we find that the fibres which at one time are only capable of being employed for the standing rigging of ships, or for the formation of cordage or twine, will at another be found of fineness sufficient to permit of employment for spinning into fabrics of a certain kind; for instance, for women's dresses, and for imitations of horse-hair cloth, &c. The finest fibre in this group is undoubtedly that of the pine-apple (*Ananassa sativa*); next in order of importance stands the moorva (*Sansevieria Zeylanica*); then come the agaves, such as *Agave americana* and *A. vivipara*, the last now called *Fourcroya gigantea*. Fourthly, we have the yucca and Adam's needle; and lastly, the plantain. The so-called Manilla hemp and New Zealand flax may also be referred to.

In the 2nd division of Endogens we have:—1st, *Coir*; 2nd, the bristle-like fibres from the *Ejoo* palm; 3rd, rough coarse fibres from the shoots of the *Pandanus*; 4th, similar ones from the *Chamacrops Ritchiana*; and 5thly, from the *Moonj* of Sind.

The next important fibre is the *Rhea* of Assam and other parts of India. Although it cannot yet be called an article of commerce, the fibre from this and other plants of the nettle species will doubtless ere long occupy a place second only to that of flax. Another plant to which prominent attention is drawn as affording a fibre of great strength was the *Urtica heterophylla*, of Roxburgh, or Neilgherry nettle. The fibre is so similar to wool when crumpled up, that even merchants from a casual glance have not detected the difference, hence the common name of vegetable wool by which the plant is known. Its likeness to wool is well brought out by the microscope, which indicates considerably greater asperities than the

Rhea, consequently it is better suited for admixture with wool. It is the most widely diffused of the large Indian nettles. It is an annual of a most formidable character. With upright angular stems, covered with small prickles, and marked with small white specks. The leaves are similarly protected by bristles; they are irregularly serrate, long, variously lobed, petioled, and almost caudate at the base. From the severe injuries consequent upon a sting, greater difficulties are presented to obtaining its fibre than is the case with the Rhea. The natives on the Neilgherries first boil the plant before subjecting it to manipulation.

The well-known Jute of commerce now occupies a most important position amongst the supplies of raw textiles furnished to this country. There are two species which afford the fibre, viz., *Corchorus capsula is*, and *C. olitorius*. The natives call the latter *Putta pat*. It is an annual, growing to the height of 5 to 6 feet; it belongs to the same family as the limes, Tiliaceæ; its leaves are alternate, egg-shaped, and serrate, the two lower serratures ending in a slender thread. The flowers are small, and have five yellow petals; the flower stems one to two flowers. The seed-capsules are nearly cylindrical, and contain numerous seeds. It flowers in July and August. Jute is very largely cultivated, particularly throughout the Bengal Presidency, and is much used for gunny bags or baling or packing-cloths. According to a statement made by the Messrs. Noble, each gunny-bag weighs about 2lbs. The gunnies are usually in pieces of thirty yards, which weigh on an average 6lbs. In 1858, upwards of 118,000 tons weight of jute manufacture were shipped, besides 39,000 tons of jute fibre exported to all parts during the same year; and taking 1855-56, which is the year of largest exports, we find that 225,000 tons have to be added to the 44,000 exported to all parts, giving upwards of 269,000 tons as the total quantity of jute, in either the raw or manufactured state, exported from the whole of India, or

considerably more than the whole of the flax and hemp fibres consumed in this country during the same year. This brings out in a strong light the enormous jute-production in India. For, in addition to what is exported, jute is largely employed in the country itself, and it is commonly reported that the jute grown by the natives for their own purposes is much superior to that exported. The jute which presents a fine glossy appearance, obtains the best price in the market.

Coir, the product of the cocoa-nut palm, needs but be mentioned. It is imported in considerable quantities. Coir-yarn has been, and is likely to be in great demand, the matting trade having lately so much increased. Yarn from Cochin (which maintains its character as the port for shipment of the best quality of coir-yarn) has this season already been shipped to the extent of about 21,000 cwt. That coming from Bombay is received with suspicion, as some years ago it arrived falsely packed and country damaged, which has prejudiced the sale of this class of yarn. The demand for coir-rope has much fallen off, and only the best kind of Cochin is likely to pay importers. Coir fibre (for mats), and the stiffer kinds for the brush manufacturers, meets with regular demand: some of the "bristles" of this fibre, lately received from Colombo, have been sold to brush makers at £60 per ton, and are substituted for some purposes for the more expensive Russian bristles.

We have endeavoured to present a brief digest of this very valuable paper, which is well deserving of a careful perusal, not only by all those specially interested in manufactures, but also by the agriculturist, from the botanical, chemical, and microscopic information furnished, and the voluminous commercial details given of production, culture, imports, and prices. The Indian Council and the Society of Arts propose, we believe, to publish it in a separate form, for general circulation at home and abroad.

HEREFORDS.

LORD BERWICK'S HERD—ARE HEREFORDS ADAPTED TO THE UNITED STATES?—IMPORTANCE OF HERD-BOOKS.

MR. CORNING'S FARM.

The comparative merits of two leading breeds of British cattle—the Shorthorns and Herefords—have been made the theme of such earnest discussion, both in England and in the United States, that a good deal of acrimonious feeling and partisanship have been excited. Calm and unbiased observers, observing the heat of the conflict, and the varying success of the disputants, have naturally concluded that as both breeds have at times borne off the highest honours in competition with all others, both possess remarkable merit; for surely, if either were quite inferior, its friends must have soon been vanquished, and the breed driven from the market. Hitherto our sketches of American herds have been confined to the shorthorns, but a recent visit to the farm of Mr. Erastus Corning, near Albany, enables us to give an account of the

kind that for twenty years past he has bred in preference to all others. To properly introduce them to our readers, it will be necessary to take a retrospective glance at their history, and note the improvements made by the leading breeders of the present generation.

It is an interesting fact that although at the invasion of Britain by Cæsar the inhabitants were almost wholly sustained by the meat and milk of their herds of cattle, and since that time the horned stock of the country have been a considerable source of wealth, yet it is only within the last century, or at most a century and a half, that much improvement has been made in the breeding of animals.

The steady increase of population in the British Isles, and the gradual exhaustion of the soil and consequent decrease of incomes of the proprietors, together with the discoveries of

Liebig, the application of steam to farming, and other causes, have gradually forced the higher classes to encourage agricultural improvement. The taste once established has grown with wonderful rapidity, until, by the aid of her agricultural press and agricultural societies, England leads the world in all that relates to the department of husbandry. And perhaps in nothing has this improvement been more shown than in the breeding of stock, for not even the feeblest comparison can be made between the perfected shorthorns of the present day and those ancestral types of the breed that roamed the country a century or two ago.

It is only within the last fifty years that the principles of animal life have been thoroughly elucidated, and the importance of preserving correct registers of pedigree properly estimated; and hence it is that when we come to investigate the early history of the Hereford and other leading breeds, we find their origin lost in perfect uncertainty. All we can do is to commence with the efforts of some well-known breeder, and trace their improvement to the present time. With shorthorns this is a comparatively easy task; for the animals bred, we might almost say created, by Mr. Charles Colling, stand out from their ancestry with such distinctness as to furnish a convenient landmark for our investigations; while there is not on record an early improver of the Herefords whose case can be taken as a parallel. The most authentic account we have is that given by Mr. C. Hillyard, who published in 1844 a most excellent treatise on "Practical Farming and Grazing." Speaking of the improvement in Herefords, he says that Benjamin Tomkins, of Wellington Court, was famed for a superior herd of that breed, many animals of which getting into the hands of John Price, of Ryal, near Upton-on-Severn, he in a few years had a herd, that at his sale in 1816 brought wonderful prices. Cows sold as high as £200 to £260 each; and bulls for £300 to £360 each. Lord Talbot purchased twenty-three animals for £2,500, an average of £108 14s. each. During seven years Mr. Price sold one hundred Herefords for £10,400. Among the earlier breeders of note the names of Tully, Yeoman, Skyrene, Williams, and Weyman, are on record; and in 1844 Earls Talbot and Oxford, Sir Francis Lawley, Hungerford Hoskyns, Sir Francis Goodericke, Sir Robt. Price, Jno. Arkwright, Jeffrey, Turner, Yeld, Hewer, Rayner, Knight, and Smithies, led the van. Mr. Hillyard says that at this period "they were breeding too fine, too narrow in the chine, the fore legs too close together, and not capacious enough in chest; too thin in thighs, with a want of muscle, and therefore, when well-fed, there was a want of due proportion of lean to fat meat."

This was no doubt true, for the treatise of Mr. Hillyard bears the marks of having been composed by a candid and practical man, and one whose opinions should be received with due respect. The same bad points are not to be charged to the best Herefords of to-day, for the herds of Lord Berwick, Lord Bateman, and other leading breeders, can perhaps show as good an average as any shorthorn herds of similar size.

CLASSIFICATION OF THE BREED.

The Herefords are placed by all the leading writers in the class of "Middle-horns;" that is, they are neither long-horned, like the Cravens and Leicesters, nor short-horned, like the prevailing blooded stock that is now in fashion; but are in the same rank as the Devons, Sussex, Glamorgans, and others. The Herefords are considered an aboriginal breed, and as having, perhaps, the same origin as the Devons. Those who have only known them with white faces, throats, and bellies, would scarcely believe that it has been a difficult matter to distinguish a heavy Devon

from a light Hereford; but such is the fact. Youatt says that, "compared with the Devons, they are shorter in the leg, and also in the carcass; higher, broader, and heavier in the chine; rounder and wider across the hips, and better covered with fat; the thigh fully and more muscular, and the shoulders larger and coarser."

A few years since they were not of the same uniformity of appearance as now, for we learn from Mr. R. Smith's report on the stock exhibited at Chester last year, that formerly "there were some herds self coloured like the Devon and Sussex breeds, and opinions have been published that this was their original character. Subsequently we find the gray, the mottled, and the white-faced, each with their distinct admirers and their successful breeders. . . . That the race was originally red with a white face is indicated by the almost perfect uniformity of colour which the breed of the county now presents." If this peculiarity were not inherent in the race, but merely the result of mongrel breeding, we should find every imaginable variation of the colour; or rather, where herds had been bred pure, we should see the colour recurring to some other original type; for this is the peculiarity of well-established strains, to overcome modifications attained by art and preserve their *ancient landmarks*.

MILKING PROPERTIES NEGLECTED.

Hereford oxen have ever been noted for their strength, endurance, docility, and feeding propensities, as well as for the fine quality of the best pieces of beef. The general introduction of horses has in great measure driven them, however, from the plough; while as a further reason we might add that the farmers find it more profitable to grow them so as to be fit for the butcher at three years of age, than to keep them as working animals until they are six or seven.

As regards their performance "at the pail," not much can be said; for while Hereford milk is confessedly rich in quality, the efforts of breeders have been so turned to developing beef-making qualities that no heed is given to the production of milk. In fact, it is a common practice in their native county to let the calves run with their dams in the natural state; and even then, it is sometimes necessary to have common cows to act as wet-nurses to the young beef-makers. This is a crude state of things that should be replaced by a better system, but especially so if it is expected that Hereford cows may sometimes be needed to give milk to their owners. The short-horn men are not a whit better in this respect, for they put forth all their energies to get a heifer up to an enormous weight, and neglect milk-making properties altogether. The scale of points given by our agricultural societies to their judges on cattle, as a guide to their decisions, tells the whole story; the development of bag, and signs of milking ability, are put down in the merit list at three or four per cent., while the beef points are exalted to the highest degree. What is the result of this treatment? The system becomes so overloaded with fat that the mammary glands and ducts, that should be left free to secrete and convey milk, are coated over with fatty matter, and the flow of milk becomes at first almost, and ultimately quite, impeded. The heifer coming in calf and near her time, the system is overheated and inflamed, and there is great danger that she will lose her own life, or that of her calf. Our breeders know this better than we can tell them; but in England and this country, let two lots of cattle of equal excellence be shown, and, in nine cases out of ten, those which are in proper

breeding condition will lose the prize, and it will be given to the lot in high flesh. Fat, like charity, "covereth a multitude of sins."

MANAGEMENT OF BREEDING COWS.

In Herefordshire it is customary with the farmers to make the cows come-in in the winter months. The calves suckle their dams until May, when grass is ready for them. When the cows are dry, they are driven to the poorer pastures toward the hills; but if they do not come in calf again, they are put upon the richer grazing land to fatten. The larger breeders of course treat their herds as do the owners of the best herds of other breeds. Mr. Henry Tanner, in a prize report on the Agriculture of Shropshire to the Royal Agricultural Society, mentions that in the district of Corve Dale, comprising an area of 35,000 acres, the stock-growers have met with serious losses from the premature dropping of their calves by the Hereford cows; and he attributes it to too close breeding, which he thinks has enfeebled them, and made them susceptible to the malady when the direct producing cause is prevented. This cause, he claims, is to be found in the ergot or fungoid growths which attack, not only rye, but most of the pasture grasses of the district as well. If this theory be true, how can we account for the prevalence of this same trouble in the dairies of Orange County, where the cows are of mongrel extraction, and in no case pure-blooded? If the introduction of fresh blood would be, as he claims, a remedy, surely in our dairy districts we should be exempted from the difficulty. This not being so, we can scarcely charge it to the Herefords as a weakness of constitution on their part; we must look for some other explanation of the mystery. Perhaps certain conditions of atmosphere, an excess of moisture or something else, may favour the growth of fungi on our pasture grasses, and thus induce the abortion. Professor Buckman says that ryegrass is especially subject to ergot, and care should be had in feeding it to valuable breeding animals on this account.

LORD BERWICK'S HERD.

During the last summer we had an opportunity of visiting the herd of Lord Berwick, at Cronkhill, near Shrewsbury, Shropshire; and in connection with Herefords, some account of it may be of interest to our readers. His lordship commenced his herd in 1844, by the purchase of fourteen or fifteen heifers at Mr. Salway's sale at Ashley-Moor, Herefordshire. The animals were of the blood of Mr. T. A. Knight, of Downton Castle, previously mentioned in this article; and since, by purchases made from Jeffries', Hewer's, and other blood, to get points, he has increased the value of his herd. He has now three Royal Society's first-prize bulls, and has the reputation of drawing more Royal prizes than any other Hereford man in England. From 1849 to 1857, with a total of thirty-three animals only exhibited, and these bred by himself, he obtained twenty-seven Royal prizes and four "High Commendations." His bull Walford bore off the first prize of 1,000 francs and gold medal at Paris in 1855, as the best bull of any age or breed; while, at the same time, his Napoleon III. won the bronze medal and high commendation, as no exhibitor was allowed to take more than one prize in this class. Walford won the Great Challenge Sweepstakes, open to all England, at Ludlow, in 1850; and two of his steers won the Challenge Cup, open to all England. It is specially worthy of note that this breeder, who has attained such splendid success, founded his entire herd upon the surest basis, viz., that of a few animals only, and those of surpassing excellence, undoubted origin, and the nearest possible blood consistent with the laws of consanguinity. This principle, faithfully carried

out, has given him a herd of great uniformity, remarkable quality, and beauty of appearance. Lord Berwick claims that Herefords are the best for farmers on moderate pastures, because they will thrive better on such land than the shorthorns, and will make good beef animals at two years old. The shorthorns he acknowledges have better frames, and oftentimes a better hind-quarter; but the Herefords are better in girth, as a general thing, and in shoulder-points. It is quite noticeable that the crops are usually much better filled in the latter than the former breed, and their quality is, to say the least, as good. He had at the time of our visit 175 females, including calves, and about 50 males. The preceding season he had 65 calves dropped.

ADAPTABILITY TO THIS COUNTRY.

We must confess to having had but a poor opinion of the breed previously to seeing this splendid herd, for the diatribe of Mr. Sotham, and the sorry animals that we had seen on exhibition, gave us no cause to admire them. Our experience of last summer has convinced us that, for certain districts of our country, it would be much more profitable to raise Herefords than any other breed. As good animals, whether we consider quality, form, or constitution, can be purchased of Lord Berwick for £120, as, if Shorthorns, would cost five times that sum; and for all the prairie country of the West, for Texas and California, they would equal, and perhaps excel, their costly rivals. In looking carefully through Lord Berwick's herd, we think that we saw as large, as symmetrical, and promising animals as in any other herd of any breed, if we except Samuel Thorne's, which probably is without an equal in any country. A short time prior to our visit, a stock-grower from Australia had purchased Herefords of Lord B., to try upon the plains of that country; he giving as his reason for the purchase that the Devons, turned loose on the *pampas*, became so fleet of foot as to outrun all but their very fleetest horses. The Herefords, he thought, from their great size, and their thrifty growth on coarse herbage, would do better for them than either Devons or Shorthorns, for, while they would not have the objectionable fleetness of the former, they would thrive better without care than the latter.

IMPORTANCE OF A HERD-BOOK.

Perhaps one reason why Herefords have given place to Shorthorns to so considerable an extent is, that there had been no herd-book published until the task was undertaken by Mr. T. C. Eyton, near Wellington, Salop. His first volume was issued in 1846, but even then the necessity for such a register was so poorly appreciated that, after another volume was issued, in 1853, he gave it up in despair. It then passed into the hands of Mr. Powell, of Hinton Court, near Hereford; but he died after bringing out one number. Breeders now began to see the value of the work, for they found every purchaser from beyond the confines of their county demanding of them the pedigree of their animals. A dim conception of the fact that purity of blood on both sides could only be proved by a printed register, entered their minds, and, spurred on by the pecuniary profits of herd-book registry, they have begun to give more patronage to the undertaking. Lord Berwick and other leading breeders have made most strenuous efforts to keep the thing going, and at present it may be expected that success will attend their efforts. The third volume has recently been issued by Mr. Duckham under the auspices of the Hereford Agricultural Society. The number of bulls recorded in the first two volumes is 901; in the third, 1,477.

HENRY CLAY'S IMPORTATIONS.

The earliest account we have of importations of Herefords

into this country is of two pairs imported by Henry Clay in 1820 or 1821, who "bred from them and their crosses until led to discontinue in consequence of an apprehension that he should breed in and in too far." Mr. Clay says of the breed that they "have the advantage of the Devons in size, greater length, more power consequently; and I think they are as quick in step, and as good at the pail." Mr. H. S. Randall, quoting the above language (Transactions N. Y. State Ag. Soc., vol. i., page 252), says that Mr. Clay had probably selected his stock for milking purposes, and hence they were better milkers than usual. Surely, if Mr. Clay found them good at the pail, it shows what might be done with the breed if breeders would allow nature to have more scope in developing the animal.

MR. RANDALL'S VIEWS.

Other importations were made at about the same time as Mr. Clay's and subsequently, but they have failed to become favourites generally, having given place to their great rivals the Shorthorns. Mr. Randall, in the article above referred to, says judiciously: "There can be but little doubt but that in the points regarded by the butcher, Herefords have few rivals, though perhaps the grazer would prefer a variety maturing somewhat earlier. In a country where feeding properties are regarded as the prime point, and the demand of whose markets will render it profitable to breed and graze a race of cattle exclusively for the shambles, the Herefords, from their aptitude to take on flesh, from the high quality of their beef, and from their endurance of travel, will always be deservedly held in high estimation. And although it cannot be denied that the more popular breed have, within a few years, superseded Herefords in a large majority of the more fertile districts of England, the latter not unfrequently bear away the palm from their more successful rivals at the English agricultural exhibitions, particularly where influences prevail arising from the proximity of large markets." Mr. Randall concludes thus: "In the remote Western States, on whose immense natural pastures early maturity is less a matter of consequence, where dairying properties are little regarded, providing the cow will yield sufficient milk to properly rear her progeny, and where beef-cattle must be driven great distances to market, there is little doubt that the Herefords would prove an invaluable breed." This coincides with our own opinion. We do not think that, as the breed is now constituted in this country, it can compete with Shorthorns in the rich pastures of the older States, where but few cattle would be kept on a place, and these be tended with great care; where, too, dairy stock is in demand, and can be had by crosses of Shorthorns on our native cows—for, as we have already shown, the Hereford men have bred almost entirely of beef, and have reduced the milking capacities of their stock to a low point; but on the western prairies, where the great droves of stock are raised for our consumption, we feel satisfied that pure Herefords of the Berwick and Bateman stamp, and crosses on our common stock, would prove eminently profitable.

It will be seen, therefore, that we assign to each breed a distinct sphere of usefulness, and do not admit that either embraces in itself all that is good and perfect. The field is wide. Let each have a share.

MR. CORNING'S PLACE.

Fifteen years ago, Mr. Erastus Corning commenced his career as a Hereford breeder, by the purchase of about twenty animals from Mr. Sotham, and entered into an ar-

angement with him to superintend and manage the herd. This connection continued for two or three years, when the direction of affairs was confided to Mr. Corning's son, Erastus, who has since continued in charge of the herd. At various times, importations have been made of nine cows in calf, and two bulls, one of which latter, Cardinal Wiseman, was bred by the Rev. Mr. Smithies, of Leominster, Herts.

Mr. Corning's farm, comprising 300 acres, lies on the banks of the Hudson, three miles below the City of Albany. Like all the land in that vicinity, his farm is mainly hilly; the soil of fair quality. There are 35 acres of pasture, 80 meadows, 15 corn, 32 oats, and the balance in roots, woods, orchards, &c. In almost any direction within three miles of the city, land is worth, on an average, £20 per acre, the price decreasing as the farm is more and more removed from market. Mr. Corning has had much difficulty from the washing of his side-hills, but thinks he has found an effectual remedy in tile-drainage. Seventy acres of tile have been laid, on an average $4\frac{1}{2}$ feet deep, and usually 14 or 15 yards apart. We were shown adjoining lots—one thorough drained, the other not—both laid down to pasture. On one the sod was smooth, even, and unbroken, the crop luxuriant and healthy; on the other could be seen, here and there, large masses that had been undimmed by currents of rain-water, and washed away, so as to leave their former resting-places denuded of verdure. Mr. Corning was about commencing to drain this lot, and purposes extending the system over the entire farm. He has perhaps one of the most extensive and valuable collections of green-house plants in this country, and some specimens exceedingly rare and valuable. There are over 450 feet of hot-houses, built in a substantial manner, and with taste. The pleasure-grounds adjoining the house are so well kept, the lawn is so beautifully green and closely shorn, and the trees so disposed, as to vividly recall the memory of English country-places recently visited. The collection of heaths is perhaps the finest in the country, there being over 200 varieties of this graceful plant. We noticed especially a *Hartnellii* of fine symmetry, very large and healthy. It must be 13 inches in diameter and 14 in height. The Philadelphia florists have doubted that it could be so successfully grown in this country. The *Victoria*, quite a new variety; the *Vestita alba* in a tub outside the house, probably 4 by 3 feet in size, and very compact at that, were well worthy of examination. Of the orchids, the *Dendrobium speciosum*, unpretending in appearance, but very costly; the *Dendrobium nobile*, a fine specimen, with 30 blooming shoots that will give it 300 flowers next season; the *Drosera rotundifolia*, with its smooth crimson leaves; the *Perfugium grande*, and hundreds of others, testify to the skill and zeal of the modest Scotch gardener, William Grey. In the ground we noticed a magnificent *Erica transparentis*, 6 by 6 feet, that has scarcely a mate this side of "Edinboro' toon." But to "return to our muttons," which in this case are Herefords.

Mr. Corning says that he has given faithful trials, side by side, to Short-horns and Herefords, and has convinced himself of the superiority of the latter, for withstanding our cold Northern climate, for making flesh on less food, and for activity as workers. He has had at times twenty or thirty of each breed in his stables, and the result is that he has chosen what he thinks is the "good part that cannot be taken from" him. His animals are not kept up and fed to get them in high condition, for he has bred not for the butcher but for the breeder.

The cow stalls are separated by partitions carried up quite to the ceiling, which seems to us an unnecessary waste of material, and as having a tendency to obstruct ventilation. The liquid manure is collected in tanks, and after being diluted with water, is carted out by means of a hog-head on a cart frame, and distributed over the land through a perforated pipe, extended across the tail of the cart and connected with the hog-head, the whole apparatus being nothing other than the street sprinklers in common use in this and other cities.

Mr. Corning's herd usually comprises twenty head of stock, but he has not so many at present. The price of first-class females in England is about £65, and the charges of importation (which include £15 for passage, the house on deck, hay, straw, and feed) are £20 to £25 more, the whole making the animal cost, delivered at Albany, within £100.

The bull Cardinal Wiseman, bred by Mr. Smithies, and now ten years old, has been a fine animal in his time. He has a good frame, but it shows too plainly just now, for he is very thin and gaunt. A calf, by Defiance, out of Victoria 2nd, by Cambria 887, was bred by Mr. Humphries, of Lorain County, Ohio, and promises to make a superior animal. His sire and himself were exhibited at Syracuse, at the State Fair, and the calf seemed so full of promise that Mr. Corning purchased him. He is very smooth, his upper and lower lines good, crops well filled, and drops well in the flank.

Grace, an aged cow of Lord Berwick's breeding, is deep and roomy, and has a good flank. She is by Tom Thumb (243), dam Wood-Pigeon by the Count (251). Her dam was the winner as the best cow at Shrewsbury in 1856, and The Count has sired some of Lord B's best heifers.

Victoria 4th, coming seven years' old, by Cardinal Wiseman, out of Victoria 1st, is an imported cow. She is very heavy, and in high condition. She is said to have had throughout the winter only two quarts of ship stuff, with hay and ataka, but is really in too high flesh. She is very lengthy and deep, and must weigh 1,300lbs. Lady Goddard, another imported cow, Cora, and Princess, with a calf by her side by Cardinal Wiseman, are worthy of notice, and the young stock is quite creditable.

The lovers of fine carriage horses would be pleased to see a

pair of spanking bays that Mr. C— drives. They can go in 3:13 double, and one of them in 2:45 single; are without a fault or blemish, sixteen hands high, six and seven years old, and cost the nice little sum of £500. A brood mare of wonderful strength and constitution, by an imported English dray-horse out of a common mare, should not be passed without a notice. She pulled twenty-six barrels of flour at one load from the city to the railroad depot across the river, with enough men sitting on the hills to balance the load.

We cannot conclude our notice of Herefords more appropriately than by quoting the language used by Mr. R. Smith in his last report to the Royal Agricultural Society of England:—

"In our present day we see recorded in the Society's Journals an increasing number of competitors from different parts of the kingdom. This proves that the value of the breed is becoming more appreciated. A few years since they were almost exclusively in the hands of the tenant farmers of their native county. They now form the principal breed of the counties of Monmouth, Radnor, Brecon, Salop, and parts of the counties of Gloucester, Worcester, Warwick, Stafford, Wilts, Herts, Dorset, Somerset, and Cornwall. There are also some good herds in North Wales and Scotland, for which districts their hardness of constitution, thick but mellow hides, wavy, soft, and moderately long hair, render them peculiarly adapted."

At the Chester Show of the Royal Society we saw the representatives of this breed. The entries were of Aged Bulls, 9, Young Bulls, 13, Bull Calves, 14, Cows in calf or milk, 8, Heifers in calf or milk, 8, and Yearling Heifers, 14 entries. The prize bull, the property of Mr. Price, girthed 8 feet 7 inches. Another highly commended bull, shown by Lord Bateman, girthed 8 feet 9 inches. These exceeded in girth the first prize old bull in the shorthorn class by 8 inches—his girth being 8 feet 1 inch. The show of Herefords was said to have outnumbered any previous one, with the exception of that at Shrewsbury (a few miles from Lord Berwick's farm), and to have been of excellent quality. It certainly was far ahead of anything we have seen exhibited in this country as yet; but we trust the day is not distant when on some one of the show-grounds of Western Agricultural Societies as respectable a congress of these valuable animals may be assembled.—New York Tribune.

THE PRICE AND PRODUCTION OF BUTCHER'S MEAT.

The growing increase in the consumption of butcher's meat in the United Kingdom has become an important consideration in agricultural management. During the period of the low prices of wheat, it has prevented or mitigated to a considerable extent the injurious effects that otherwise must have been experienced by the tenant farmer. This increased consumption arises from two causes which in all probability will continue to operate, namely—the increase of the population, at the rate of 1,000 per day, and the improvement in the condition of the operative classes throughout the kingdom; consequent upon the enormous extension of commerce and manufactures, and the abundant employment created by railway and other national works. As, therefore, this demand is likely to become more extended rather than diminished, the question of a future adequate supply of meat is beginning to assume greater importance

than even that of the home supply of bread corn; inasmuch as the latter can be obtained, in case of need, from almost every country with which we have commercial intercourse. Whereas the importation of cattle is wholly confined to a few neighbouring States, owing to the danger and difficulty of longer sea voyages, which involve a heavy per-centage of loss by deaths. From those countries, too, whence we obtain the largest and best supply of cattle and sheep, the exportation appears to have reached its maximum. And, although the quality is greatly improved by judicious crossings with English types, the actual gross weight of meat is considerably smaller than formerly. This may, in some degree, be owing to the stringency of the Customs regulations for preventing the introduction of diseased animals into the country. But, on the other hand, it is evident that in such small, populous, and

flourishing countries as Holland and Belgium, from whence we obtain the best supply of both cattle and sheep, the exporting power must necessarily be limited. The number of sheep from Germany has certainly increased; but these are chiefly Merinos, and their quality may be judged of, when we state that they do not fetch more than from 15s. to 18s. each in the market, after an expense of 2s. 6d. per head for freight, and a heavy per-centage of loss on the voyage.

Had it not been for the increased supply and improved quality of the animals imported from Ireland, the price of butcher's meat in London would have been much higher even than it now is. The old Irish herds of animals of all kinds have been supplanted or crossed with the best English breeds to so great an extent that the Irish graziers can now successfully compete with those of England in the size and quality of either cattle, sheep, or swine. Some Irish oxen having sold at Smithfield at from £21 to £27, and sheep at from 50s. to 65s. per head.

The following table will show the decrease in the importations of animals since 1854:—

IMPORTATIONS OF CATTLE AND SHEEP IN THE YEARS 1850 TO 1859 INCLUSIVE.

Years.	Cattle of all ages.	Sheep.	Aggregate number.
1850	66,462	143,498	209,960
1851	86,520	201,859	288,379
1852	93,061	230,037	323,098
1853	125,253	259,420	384,673
1854	114,200	183,400	297,600
1855	97,400	162,000	259,400
1856	92,777	135,588	228,365
1857	92,963	177,207	270,170
1858	59,001	184,482	243,483
1859	85,477	250,580	336,057
From 1850 to 1854	485,406	1,018,214	1,503,710
1854 to 1859	427,618	909,857	1,337,475
Total decrease..	57,788	108,357	166,235

From the above facts it appears that the aggregate importation has fallen off considerably since 1854, being an average of 11,575 cattle of all ages, and 21,671 sheep and lambs per year; whilst the quality of the latter is much inferior to what it was previously, despite the great increase of price in the English market. There is therefore no reason to expect that we shall have much increase of competition in the cattle market with the foreigner. It is, then, of the utmost importance, under the certainty that the consumption must continue to increase, if moderate prices are sustained, to inquire how the home supply may be so maintained as to meet the demand, and thus prevent the rates from advancing to such a degree as to act as a prohibition on consumption by the operative classes.

It is a question whether the modern practice of getting animals of all kinds for the butcher at the earliest possible age has not tended in some degree to lessen the quantity of consumable meat. We refer of course to the extended practice of fattening lambs and calves for the butcher, and thus decreasing the

number of mature animals, and consequently the quantity of beef and mutton. Great credit is due to the graziers of the present day for the efforts they have made (and with so much success) to attain precocity in the different classes of animals, by which a much heavier amount of meat is brought to market. But on the other hand, to consign so large a portion of the stock to the butcher in their infancy, we believe to be contrary to the interest of the producer as well as of the public at large. It may be said that to reduce the quantity of lamb and veal would occasion considerable rise in price. We say, be it so; this would be an additional reason, because it would remunerate the grazier better. While, as those descriptions of food are chiefly consumed by the wealthy classes, the public at large would be uninjured by it, because the advance in price would fall upon those who are best able to bear it, and a large supply of consumable meat would be brought to market to meet the increasing demand, and thus keep the price from reaching a maximum that would draw the operatives out of the market, or at any rate cause him to lessen his consumption. It is simply a question between a supply of the luxuries and the necessities of life.

With the same end in view—the increase of animal food to meet the increasing demand—it is desirable to extend the cultivation of food for a greater number of animals. In this point of view the farmer should keep his eye on the malt-tax, which operates most injuriously, it being clearly ascertained that a small proportion of malt aids most materially in the fattening of cattle and sheep, by reason of the condensation of the saccharine in the process of malting. This is an additional reason for the abolition of an impost, in every respect a heavy drawback upon the agriculture of the country. We are by no means disposed to despair of having remunerating prices for cereal produce; indeed, our exposition of the state of the corn trade, as given a short time since, is already verified by the present position of the market. But any deficiency in the stock of corn is, as we have already said, easily supplied, the whole cultivated world being open to us. Not so, however, with animal food. Look, for instance, at the articles of butter, tallow, wool, and leather, all of which must be taken into account in dealing with the subject. The following table will show their respective prices for the seven years from 1851 to 1857 inclusive:—

Year	Butter.		Tallow.		Wool.		Leather.			
	Carlow.		per cwt.		English.		per lb.			
	s.	s.	s.	d.	s.	d.	d.	d.		
1851	78	80	36	6	37	6	14	14½	12	23
1852	74	80	37	0	42	0	13¾	16½	12	21
1853	86	98	45	0	58	0	17	19½	13	23
1854	104	—	62	9	70	0	14	16	15	22
1855	96	104	48	0	64	0	14	16	—	—
1856	100	104	46	0	48	0	14½	19	16	28
1857	112	—	62	0	—	0	20	0	24	31

We have not the prices for 1858 and 1859, but we

have every reason to believe they would exhibit a still further advance in most cases; nor is there the slightest probability that the supplies of any one article of animal produce is likely to decline through an increase of the foreign supplies, or that the consumption can do otherwise than increase if prices remain at a consumable rate.

In leaving these remarks for careful consideration, we append to them a statement of the prices of beef and mutton for the seven years from 1851 to 1857 inclusive.

PRICES OF PRIME BEEF AND MUTTON FOR SEVEN YEARS FROM 1851 TO 1857.

	Beef.		Mutton.	
	s.	d.	s.	d.
1851	3	4	4	0
1852	3	4	4	6
1853	4	2	5	0
1854	4	4	4	6
1855	4	4	4	6
1856	4	6	5	0
1857	4	2	4	10
Present price ..	5	4	6	6

WHAT THE IMPLEMENT MAKERS WANT.

It is by no means easy to say what it is that the leading implement makers really require. Of course the difficulty only increases in proportion as they become less and less inclined to offer any explanation for the line of conduct they have been compelled to adopt. The world at large can make no more than a guess why the Show at Canterbury is to be deprived of such support. The General Meeting of the Royal Agricultural Society passed over without a word on the subject; and people still wonder what is the matter? A short time since, and the business of the week was declared to be too much for it. The Triennial system was asked for, granted, and pronounced to work well. The Quadrennial, however, would be yet more convenient, and was accordingly acceded to. And then, when the Society has done everything in reason, if not indeed everything that was asked of it, the manufacturers fairly wash their hands of the concern! It is utterly impossible to let so public and important a matter as this blow over in silence or without inquiry. It may be said that the Trade is still more convinced of the impolicy of the prize system. But this can scarcely be, either; at least if we are to judge by deeds as well as words. It is only within a very few weeks that such men as the Messrs. Howard, Ransome, and Hornsby sent not merely their implements, but men to direct them and horses to draw them, right into the heart of Scotland, to contend against each other for a prize given under the auspices of the President of the Highland Society. As will be remembered, the only one of these firms that was successful at Strathord was Hornsby; and so, naturally, they will all have to enter again for Dumfries. Or, if they do not, the public will be thinking that the prize system is clearly wrong—when certain gentlemen won't play at it; and who, like the spoiled child, won't win any more unless they can have it all their own way. But it is urged, the Royal Agricultural Society of England has broken faith with them. For four long years the plough-makers' minds should have been at ease. The men of Kent, however, and very properly as we take it, have resolved to arrange for some illustration of their own local plan of proceeding; and the Society, with every precedent for so doing, has taken these local premiums under its cognizance. Whereupon the Hornsby's, Howards, and Ransomes turn round

in a moment. They will not contend for prizes in 'sixty. They will not countenance prize-ploughing in Kent. They will not enter at Canterbury. And what is the immediate and logical deduction of this fixed resolve? Why, in a few weeks, if not days, of making it, the Ransomes and Howards are striving one against the other for a prize for the best plough, at a place called Marden, in Kent! The Messrs. Howard, according to a local journal with which we were favoured, have been devising an implement for the especial use of the Weald farmers. Earlier in the year the Hornsby's had yet more decided success in the same county; while the Ransomes have for some time past had a good connexion in the district. We repeat, that it is by no means easy to say what it is the implement-makers want. They object to the prize system, and straightway they are off, as eager as school-boys, to try and win a prize some hundreds of miles away! They will not have their ploughs tested for prizes this season in Kent, and they are having their implements subjected to so public an ordeal within a week or two of the rumour! They will not enter at Canterbury; but they still intend to exhibit there. We are seriously assured that the new Implement Bazaar, in Swanlane, will have a stand on the Show-ground, in which will be found many of the best-known manufactures of the best houses! In a word, without any explanation or pretence of being in the secret, one can only wonder more and more what good all this inconsistency and contradiction is to conduce to.

We have purposely directed or illustrated the case as it stands by the plough trials. Even beyond the recent interest these have created, they now offer another point of concession, as made to the exhibitors. The Judges at Strathord have backed their decree by a Report, which we give in full. It is drawn up with much ability, and is especially remarkable for the courage with which it faces the different "points" of what should be a good implement. As a comparison between the merits of a wheel and swing-plough the paper will be sure to have much weight, especially in the north. It will go a great way, moreover, to teach people the principles of ploughing, and our desire would be to see some other as official a document issued under the sanction of

English authority. We have all, of course, our leanings and likings, and what might tell very well at Strathord might not be found to answer at Warwick, Chelmsford, or Canterbury. A Perthshire Farmer, whose letter follows the Report, is much more inclined to the English than the Judges themselves. But, somewhat severe and pointed as he is in his criticism, and an eye witness, moreover, as he was of the trials, it is much to be regretted that he did not put his name to his communication. He may be assured that he will not have half the effect without it.

At Strathord, as our readers have previously heard, the English houses, with the one grand exception of the Hornsby's, were beaten. The Judges thus significantly comment upon so unexpected a result: "The Duke of Athole and the members of committee have successfully carried out now for three years, at great expense and personal trouble, these national competitions in ploughs and ploughing, at a season of the year when ploughs are most in use. We attach far more importance to them than to those attempted under the auspices of the national Agricultural Societies of England and Scotland; for these are made in summer when the plough is very little in use in Scotland, and the competition takes place necessarily either on hay stubble, with a tender sward, or on loose fallow land, and in weather usually dry. These are circumstances peculiarly favourable for rectangular furrows and wheel-ploughs, and we are not surprised that, for some years, such ploughs have been placed among the first of the competing ploughs." Mr. McLagan wrote something like this, although not put so strongly, in his report of the Edinburgh Meeting, as published in the Highland Society's Journal. If we make this remark a general one, then the match at Marden in May may be worth far more as a guide and a test than another at Canterbury in July. But if it should be so, there follows the rather awkward question as to the value of all the previous trials that have taken place in the heart of summer?

We have very reluctantly touched again on this matter, as a duty, and, as we hope, without either prejudice or favour. The present conduct of the great implement houses is to the world at large altogether incomprehensible; and we believe that by persisting in it they will be doing alike an injustice to themselves and their customers. We should be the last to say that the management of the Royal Agricultural Society is free from all fault or blame. On the contrary, we have never hesitated to declare how susceptible it is of improvement. But this is not to be attained by sulking away from and indirectly ignoring an institution that has done so much good, and may do so much more—even to the implement-makers themselves. There should be a warmer feeling of mutual appreciation between the Agricultural Engineers and the Society in Hanover Square, and that we trust soon to see brought about. But we are inclined to look a little even beyond this, and to put them together for the especial advantage of agriculture. What have open competition and public exhibition done for the cause in the

last twenty years? There can be but one answer, and that is—*More than ever was done before.*

THE STRATHORD PLOUGHING MATCH,

REPORT OF THE JUDGES ON THE TRIAL OF SWING AND WHEEL PLOUGHS.

Having consented to act as Judges at the Trial of Swing and Wheel Ploughs held on Shielhill Farm, Strathord, on the 7th and 8th of March, 1860, at the request of the Committee, composed of the following gentlemen—His Grace the Duke of Athole, President; Captain M'Duff, New Mill; Robert Elliot, Lighthow; Duncan M'Donald, The Hatton; Henry Anderson, Burnside; Robert Smith, Tophead, Secretary—we received the following "Instructions to Judges," drawn up by the Committee:—

PLOUGHING MATCH, SHIELHILL FARM, STRATHORD.

INSTRUCTIONS TO JUDGES.

The objects of this ploughing-match are chiefly—

- 1st. To test the general merits of the competing ploughs.
- 2nd. To test the comparative efficiency of the swing and wheel ploughs.
- 3rd. To ascertain which of the competing ploughs is best adapted for all kinds of work in which that implement is usually employed on the farm.

To enable the Judges to decide and to arbitrate in regard to these matters, the Committee of Management beg to direct their attention to the following points:—

FOR PLOUGHS.

1. Ease of draught.
2. Easiest for holder.
3. Cleanest "goer" through loose soil.
4. Simplicity of construction, united with efficiency and facility for fixing and adjusting coulter, wheels, bridle, &c., &c.
5. Form of mould-board best adapted for turning the most perfect furrow on different descriptions of land.

PLOUGHING.

1. Best and cleanest cut, land-side and bottom.
2. Best laid furrow, having regard to compactness and form.
3. Grass or stubble best turned in and buried.
4. Most uniform ridge.
5. Best feering.
6. Best finish.

The first day the ploughs will all be engaged on lea-ground, but on the following day, the whole, or any portion of them which the Judges may select, will be required to work on any kind of ground, or in any way the Judges may direct.

The Committee have only further to request that the Judges will append to their award a Report, stating why they consider the successful ploughs superior to the others, having regard to the different points detailed above, or to any others which their enlarged experience may suggest, or conceive to be of importance, so as to enable the Committee to lay before the public the reasons which have guided the Judges in their decisions; as anything emanating from gentlemen of their standing and experience must carry with it great weight and consideration, and perhaps tend to solve some of the difficult questions on the merits of the different kinds of ploughs which have long been disputed points among farmers.

ATHOLE, President.

The following are the conditions of the trial as advertised by the Committee:—

A Ploughing Match will take place on the farm of Shielhill, on Wednesday and Thursday, the 7th and 8th of March next, commencing each day at Ten o'clock.

The Match is open to Makers of Ploughs only; and as its object is chiefly to test the comparative merits of Swing and Wheel Ploughs, each competitor will be allowed to enter two of both kinds.

On the Second Day, only those Ploughs will be required to

appear which the Judges consider worthy of further trial, in any way or in any ground they may choose.

Prizes.—1st, £2, and a Medal to the Maker, and the Highland Society's Medal to the Holder. 2nd, £2. 3rd, £1 10s. 4th, £1. 5th, 15s.

An Extra Medal will be given to the Maker of the best Plough of the class which fails to carry off the First Prize.

PLOUGHS ENTERED FOR THE STRATHORD PLOUGHING MATCH, 1860.

No	Makers.	Residence.	Description of Plough.	
			Swing	Wheel
1	Ransome & Sims	Ipswich	—	1
2	R. Hornsby & Sons	Grantham, Lincolnshire	1	—
3	David Robertson	Newmill, Guildtown	1	—
4	Andrew Gray	Meikle	1	—
5	John Fisher	Bankfoot	1	—
6	James Finlayson	Pendreich, Bridge of Allan	—	1
7	J. Douglas Allan	Culthill, Caputh	1	—
8	Andrew Gray	Meikle	1	—
9	J. & R. Howard	Bedford	1	—
10	James Brown	Auchinbowie, Stirling	—	1
11	J. & R. Howard	Bedford	—	1
12	Ransome & Sims	Ipswich	—	1
13	Jam. Stewart	Kirksteps, Co. Angus	1	—
14	James Stewart	Kirksteps, Co. Angus	1	—
15	Hugh Martin	Morningside, Balbeggie	1	—
16	James Brown	Auchinbowie, Stirling	—	1
17	William Miller	Airtully, Stanley	—	1
18	David Robertson	Newmill, Guildtown	—	1
19	William Miller	Airtully, Stanley	—	1
20	J. Douglas Allan	Culthill, Caputh	1	—
21	John Fisher	Bankfoot	1	—
22	Andrew Morris	Gorthy, Madderty	1	—
23	Alexander Cameron	Tullymet, Dunkeld	1	—
24	R. Hornsby & Sons	Grantham, Lincolnshire	—	1
25	J. Douglas Allan	Culthill, Caputh	—	1
26	William Miller	Airtully, Stanley	—	1
27	R. Hornsby & Sons	Grantham, Lincolnshire	—	1
28	William Miller	Airtully, Stanley	1	—
29	J. & R. Howard	Bedford	—	1
30	R. Hornsby & Sons	Grantham, Lincolnshire	1	—
31	J. Douglas Allan	Culthill, Caputh	1	—

[A few of the above ploughs were not present.]

In following out the above instructions, we devoted our attention the first day to testing the merits of the competing ploughs on lea, and on the second day to testing them in cross-ploughing land that had been turned up in the autumn.

The fields on which the lea-ploughing was tried were hay stubble, the soil being of medium stiffness or tenacity, in some parts most uniform in character, in others rather thin of soil, with gravelly subsoil. In our decisions, we took into account the variations of the soil. Being requested by the committee to direct our attention to the proper form of the furrow, the proper laying of it over, and the burying of the grass, we observed that attempts were made to accomplish these objects in three marked and different ways: 1st. By an almost rectangular furrow, with the width too great in proportion to its depth, thus causing it to be turned too much over, as represented in J. and R. Howard's wheel-plough. 2nd. By the pressing of a slightly-crested furrow by means of a convex mould-board, as represented in Richard Hornsby and Sons' ploughs. 3rd. By cutting the furrow of a trapezoidal form, or rather of an irregular form of unequal depths at the two sides, and in some instances slightly deficient in depth or thickness in its middle; such a furrow, when turned over and placed in its proper position, presents a sharp apex, crest, or shoulder, and was represented by Andrew Gray's swing-plough, No. 4, and James Finlayson's wheel-plough, No. 6.

According to the first method, the effect is to lay the furrow too much on its back, a position justly condemned by all practical men, as, though the grass may be well covered, the same amount of mould cannot generally be obtained for

the covering of the seed as in the crested furrow. According to the second method, considerable pressure is required to maintain the furrow in the proper position; and often, in the case of old lea or stiff soils, the elasticity of the turf overcomes the pressure, the furrow tends to stand on edge, and an opening is left between the furrows—so that in sowing, some of the seed drops to the bottom of the opening, and an irregular braird and consequent unequal ripening of the crop is produced. We observed this opening of the furrows to have taken place in some degree the day after the lea was ploughed, in Nos. 24 and 27, Hornsby's wheel-ploughs. We consider a crest or shoulder in the lea furrow—whether of the form of a rhomboid or trapezoid, but especially the latter—an advantage in most of the soils of Scotland, in the present circumstances of agriculture, for the following reasons: 1st. Because the grass is more easily buried by this form of furrow, and consequently the ground kept cleaner. 2nd. Because there is more compactness, and less tendency of the furrow to open up again after being laid over, as its edge falls into the hollow or groove in the middle of the furrow previously turned over. 3rd. Because more mould is obtained, and less harrowing required, for the covering of the seed. 4th. Because, on account of the compactness of the furrows, a more regular and equal braird, and earlier and more equal ripening of the crop, are produced. While we give the preference to a crested furrow in lea ploughing, we do not extend this preference to all kinds of crested furrows; for many ploughmen not acquainted with the proper way of dressing their irons often overdo the crest, and produce work that is not firmly put together, and cannot support the treading of men and horses. We are happy to say that there were few instances of this at the Strathord trial of ploughs. And we wish it to be particularly understood that we do not approve of the crested form of furrow in stubble-ploughing: for even in lea-ploughing we consider it a disadvantage of the crested furrow in leaving part of the soil at the bottom of the furrow not turned up—a disadvantage, however, more than counterbalanced by the advantages mentioned above; but in stubble-ploughing or in crossing we consider it a much greater disadvantage, and a most decided fault, as there the bottom of the furrow should be as level as possible.

Though we give the preference to the crested furrow in lea-ploughing, we would not have it supposed that we underrate the advantages of the rectangular furrow in the same description of ploughing. We may mention what we consider three of the most important of these advantages: 1st. By means of it the greatest solid contents of soil can be turned over at the least expense of labour; 2nd. The greatest surface is exposed to the action of the atmosphere; and 3rd. From the furrow being wider, there is a considerable saving of time in ploughing the same extent of land. We would remark, however, that an exact rectangular furrow, when turned over and laid in position, is not compatible with a perfectly level furrow sole, which in theory is the case. For the effect of friction, so often overlooked in theoretical calculations, is here not taken into account. It must be apparent to everyone that a furrow of a soft material, like soil of any description, cut exactly rectangular, will not have quite that shape when laid in position, as the part near the apex being subjected to considerably more abrasion or friction than any other part, from the mould-board raising it and turning it over, will be somewhat flatter, and the furrow will have the appearance of being laid too much on its back; and hence, to make an exactly rectangular furrow in position, it should be cut somewhat deeper at the land-side, or at the point of the sock, than

at the other side. There are cases of lea-ploughing where the rectangular furrow is as advantageous as the crested, such as in early ploughing in light friable soils with a tender sward of grass, and where the crop is to be drilled; but we should bear in mind that early lea-ploughing is the exception rather than the rule in Scotland, and most of the grain is sown broadcast, and not drilled, in which case the more numerous the furrows, and the better they are closed, the more uniformly will the seed be scattered, and the more equal the braird.

On the second day we tested the merits of the ten ploughs selected on the first day, and these were Nos. 3, 4, 6, 8, 9, 17, 20, 24, 27, and 30. They were tried in crossing land that had been ploughed before the frost, when also their draughts were ascertained by means of the dynamometer. The soil

was in a most friable state, being well-mouldered down by the frost; it was, therefore, well adapted for the power of the ploughs to clear their way through the loose soil. The implement which performed its work best was No. 4, Andrew Gray's swing-plough, which not only laid the furrow well over, but brought up the loose soil from the bottom, clearing its way well. Some of the other ploughs, which made good work on the lea, were deficient in cross-ploughing, for they did not clear away the loose soil from the bottom and turn it up to the surface, but pushed it from them, pressing it together by means of the mould-board.

We present in a tabular form the following observations, made the second day on the ten ploughs selected for further trial:—

Maker of Ploughs.	Description of Ploughs.	Width of Ridge.	Width of Furrow.	Form of Furrow.*	Draughts of Ploughs.	Price of Ploughs.
No.		feet. inches	inches.		ewts.	£ s. d.
4. Andrew Gray.....	Swing	20 6	8 1-5th	1 inch	2½	3 15 0
6. J. Finlayson.....	Wheel	20	8½	ditto	2 9-10ths	6 10 0
8. Andrew Gray.....	Swing	20	9	ditto	2½	3 15 0
9. J. and R. Howard.....	Wheel	19 6	9	square	2½	4 7 6
17. William Millar.....	Swing	24 6	9 4-5ths	ditto	2½	3 15 0
20. J. D. Allan.....	Wheel				2½	
24. R. Hornsby and Sons.....	Wheel	20	8½	ditto	2½	4 10 0
27. R. Hornsby and Sons.....	Wheel	18 9	8	½ inch	2 4-11ths	4 13 6
30. R. Hornsby and Sons.....	Swing	18 9	8	ditto	2½	4 10 0

We are unanimously of opinion that the prizes should be awarded to the following ploughs in the order of merit mentioned as those "best adapted for all kinds of work in which that implement is usually employed on the farm," viz.:

- 1st to No. 4. Andrew Gray, Meikle—*Swing*.
- 2nd to No. 6. J. Finlayson, Bridge of Allan—*Wheel*.
- 3rd to No. 27. R. Hornsby & Sons, Grantham—*Wheel*.
- 4th to No. 24. R. Hornsby & Sons, Grantham—*Wheel*.
- 5th to No. 8. Andrew Gray, Meikle—*Swing*.

No. 30 commended.

No. 3 would have obtained a prize, but the committee informed us that it was disqualified on account of an informality in the entry.

The first prize having been gained by a swing-plough, the extra medal was awarded to the first wheel-plough, No. 6, J. Finlayson's.

In summing up our reasons for the awards, we have to state that the work done by No. 4, Andrew Gray's swing-plough, on the lea was a bold-crested furrow, firmly put together, well closed, and well finished. Whatever difference of opinion there may have been the first day as to the exact place it should have held, there was none the second day as to its proper place in the cross-ploughing, and in the final arranging for the premiums. No. 6, James Finlayson's wheel-plough, was preferred to No. 4 in the lea-ploughing, but it was not equal to it in the cross-ploughing, and indicated, besides, a much heavier draught. The furrows of Hornsby and Sons' wheel-ploughs, Nos. 24 and 27, were not so firmly put together, and tended the second day to show openings between them. In the cross-ploughing, whether from

the mould-board being too convex for this work, or some other cause, the loose soil was not so much turned over as rubbed into a furrow-slice. Howard's wheel-plough, No. 9, laid the lea furrow too much on its back, its draught was considerably above the average, and it did not clear its way sufficiently in the cross-ploughing.

We were next instructed to test the "comparative efficiency of the swing and wheel-ploughs." We may premise here that some of the ploughs competing might have been used either with or without wheels, and, with men accustomed to use them, would have produced equally good work either way, such as Finlayson's. And we cannot but express our doubts as to the advantage of attaching wheels, however ingenious the contrivance, to an ordinary swing-plough, when the effect of such an addition is to raise the price of the plough and wheels to £6 10s.—the price of Finlayson's—particularly if the work could have been performed as well without as with wheels. The main use of the wheels is to insure uniformity of depth, and to enable the farmer to employ less skilful workmen in the ploughing of his land. It has been well said that the wheel-plough partakes more of the character of a machine, and the swing-plough more of that of an implement. By means of the wheel-plough, the work is performed with more exactness, and is less dependent on the skill of the ploughman than the swing-plough. In some kinds of ploughing the draught is very much diminished by the use of wheels, such as in lea-ploughing, where the surface on which the wheels run is even and smooth; but in stubble or cross ploughing the wheel-plough has not always this advantage, particularly in damp weather. Thus, in the trial of the draughts of the ten selected ploughs in cross-ploughing, after the sun had melted the frozen surface of the soil which adhered to the wheels, the average draught of the swing-ploughs was 2½ cwt., and of the wheel-ploughs 2½ cwt.—that is, 14 lb. more. We consider that wheel-ploughs are better adapted for some descriptions of soil than for others; for soils, for instance, possessing uniformity of character, or those free from stones, whether land-fast or loose, but of such a size as to impede the working of the im-

* The measurements in this column were taken by applying an ordinary square to the apex of the furrow, one of the arms of which was made to rest on one side of the furrow. If the furrows were square—that is, if the angle at the apex were a right angle—the other arm of the square would, as a consequence, rest on the other side of the furrow. But if the furrow were crested—that is, if the angle were an acute one, or less than a right angle—the other arm of the square would be elevated above the other side of the furrow; and the numbers in the column indicate the heights of that elevation at six inches from the apex.

plement. It is suggested as a reason why wheel-ploughs are more used in England than in Scotland, that the soils in the former possess a more uniform character than those in the latter. And it is worthy of notice that the use of wheel-ploughs has been very much on the increase in Scotland since the soil has been improved by thorough draining, by being freed of land-fast stones, and rendered more uniform by deep cultivation and liberal manuring. While we are inclined to give the preference to swing-ploughs for general use in Scotland, in the present circumstances of agriculture, as being more capable of accommodation to the different operations usually performed by the plough, such as drilling for green-crops, &c., we consider the wheel-ploughs deserving the attention of those farmers for whose soil they are adapted; as in the present state of the labour market, when so many of the best ploughmen are emigrating, less skilful labourers may be employed to hold the plough, just as the introduction of the reaping-machine has given employment during harvest to many who, from want of skill in the use of the sickle or scythe, were of no use in the harvest-field before.

We cannot conclude this report without expressing our sense of the obligations under which the agricultural community, throughout England and Scotland, is laid to his Grace the Duke of Athole and the Members of Committee, who have so successfully carried out now for three years, at great expense and personal trouble, these national competitions in ploughs and ploughing, at a season of the year when ploughs are most in use. We attach far more importance to them than to those attempted under the auspices of the national Agricultural Societies of England and Scotland; for these are made in summer when the plough is very little in use in Scotland, and the competition takes place necessarily either on hay stubble, with a tender sward, or on loose fallow land, and in weather usually dry. These are circumstances peculiarly favourable for rectangular furrows and wheel-ploughs, and we are not surprised that, for some years, such ploughs have been placed among the first of the competing ploughs. We wish also to record our sense of the spirit and enterprise of the English plough-makers, who so promptly responded to the invitation of the gentlemen connected with the match, and brought, at great personal inconvenience and expense, not merely their ploughs, but, in some instances, their horses, to compete with their brethren in trade on this side of the Tweed.

HENRY STEPHENS, GEORGE HOPE,
PETER M'LAGAN, THOMAS WYLLIE.
WILLIAM FORD,

STRATHORD PLOUGHING MATCH.

TO THE EDITOR OF THE PERTSHIRE ADVERTISER.

SIR,—This long-talked of report has at length made its appearance, and as the public have looked forward with some anxiety for the reasons which guided the judges in giving their memorable decision, I venture to solicit as much of your valuable room as will enable me to give expression to my candid opinion, that opinion being formed from closely watching the proceedings from their beginning to their final issue.

THE DUKE OF ATHOLE.

I cordially join issue with the general public in yielding to his Grace the full merit of liberal intention in instituting these

ploughing matches; but is the question between wheel and swing ploughs a single point nearer settlement? On the contrary, a question which is in itself simple has become vexed and complicated, by attempting solution through a channel which from the first was felt to be utterly wrong.

THE COMMITTEE.

These gentlemen, in laying before the judges the grounds upon which their deliverance was to be given, have been sufficiently explicit. No less than fourteen separate items; and lest offence might be taken at the merely mechanical turn which such elaborate instructions might give to the judges' position, they (the committee) wind up by a piece of admirable *soft saunder*. The judges have had their revenge; they have set at nought the fourteen instructions, and returned the *sawder*. The plough which stands at the top of the judges' list did not show one of the characteristics named under the head "Ploughing." The land-side was badly cut, the furrow loosely laid over, the grass seen from ridge-end to ridge-end, the furrows unequal, the finish soft and wadry, and the ferring unquestionably one of the worst on the field. The young man who held this plough knows his business well, but he felt and expressed that he was making bad work! Then why is Mr. Howard's plough mentioned twice in the course of this report? Is it because it was the worst of its class? or is it in deference to an ill-concealed leaning towards that implement? And why have the ploughs made by Mr. Miller of Airtully, Nos. 17 and 19, been entirely passed over, although they left two of the best ridges on the field?

THE JUDGES.

No one will deny these gentlemen the "devotion" which they claim in the outset of their report. It must have been obvious to every person present that an anxious desire to do their duty characterised their whole proceedings; but it must have been obvious to every practical man present, that they had accepted an office to which the event shows them to be little fitted. If the judges had announced that the plough which was most successful in forming a "trapezoidal" furrow would be preferred, the ploughmen would have known how to act; but instead of that, they are allowed every one to do as he thought best, and now they are told that "attempts were made" to form the "proper furrow" in three marked and different ways.

1st. "By an almost rectangular furrow, &c., as represented in J. and R. Howard's wheel plough." Now to assert that Howards' man attempted to form a trapezoidal furrow by ploughing a rectangular one is simply absurd. The man ploughed rectangularly because he thought it best; and is a plough to be condemned because its holder is not cognisant of the principle to which he has tacitly subscribed?

2nd. "By the pressing of a slightly crested furrow, by means of a convex mould-board, as represented in R. Hornsby and Sons' ploughs." If Mr. Hornsby's ploughs produced a crested furrow, and if a crested furrow is the kind wanted, it must be utter nonsense to accuse them of "attempting to produce the proper form of furrow by pressing with a convex mould-board."

3rd. "By cutting the furrow in a trapezoidal form, &c., as represented by Andrew Gray's swing plough, No. 4, and James Finlayson's wheel plough, No. 6." Every man who has studied ploughing knows that it is impossible to form a semi-triangular furrow without cutting deeper at the land-side and leaving the bottom slightly concave, and it is most unfair to represent Gray and Finlayson's ploughs as the sole exponents of that principle; yet the judges have done so by placing Mr. Hornsby's ploughs next on the list of merit,

* As we take it, what the writer really means is, that he agrees with the general public, the very reverse, in fact, of joining issue. —Ed. P.M.

while distinctly stating that they acted on a quite different principle.

After thus giving their decision to the public in print, the judges go on to say, that Howard's ploughing lays the furrow too much on its back, "a position justly condemned by all practical men," yet on the next page the following sentence occurs: "Though we give the preference to the crested furrow in lea-ploughing, we would not have it supposed that we underrate the advantages of the rectangular furrow in the same description of ploughing. We may mention what we consider three of the most important of these advantages—1st, By means of it the greatest solid content of soil can be turned over at the least expense of labour; 2nd, The greatest surface is exposed to the action of the atmosphere; and, 3rd, From the furrow being wider, there is a considerable saving of time in ploughing the same extent of land."

At Shielhill, on the 7th of March, there were horses and ploughs from Forfarshire, from Stirlingshire, from Lincolnshire, from Bedford, and from Suffolk, sensible and shrewd men from every corner of the country, peers and ploughmen, merchants and mechanics, assembled to perform and see the work which was to engage such a high tribunal—and the above is part of the verdict! The public have been fooled to the top of their bent. Look at the first and third of the above "considerations"—are they not precisely the same? and what do they amount to? Simply to this—that by ploughing with a wide furrow, the speed is greater than with a narrow one! Then examine the second "consideration," and do not forget that it is signed by five gentlemen of "standing and experience." The hypothesis contained in it is not only erroneous, but, as applied here, eminently unjust. Any boy can test it with half-a-dozen bricks. No doubt the long back of the rectangular furrow will expose a greater surface to the atmosphere than the shorter back of the crested furrow; but these five gentlemen seem to have forgot that it takes a proportionably greater amount of room to hold it; in short, it is impossible by the rectangular furrow to enlarge or diminish the amount of soil exposed to the atmosphere, because it is guided by an exact law; but in the crested furrow the height of the apex will very much affect it, as exemplified in comparing the roof of a modern Episcopal Chapel with the flat roofs of the houses around it.

The position the judges have assigned Finlayson's plough has my entire approval: the ridge was capitally ploughed, and was, in the opinion not only of myself, but of every one I have consulted on the subject, second only to Hornsby, No. 27. Next to Finlayson, I consider Hornsby, No. 30; then Miller, No. 19; then Hornsby, No. 24; then Andrew Gray, No. 8; then Miller, 17; then Andrew Gray, No. 41

I admit that I had no other data to judge from but the work, and I must confess that in doing so I laboured under a disadvantage, not as compared with the judges, but in the absence of all knowledge obtained from the ploughmen themselves; for I hold it to be utterly preposterous to attempt judging of any implement subject to the human head and hand, without having in the very heart of our council the man who works it; yet, so far as I saw, the judges at Shielhill seemed to look upon the ploughman as merely a continuation of the machine.

In conclusion, I would submit the following three facts as the result of my careful study of the subject; and however much they may differ from the opinions expressed in this report, I will be backed by every practical man:—

1st. I have never yet seen a well-ploughed ridge that did not cost the horses heavy draught and the ploughman hard work.

2nd. In ploughing tough lea with a level furrow sole there is a difficulty in resting, and the furrow will have a tendency to fall back into its original position; but a furrow cut deeper at the land-side, when once put in position, cannot possibly open on the second day, because it is not only kept in its place by the lap of the next furrow, but the heavy edge is beyond the culminating point.

3rd. That however much the Scotch or swing-plough may be, as a whole, preferred to the English or wheel-plough, there is no doubt whatever that the English mould is infinitely superior to the Scotch; and, without any exception, I consider the moulds made by Hornsby and Sons as best calculated for the purpose of any that I have ever seen, because they form a section of a delicate and elongated screw, offering little resistance to the soil; and if Mr. Hornsby would, regardless of a fraction more draught, put a little more metal into the plough, so as to give the holder sufficient power over his implement, he may snap his fingers at this unimportant discussion about wheel or no wheel.

I am, sir, your obedient servant servant,

A PERTHSHIRE FARMER.

BULLOCK GRAZING OR GUANO—WHICH IS THE CHEAPEST FERTILIZER?—At the discussion meeting of the Ipswich Farmers' Club, recently held in the great room at the White Horse, there was a very full attendance. Mr. M. Biddell, the vice-president, occupied the chair. The secretary read the minutes of the previous meeting. Mr. R. Bond was then requested to state the result of the interview, held at the Club House in London, on Monday last, between a deputation from Ipswich and the Committee of the Central Farmers' Club, on the subject of the establishment of an Anti-Malt-tax Association. Mr. Bond stated that the deputation met with a very cordial reception, and that it was resolved to call a special meeting of the Central Club on the question, to which every member would be specially invited. The chairman then called on Mr. W. Biddell, of Hawstead Hall, to introduce the subject of the evening, with which we have headed this article. That gentleman delivered a most scientific, as well as a really practical address, giving data for all the conclusions he had arrived at, which was in favour of guano as the cheapest fertilizer. A discussion ensued, in which Mr. E. Packard, Mr. A. Packard, Mr. J. A. Hempton, Mr. R. Bond, Mr. Dobito, and Mr. Newson, took part. Mr. Biddell having briefly replied, the following resolution, moved by Mr. J. A. Hempton, seconded by Mr. W. Biddell, was carried unanimously: "That manure cannot be made satisfactorily by high grazing, with beef at 7s. per stone, while guano can be procured at £13 per ton."

THE LEECH AS A WEATHER-GLASS.—The following observations on a leech were made by a gentleman who kept one several years for the above purpose:—"A phial of water containing a leech was kept in the lower frame of a chamber window sash, so that when I looked in the morning I could know what would be the weather on the following day. If the weather proves serene and beautiful, the leech lies motionless at the bottom of the glass, and rolled together in a spiral form. If it rains before or after noon, it is found to have crept up to the top of its lodging, and there remains till the weather is settled. If we are to have wind, the poor prisoner gallops through its limpid habitation with amazing swiftness, and seldom rests till it begins to blow hard. If a remarkable storm of thunder and rain is to succeed, for some days before, it lodges almost continually out of the water, and discovers uneasiness in violent throes and convulsive motions. In the frost, as in clear weather, it lies at the bottom; and in snow, as in rainy weather, it pitches its dwelling upon the very mouth of the phial. The leech was kept in an 8oz. phial, about three-fourths filled with water. In the summer the water was changed once a-week, and in the winter once a fortnight."

THE ROYAL AGRICULTURAL SOCIETY OF IRELAND.

The general half-yearly meeting of the Society was held on Thursday, May 31, J. L. W. Napier, Esq., in the chair, when the following Report of the Council for the half-year ending the 31st of May, 1860, was read and received:—

“Your Council have the honour to submit their usual half-yearly report of the proceedings of the Society, together with the balance-sheet, duly audited, showing the receipts and disbursements up to the 31st December, 1859, which are as follow—

RECEIPTS.	£	s.	d.	Dr.	£	s.	d.
To annual subscriptions for 1859	1,405	2	0				
Interest on funded stock	152	14	2				
Received from local committee at Dundalk	530	0	0	1,557	16	2	
Entrance-fees from non-subscribers	21	4	0				
One year's rent from Irish Farmer's Club, ending December 31st, 1859 . . . . .	..	..	59	0	0	0	
Balance to debit of the Society . . . . .	..	..	321	8	4		
					£2,153	8	6

DONATIONS.	£	s.	d.	Cr.	£	s.	d.
Amount of donations received up to 1st Jan., 1859	5,310	0	0				
Donation from Fishmoogers' Company, London . . . . .	..	..	10	19	0		
					£5,350	19	0

EXPENDITURE.	£	s.	d.	Cr.	£	s.	d.
By Balance to debit of the society for 1858				463	15	10	
Money premiums to local farming societies	213	13	0				
Medals to local farming societies	154	18	6				
Arrears of premiums since Waterford show	1	0	0	368	8	6	
Arrears of premiums since Londonderry show	29	16	6				
Traveling expenses of Judges to Dundalk show	112	11	4	30	16	6	
Expenses of Secretary and assistant, clerk of the yard, &c., at Dundalk show	47	2	10				
Money premiums awarded at Dundalk show	431	4	0				
Paid Local Committee fees received on stock	21	4	0				
Printing for Dundalk Cattle Show				615	2	2	
Secretary's expenses attending show of English Society				33	12	6	
Deputation to Cork to arrange for approaching show				7	5	0	
Gold Medals to Labourers' Cottages	21	15	0	3	10	0	
Prize Plans of ditto	42	0	0				
Travelling charges of Judges on ditto	14	14	2				
Printing Reports of Society, Stationery, Postage, and Carriage of Parcels				78	9	2	
Cost of Advertisements				153	15	8	
Chemist's Salary	1	0	0	43	4	0	
Secretary's Salary	216	13	4				
Accountant's, with assistance, ditto	111	1	0				
Servants' ditto	26	8	6				
Rent and Taxes	146	17	2	454	2	10	
Furniture and Repairs	44	9	2				
				191	6	4	
					2,453	8	6
Amount of Donations Funded, £5,373 8s., 3 pence	5,339	2	10				
Balance to credit of Donation Fund				11	7	2	
					5,350	19	0

“It will be observed the debt of the society in 1858 was £468 15s. 10d.; since then your finance committee have paid off some outstanding accounts, which has reduced it to £321 8s. 4d.

“Prizes, in money and medals, amounting to £263 8s. 6d., have been paid to local farming societies.

“Your council have much satisfaction in stating that from the increase of members, and the liberal manner the annual subscriptions are coming in, they have every confidence in anticipating, that at your next annual meeting there will be a considerable balance in favour of the society.

“Your council have much pleasure in stating that from the 19th of May, 1859, to the 31st of May, 1860, one hundred and sixty members have been elected, while the number who have notified their intention of retiring from the society does not exceed eight.

“Your council have accepted the invitation of the County of Cork Agricultural Society to hold the annual cattle show in that city. From the many local advantages it possesses, together with the very favourable arrangements entered into with the rail and steam-packet companies for the transit of stock and implements, a very large number of entries may be calculated on.

“The society's prize-sheet has undergone a careful revision by the committee appointed for that purpose, and many important and judicious alterations have been made to meet the requirements of that locality. Your council have much pleasure in stating that all matters connected with this important show are progressing most favourably. The corn market, which comprises an area of nearly five acres, and in which there is a great quantity of permanent shedding, has been selected for that purpose. From the energy and zeal displayed by the local committee and honorary secretaries, a most successful meeting may be anticipated.

“Your council regret the prizes offered by this society for building and improving labourers' cottages has not induced a greater spirit of competition among landed proprietors generally. Your council have thought it advisable to renew them for the current year, hoping that a greater disposition may be evinced to attain an object so much to be desired.

“In pursuance of a motion brought forward relative to the third object of the society, viz. :

“To promote improvement in the dwellings and domestic condition of the agricultural population in Ireland, it has been ordered “that the secretary do open a separate account of any funds which may be contributed for improvement of cottages, under the head of contributions of associates.”

“A further inducement to landed proprietors to improve the habits and comfort of their tenantry has been added by the kindness and liberality of Lord Talbot de Malahide, who has placed at the disposal of your council a handsome silver challenge cup, which is to be competed for annually under the following conditions:—To the landlord who builds the greatest number of the most approved farm houses, with farm buildings suitable for tillage, for tillage farms valued under the Tentement Valuation of Ireland at from £50 to £150 per annum.

“In accordance with the 9th rule of the society, ten members of council lowest on the list retire from office, but are eligible for re-election. The names of all gentlemen qualified for seats at your council have been furnished to the members of the society, in pursuance of the rule referred to.

“At this meeting it is your prerogative to elect a president, to succeed your present very efficient one, the Earl of Erne, who retires, and is not eligible for re-election. The name of the Right Hon. Lord Clonbrock, recommended by your council to fill that important office, has been posted in the secretary's office in accordance with your rule.

“Your council refer with pleasure to the very favourable results of the working of the local farming societies, which

continue to diffuse their usefulness, and materially assist in carrying out the objects of the parent society.

"Your council beg to inform you the deed of incorporation having gone through all legal forms, is now in London awaiting her Majesty's signature.

"In conclusion, your council beg to congratulate you on the very prosperous condition and growing importance of the society; they would at the same time urge upon every member the necessity of increased exertion to assist in the

enrolment of subscribers, as by that means only can the society extend the sphere of its usefulness.

"GEORGE HODSON, Bart., Chairman.

"May 31st, 1860."

The only discussion of importance was upon the resignation of Dr. Apjohn, the consulting chemist of the society, and the meeting recommended the council to reconsider the subject of that gentleman's withdrawal. Lord Clonbrock was elected president.

THE IN-AND-IN SYSTEM OF BREEDING ANIMALS.

A PAPER READ AT THE CROYDON FARMERS' CLUB.

By J. SHORHOUSE, M.D., LL.D., OF CARSHALTON.

Edwd. Stenning, Esq., President, in the Chair. R. W. Fuller, Esq., in the Vice-chair.

That a "man may not marry his grandmother," or his "father's brother's wife," or his "wife's sister's daughter" is a well recognized axiom, and enforced not only by scripture, but by the laws of this country; nevertheless, undismayed by the canonical pains and penalties attached to a violation of the "laws and customs" of the church, and not having the fear of bishops, deans, archdeacons, priests, deacons, and other dignitaries and functionaries of the church before my eyes, I appear before you as advocate of in-and-in breeding in the inhuman animals of the class *mammalia*. I designate myself *an advocate* advisedly, for although my desire is to judge impartially, I am so convinced, after a somewhat extensive enquiry into the various systems of breeding, of the superiority of the in-and-in method, that I unhesitatingly present myself before you as the advocate of a very unpopular system. I shall not be surprised, however much I may regret the circumstance, if I have to champion the cause before this meeting singlehanded, and if all the other members of the Club are of a contrary opinion. There are many members whose opinions are entitled to much weight, and by myself are highly valued, and if I appeared here with no other experience than my own on the subject, I confess I should shrink from an encounter with men so much more able to impart information than I am. Fool-hardy, indeed, should I appear, if I introduced only my own views to your notice; and presumptuous, indeed, if, in my folly, I attempted to dictate *my* opinions to men of much greater experience, and with more extensive opportunities, than have been afforded me. I may premise that I shall confine myself almost exclusively to well known *facts*, merely supplying a connecting link to give coherence and intelligibility to them. On the first blush a child might be supposed to resemble his father rather than his godfather, or grandfather, but this is by no means certain. By resemblance I do not mean the characters which belong to a *class* of beings such as having two arms, two legs, two eyes, &c., or of being a man and not a hedgehog, but the peculiar characteristics belonging to the *individual* which makes the child a "smaller edition" of his progenitor, or as it is vulgarly called a "chip off the old block." But it by no means happens that a child necessarily resembles his father; indeed, if his mother have *previously* had *fruitful* intercourse with another man, and that other man be of a different *race*, it is almost certain that the child will *not* in the slightest degree resemble his own father, and I do not here mean simply the husband of the child's mother, who in the eye of the law would be regarded as his father, *but his actual progenitor*. This is a fact so well known, and of such unquestionable importance, that in any discussion on breeding, it behoves us not

to lose sight of it. We have an instance of this in the chesnut Arabian mare of Lord Moreton's, which after being covered in 1815 by a quagga (a sort of wild ass from Africa), gave birth to a hybrid, which had distinct marks of the quagga in the shape of its head, black bars on the shoulders, &c. In 1817, 1818, and 1821, the same mare was covered by a very fine black Arabian horse, produced successively three foals, all of which bore unequivocal marks of the quagga, and no resemblance to their own sire. The mare was only covered by the quagga once, and never saw him afterwards. I could adduce numerous analogous instances, but have not time to go into details. I must be satisfied with pointing to the circumstance, which may almost be regarded as a *law*. It is this: That a male animal, that has once had fruitful connexion with a female, may so influence her future offspring begotten by other males, as, to a greater or less extent, to engraft upon them his own distinctive features; his influence reaching to the subsequent progeny of the female in whose conception he himself had no share. Accordingly, if the female be of a different breed or species from that male, and have thus borne a hybrid or cross by him, her subsequent offspring got by males of the same breed as herself may yet have, more or less, the characters of a cross or hybrid. Dr. Harvey says: "It seems not improbable that on every occasion of fruitful intercourse some effect of this kind is wrought on the breeding powers of the female; but it would appear that the greatest effects result from the *first* sexual connexion." If this be a general fact, having the character of a law of nature, it is one obviously of great practical application in the breeding of stock. It will at once appear how important it must be that care be taken in the selection of the male, and *particularly in the first male*, in the coupling animals even of the same breed; and if the preservation of a pure breed be an object of regard, that crossing be in every instance eschewed. If a cross be desired for fattening purposes, the female ought never after to be used for breeding purposes, *i. e.*, for perpetuating stock, for her produce will inevitably be more or less mongrel. This question has been investigated with great care and research by Mr. McGillivray, a veterinary surgeon of Huntley, and the results published in an elaborate paper in the *Aberdeen Journal*, to which I refer those gentlemen who are curious on the point. Dr. Alexander Harvey, of Southampton, has also published a pamphlet, which is unfortunately out of print, but from which I have given extracts. It is desirable to know the cause of this phenomenon. An ingenious explanation of it has been offered by Mr. McGillivray. He says: "When a pure animal of any breed has been pregnant to an animal of

a different breed, such pregnant animal is a cross ever after, the purity of her blood being lost in consequence of her connexion with the foreign animal." And again: "If a cow, say of the Aberdeenshire breed, is in calf to a bull of the shorthorn breed (known as the Teeswater breed), in proportion as this calf partakes of the nature and physical characters of the bull, just in proportion will the blood of the cow become contaminated, and herself a cross, for ever incapable of producing a pure calf of any breed." It is maintained, therefore, that the great variety of nondescript animals to be met with are the result of the crossing system; the prevailing evil of which is the admission of bulls of various breeds to the same cow, whereby the blood is completely vitiated. Another important fact (for I believe its authenticity is undoubted) is the one related by the Count de Strzelecki, that if fruitful intercourse take place between an European male and an aboriginal female of New South Wales and Van Diemen's Land, that the female is for ever afterwards barren to a male of her own race, and only capable of procreating with white men. He says, in his "Physical Description of New South Wales and Van Diemen's Land," "Hundreds of instances of this extraordinary fact are on record in the writer's memoranda, all recurring invariably under the same circumstances amongst the Hurons, Seminolas, Red Indians, Yakirs, Mendoza Indians, Arancos, South Sea Islanders, and natives of New Zealand, New South Wales, and Van Diemen's Land; and all tending to prove that the sterility of the female, which is relative only to one and not to the other male, is not accidental, but follows laws as cogent, though as mysterious, as the rest of those connected with generation." The count's statement is backed by the high authority of Dr. Maunsell of Dublin, Dr. Carmichael of Edinburgh, and the late Professor Goodsir, who say they have learned from independent sources that, as regards the aborigines of Australia, Strzelecki's statement is unquestionable, and must be regarded as the expression of a law of nature. It is certain that this law does not extend to the negro race; the fertility of the negro female with the male of her own race not being apparently impaired by previous fruitful intercourse with the European male, a kind of intercourse which is common in all the West India Islands, the Brazils, and the slave-holding States of North America. Infinitely, then, does it behove us to study these laws of breeding. I must now, however, proceed to consider briefly the relative influence of the male and female in reproduction. In the breeding of animals, whether for stock or for market, it is of immense importance, as everything depends upon due selection and adjustment of the male and female to each other, or to the result wished for. Mr. Walker in his work on Intermarriage has treated this subject, as indeed he did everything he touched, with a master's hand, but as the more interesting to the gentlemen present, and more relevant to the subject I have brought forward, I shall refer to a paper read by Mr. Orton, of Sunderland, at a meeting of the Newcastle Farmers' Club, March 4, 1854, and which paper has since been published in the *Newcastle Chronicle*. The paper excited much interest amongst agriculturists in that part of the country. Sir Matthew Ridley took the chair, and I believe the discussion was adjourned. Mr. Orton's argument is that in the reproduction of the animal species there is no casual blending of the parts and qualities of the two parents, but that each parent contributes to the formation of certain structures and to the development of certain qualities. And, advancing a step further, he maintains that the male parent chiefly determines the external characters, the general appearance, in fact, the outward structures and locomotive powers of the offspring (*e. g.*, the brain, nerves,

organs of sense, and skin, and likewise the bones and muscles, more particularly of the limbs), while the female parent chiefly determines the internal structures, and the general size and quality, mainly furnishing the vital organs (*e. g.*, the heart, lungs, glands, and digestive organs), and giving a tone and character to the vital functions of growth, nutrition, and secretion. Not that the male is *wholly* without influence on the internal organs and vital functions, or the female wholly without influence on the external organs and locomotive powers of the offspring. The law holds only "within certain restrictions." These may be said to constitute a secondary law—the law of limitations, equally important to be known as the fundamental law itself. Mr. Orton adduces a large collection of strikingly apposite examples. Crosses or hybrids furnish the most remarkable examples of the proposition, and serve the best to test it. The mule is the produce of the male ass and the mare; the mule or hinny that of the stallion horse and the ass. Both hybrids are the progeny of the same set of animals, but they differ widely in their respective characters. The mule, in all that relates to its external characters, having the distinctive features of the ass; the hinny, in the same respects, having all the distinctive features of the horse; while in all that relates to the internal organs and vital qualities, the mule partakes of the characters of the horse, and the hinny of those of the ass. "A cross between the male wolf and a bitch illustrates the same law; the offspring having a markedly wolfish aspect—skin, colour, ears, and tail. On the other hand, a cross between a dog and female wolf afforded animals much more dog-like in aspect—slouched ears, and even pied in colour." In the course of his paper, Mr. Orton adduces some special evidence in support of that part of his argument which relates to the office of the female in the work of reproduction. He gives several instances bearing on the milking and on the nutrient and fattening qualities of the offspring, which qualities, he alleges, pass chiefly on the side of the female parent. He refers to the Shorthorn, and to the Dishley sheep, as deriving and maintaining their celebrity through the female. "I do not mean it to be inferred," he says, "that either parent gives either set of organs uninfluenced by the other parent, but merely that the leading characteristics and qualities of both sets of organs are due to the male on the one side, and the female on the other, the opposite parent modifying them only. Thus I do not infer that the ass has alone been the agent in conferring the external characteristics of the mule, but merely that he has principally conferred the developments; while the mare has been, in regard to the external organs, a secondary agent, an instrument not of conferring, but only of modifying those organs. It is just the reverse, however, with the vital organs. The female is the agent in conferring them, the male only an agent in modifying them. Hence I conceive that, though the male and female parents in all cases give, the former the external, the latter the internal organs, yet they each mutually exercise an influence in modifying to a greater or lesser extent the organs given by the other." In connection with this branch of the subject, Mr. Orton draws a distinction between a part or organ including its vital endowments, and the *quality* of the organ and its endowments; and while maintaining that the "outer" structures are chiefly furnished by the male, he equally holds that the *quality* of these, *as of all the organs*, comes mainly from the female. By *quality* he obviously means what in ordinary language is called *stamina*. This may be illustrated by a reference to the horse. "The Arab," he says, "will let you have his stallion; but his mare at no price. He cultivates *endurance* and *bottom*, and the female gives them. He does not know the law we are promulgating, but

he acts as if he did, for experience has taught him. The English breeder, on the other hand, values his stallion. He cultivates *speed*, and he finds that the sire gives the locomotive organs; consequently his value, just the reverse of the Arab; his mare is easily got at, but his stallion is priceless." This distinction, if a real one, properly comes within the law of limitations formerly spoken of, and forms an additional article of it; and, it may be remarked, that while *talent* is notoriously often hereditary in the male line, it has often been observed of individuals who have risen to distinction, either by their *power* of intellect or *force* of character, they have owed their pre-eminence to their mother. I cannot leave this part of the subject without acknowledging how much I have been indebted to Dr. Harvey's pamphlet, and to Dr. W. B. Carpenter, whose works on physiology are the admiration of all scientific men, and are monuments not only of their author's research, but of his power of arranging and elucidating phenomena.

The effect of in-and-in breeding is best manifested in racehorses; or rather, I ought to say, in consequence of the wide publicity given to the pedigree and performances of such as become celebrated winners, it is better known in such animals than it is in sheep and cattle, although it is with the latter that we are more especially concerned. I have the high authority of a celebrated sporting writer, Dr. Walsh, better known under his *pseudonym* of "Stonehenge," in favour of this system. In his *British Rural Sports* he says, "Breeding in-and-in prevails extensively in a state of nature with all gregarious animals, among whom the strongest male retains his daughters and granddaughters until deprived of his harem by younger and stronger rivals. Hence, in those of our domestic animals which are naturally gregarious it is reasonable to conclude that breeding in-and-in is not prejudicial, because it is in conformity with their natural instincts, if not carried farther by art than nature teaches by her example." He then says, "By a careful examination of the pedigrees of our most remarkable horses, it will be seen that in all cases there is some in-breeding; and in the greater part of the most successful a very considerable infusion of it." The early racehorses of the eighteenth century were notoriously in-bred, and we have numerous convincing examples. The two Childers, Eclipse, Ranthos, Whiskey, Anvil, Bondrow, and, in fact, almost all the horses of that day, were much in-bred; sometimes, as in the dam of the famous Leedes, to an incestuous degree. Mr. Smith, in his book on breeding, instances the Herod and Eclipse blood as having "hit" in a great number of horses, such as Whiskey, Waxy, Coriander, Precipitate, Calomel, Overton, Gohanna, and Beninborough, who were all out of Herod mares by sons of Eclipse. But it must also be remembered that Eclipse and Herod are both descended from the Darley Arabian, one on the sire's side, and the other on that of the dam. Among the horses of the present century the following remarkable instances will illustrate this position:—*Priam* is an example of success by in-breeding after a series of failures in crossing. *Cressida*, his dam, was put to Walton, Haphazard, Orville, Wildfire, Woful, Phantom, Scud, Partisan, Little John, and Waterloo, without success. At last, being served by her cousin *Emilius* (a son of Orville, who had previously failed, not being related to her), she produced *Priam*. This horse and *Plenipotentiary* were both sons of *Emilius*, the latter being the result of a direct cross as is often seen; but the former was in-bred to Whiskey, who was sire of his dam, *Cressida*, and also great grandsire of *Emilius*. Now, the above-mentioned two horses were both extraordinary runners; but, whilst *Plenipotentiary* has scarcely had an average success as a stallion, *Priam*, considering the short

time that he remained in England, has achieved an unperishable fame. For there are two points in which breeding is to be viewed, first, as producing successful runners; secondly, good stallions and brood mares; but, though it seems to answer in both cases, it is in the latter point of view that it is most interesting to this society, and in which it is chiefly to be recommended. Cotherstone, winner of the Derby, and Mowerina, dam of West Australian, also a winner of the Derby, are the produce of first cousins. Touchstone and Verbena, sire and dam of Ithuriel, were second cousins, taken from Selim and his sister. Matilda, winner of the St. Leger, was the produce of first cousins, and her mother, Juliana, was the produce of brother and sister. Bay Middleton was the produce of second cousins, and his son, Andover, winner of the Derby, is the produce of cousins. Stockwell and Rataplan are remarkable as being descended in the same degree from Whalebone, Whisker, and Web, the very same two brothers, as in Andover's case. Orlando, winner of the Derby, has a still stronger impression of inbred blood (the Selim blood), his dam being a grand-daughter of that horse and great grand-daughter of Castrel (brother to Selim), whilst Touchstone, his sire, is a great grandson of the last-named horse. Here, then, inbreeding has been carried out to its fullest extent, Vulture (Orlando's dam) having been the produce of first cousins, and being put to a second cousin, derived through the same strain, and the result has been, as is well known, the most remarkable stallion of the day. An instance of the comparative value of two stallions, one more inbred than the other, may be seen in Van Tromp and the Flying Dutchman, both out of Barbelles. These horses are both inbred to Buzzard, but the Dutchman is also descended from Selim, son of Buzzard, on the side of both dam and sire. Now, it will not be questioned that at present Van Tromp is comparatively a failure, and that the Dutchman is eminently successful. Wild Dayrell, winner of the Derby, and the best horse of his year, by long odds, speedy as he was, traced his wonderful powers to a re-union of the blood of Velocipede, which exists on the side of both sire and dam, and also to his descent from Selim and Rubens, own brothers, who are respectively his paternal and maternal great grandsires. Melbourne (sire of West Australian, Blink Bonny, and a number of first-rate horses of the present day) is the produce of third cousins, both his sire (Humphrey Clinker) and dam (Cervantes' mare) being descended from Highflyer. Pyrrhus 1st, Safeguard, Vainhope (the celebrated steeple-chaser), The Saddler, Chatham, Sweetmeat, Knight of St. George, are also examples of the success of inbreeding. "Stonehenge" concluded his chapter on inbreeding by challenging the breeder to "ask what horses have been the most remarkable of late years, and with very few exceptions he will find they were considerably inbred." The following thirty of the most immediately successful stallions of late years are given by "Stonehenge" for the sake of comparison:

INBRED.

1. Priam.
2. Bay Middleton.
3. Melbourne.
4. Cotherstone.
5. Pyrrhus 1st.
6. The Baron.
7. Orlando.
8. Ithuriel.
9. Cowl.
10. The Saddler.
11. Sweetmeat.
12. Chatham.
13. Flying Dutchman.
14. Sir Tatton Sykes.
15. Chanticleer.

CROSS-BRED.

1. Partisan.
2. Emilius.
3. Touchstone.
4. Birdcatcher.
5. Sir Hercules.
6. Voltaire.
7. Plenipotentiary.
8. Pantaloon.
9. Lanercost.
10. Venison.
11. Alarm.
12. Ion.
13. Harkaway.
14. Velocipede.
15. Hector Platoff.

DOGS.

I have not time to dwell upon the breeding of dogs, and the difficulty of ascertaining the pedigree of these animals, in most cases, is considerable; but I believe that in the case of sheep-dogs great care is taken to preserve the breed as pure as possible, and considerable in-breeding takes place; and I have yet to learn that these animals have degenerated in consequence, or lost any of their health or efficiency. The sheep-dog is a marvel of serenity and sagacity; unlike the conceited and petulant cur, he does not annoy you with his incessant yaffle, nor cringe to be fondled by you, but receives you with a dignified courtesy, and, when on duty, rejects caresses as ill-timed, and disdains familiarity. His marvellous accomplishments are everywhere recognized.

"His honest, sensive, bans'nt face
Ay gat him frim's in ilka place."

Mr. Meynell Ingram's (better known by his original name of Meynell) fox hounds, I know, are much in-bred. The breed has been in the family for nearly two centuries, and "the pack" is considered the finest in the kingdom, and affords a striking contrast to another notorious pack whose owner played all sorts of tricks both in the training and breeding of his dogs; and it was remarked of his pack, with no less truth than humour, that "it would hunt anything, from an elephant to an earwig." When the pack was sold by auction, the dogs realized a shilling apiece!

CATTLE.

Five weeks ago, viz., on the 28th March, an important sale of short-horned cattle took place at Milcote, near Stratford-on-Avon, the stock of Mr. Adkins, and in the advertisements of the sale, the stock was much glorified as "comprising some of the best blood," and "being of the same unalloyed strain," and as "offering to the public as much of the pure blood of 'Favourite' as could be found in any herd." The cows were described as "capital milkers and very prolific, *not having been pampered.*" Now, this stock was very much in-bred, and the animals fetched enormous prices. A cow called "Charmer" (a grand-daughter of Sylph), bred of Mr. Colling's purest blood, and praised as "a most extraordinary milker," was the great attraction of the sale; thirty-one of her descendants, many of them calves, were sold for £2,140, averaging £69 each.

The following passage is extracted from the *Agricultural Gazette* of March 24, 1860.

"It is, however, unquestionable that the ability of cow or bull to transmit the merit either may possess does in a great degree depend upon its having been inherited by them through a long line of ancestry. Nothing is more remarkable than the way in which the earlier improvers of the Short-horn breed carried out their belief in this. They were indeed driven by the comparative fewness of well-bred animals to a repeated use of the same sire on successive generations of his own begetting, while breeders now-a-days have the advantage of fifty different strains and families from which to choose the material of their herd; but whether it were necessity or choice, it is certain that the pedigree of no pure-bred Short-horn can be traced without very soon reaching many an illustration of the way in which "breeding in-and-in" has influenced its character, deepened it, made it permanent, so that it is handed down unimpaired and even strengthened in the hands of the judicious breeder. What an extraordinary influence has thus been exerted by a single bull on the fortunes of the Short-horn breed! There is probably hardly a single pure-bred Short-horn that is not descended from 'Favourite' (252), and not only descended in a single line—but descended in fifty different lines. Take any single animal, and this bull shall occur in a dozen of its preceding generations, and repeatedly up to a hundred times! In the animals of some of the more distant generations. His influence is thus so paramount in the breed that one fanciful he has created it, and that the present character of the whole breed is due to the 'accidental' appearance of an animal of extraordinary endowments on the stage in the beginning of the present century. And yet this is not so; he is himself an illustration of the 'breeding in-and-in' system—his

sire and dam having been half brother and sister, both, to by Foljambe. And this breeding in-and-in has handed down his influence to the present time in an extraordinary degree. Take, for instance, the cow 'Charmer,' from which, as will be seen elsewhere, no fewer than thirty-two descendants are to be sold next Wednesday. She had of course two immediate parents, four progenitors in the second generation, eight in the third, sixteen in the fourth, the number necessarily doubling each step farther back. Of the eight bulls named in the fourth generation from which she is descended one was 'Favourite.' She is one-sixteenth 'Favourite' therefore on that account. But the cow to which he was then put was also descended from 'Favourite,' and so are each of the other seven bulls and seven cows which stand on the same level of descent with the *gr. gr. gr. dam* of 'Charmer.' And in fact it will be found on examination that in so far as 'Charmer's' pedigree is known, which it is in some instances to the sixteenth generation, she is not one-sixteenth only, but nearly nine-sixteenths of pure 'Favourite' blood. This arises from 'Favourite' having been used repeatedly on cows descended from himself. In the pedigree of 'Charmer' we repeatedly meet with 'Comet'—'Comet' was by 'Favourite,' and his dam 'Young Phoenix' was also by 'Favourite;' with 'George'—'George' was by 'Favourite,' and his dam 'Lady Grace' was also by 'Favourite;' with 'Chilton'—'Chilton' was by 'Favourite' and his dam was also by 'Favourite;' with 'Minor'—'Minor' was by 'Favourite,' and his dam was also by 'Favourite;' with 'Peerness'—she was by 'Favourite,' and her dam also by 'Favourite;' with 'Bright Eyes'—she was by 'Favourite,' and her dam also by 'Favourite;' with 'Strawberry,'—she was by 'Favourite,' and her dam by 'Favourite;' 'Dandy,' 'Moss Rose,' among the cows, and 'North Star' among the bulls, are also of similar descent. There is no difficulty therefore in understanding how this name appears repeatedly in any given generation of the pedigree of any given animal of the Short-horn breed."

There is a prevalent notion—an ill-founded one, I believe—that uncanonical connexions are inexpedient. I have no objections whatever to *strangers*, provided they are of the same race or breed, but the greatest repugnance to *crossing*—i.e., coupling animals of different breeds, e.g. a Devon with a Short-horn, or a Southdown sheep with a Leicester. The objection to relationship between animals rests in no solid foundation. If they be healthy, well-formed, and of the same breed, the circumstance of their being cousins, or brother and sister, is of the smallest consequence, and need occasion no alarm. When crossing has once been adopted, the breed can only be kept up by crossing, and the selection of proper animals requires greater discrimination and the possession of mental qualities of a superior order than is generally to be met with amongst agriculturists. Hence arise the lamentable failures we so frequently hear of. I think the tide has already set in against cross-breeding. When I promised several months ago to read a paper on In-and-in breeding, I was aware that any one else was labouring in the same field. I have, therefore, the greater pleasure in quoting the following paragraph from a recent number of the *Midland Counties Herald*: "From what we are now witnessing, it appears to be pretty certain that cross-breeding of cattle will in a few years be well nigh abandoned, for the advocates of this system find it difficult to maintain their ground; while as regards our sheep-stock especially, *pure breeds* are rapidly displacing the mongrels which were so frequently seen a few years ago. Many sheep farmers have, indeed, suffered severely from not being content with good and improving flocks, well adapted to their locality, and have found it an expensive process to repair the mischief caused by the introduction of an injurious cross." I refer those who wish to see the relative merits of the *races* and *breeds* of cattle treated of, to an elaborate paper in the *Quarterly Review* for 1849, written by my friend and preceptor the late Mr. Thomas Gisborne.

SHEEP.

I apprehend no opposition to the following *criteria* of a good sheep, viz., smallness of bone; great disposition to fatten; and early maturity; a heavy carcase, whilst still retaining a hardihood and capability of doing well on scanty pasture, or as

a shepherd's boy once expressed it, "they sheep 'll get fat upon nuffin in no time;" and last, but not least, a valuable fleece. Prolificacy in offspring may also be considered as a very essential quality in a breed of sheep. The Southdown breed is, perhaps, on the whole the most important in England: it still retains its pre-eminence, and most of the modern breeds are founded on Ellman's. Mr. J. Webb, who may justly be regarded as the Coryphæus of breeders, possesses a flock of pure Southdowns, and their qualities have surpassed others so much as to raise a doubt in the mind of an eminent agriculturist at the Smithfield show, whether there was not in them some mixture of the Leicester blood. Mr. Webb, however, gave a positive assurance that his breed had always been preserved perfectly pure. The Leicester or Dishley breed, rendered famous by Bakewell, is the next in importance, and it is very gratifying to me to be able to quote from professor Spooner the following sentence, which speaks as much for "in-breeding" as it does for the Leicester flock. He says, "While there is no breed of long wools but what has obtained some improvement from a cross with it, the Leicester, as regards its peculiar qualities, has derived no advantage from a cross with others; but its unrivalled qualifications can only be retained by preserving the breed pure and unstained." Mr. Spooner states that a cross of Leicester with Southdowns is sometimes expedient as being "more saleable than the pure Leicesters, and with an earlier maturity and superior feeding qualities to the pure Down." But, he strongly recommends that when such a cross is adopted for the market, "to stop at the first cross and devote the produce entirely to the butcher, not to breed from them, but to preserve the stock sheep pure." The purest stock of Leicester sheep, and certainly the most famous example of "in-and-in-breeding" of any flock whatever, is that of Mr. Valentine Barford, of Fosote, in Northamptonshire. In a communication with which he has favoured me, he states that his flock has been bred since the year 1789 on the in-and-in system "from the nearest affinities, and has not experienced any of those ill effects frequently ascribed to the practice." Indeed, I may as well state my conviction once for all, that debility, leanness, lameness, "giddy," "sturdy," and other bogies which sit heavy upon the bucolic mind, are not so much due to in-and-in breeding, as to an improper selection of parents in the first instance, and afterwards crossing heterogeneous animals; the blood has not properly assimilated, and disease has been the result; but if, on the other hand, healthy animals of a good breed be selected, there will be no fear of giddy and sturdy. There is a prevalent notion that in-breeding produces degeneracy, disease, and idiocy. This is only the result of in-breeding from mongrels, or cross-bred animals, which can only be kept in a passable condition by crossing. When a cross has once been adopted you can only guard against something monstrous by great discrimination and tact in the selection of parents; you will, however, have no difficulty in perpetuating good stock if you stick to the pure breeds or races; affinity or relationship will then be of little moment. The union of what Horace Walpole called "Nobody's son with everybody's daughter," is not a satisfactory basis on which to found the supply of sheep for a great mutton-eating nation. Everything depends upon a proper selection in the first instance, and if "improvement" be wished for, seek to improve by commingling animals of the same breed until perfection be reached, and I need not say that perfection cannot be "improved." Sheep, as well as human beings, have hereditary tendencies to disease, and all sickly or strumous sheep ought to be eliminated from the breeding flock. The "giddy" in sheep depends upon an eucyated watery tumour in the brain; it has often been considered analogous to idiocy

and insanity in the human subject, but nothing can be wider of the mark, and no one, unless hopelessly ignorant, would make such a comparison. "Giddy" in sheep is the result of a palpable structural disease. Idiocy is congenital deficiency, and an anatomist would be much puzzled to point out any disease existing in the brain of an idiot; he might remark on its smallness or misshapen character, but would not place his finger on a tumour. A sheep with "giddy" dies of starvation, pines away. An idiot will eat, sleep, and get fat. Yet the "giddy" has been attributed to the "in-and-in-breeding." Nothing can be farther from the truth. Whilst on this subject I may remark that the size and shape of an animal's head—what a paper might be written on Animal Phrenology!—is a matter of the first importance. A quality of the greatest value in an animal is composure of mind; an animal with a narrow contracted or malformed head will be timid and frightened at everything it sees or hears, and will not thrive. Serenity of mind and obesity of body stand in near relation to each other; they act and react on each other, and they have conspired to make Leicester sheep and short-horned cattle marvels of laziness. It is equally difficult to provoke them to love or war. Neither Venus nor Mars will arouse them into activity. A sheep should have a short capacious well-domed head, with an animated countenance, symmetrical face, and the general contour which makes intelligence, so far as that requisite can exist in a sheep. I have already stated what parts of the framework of the animal are furnished by the mother and what by the father; therefore in making a selection of males and females for breeding purposes, it will not be difficult to approximate very nearly to perfection, if not actually to reach it. And here, sir, in concluding these few remarks which I have had the honour to bring before this Society, allow me to express my sincere regret for the truly insufficient and incomplete manner in which I have struggled through my task; and now permit me to trust that this paper, which was begun with diffidence, pursued with somewhat like a feeling of dependency, and now concluded—would that I could say, completed! with the faint hope that round it, as round a rude and foreign nucleus, the finer particles, your well-proportioned thoughts and accurately-developed opinions, may collect and crystallize—will be treated leniently by those here present, who are far more competent to discuss so vast and extensive a subject; a subject which, like the sky-crowned pinnacle of the loftiest Himalaya, looks down and frowns upon the futile attempts of prying man to scale and explore its summit; a subject which, though it may afford to the man of accomplished mind and of vast conception ample scope for backing his experience, and confirming his observations by the thunders of a persuasive eloquence, or illuminating his theories by the lightning flashes of a brilliant imagination, is yet a wild prairie fraught with difficulties, and teeming with despair to one but of meagre conception, and of very ordinary observation.

"Si quid novisti rectius istis
Candidius inperiti" (loud applause).

And now, Mr. Vice-Chairman, while time has obliged me to hasten from this subject, on which I would willingly have lingered, I rejoice in being able to refer you for its full development to the deeds and words of one whose oral teachings and the instructions of whose matured authority we all could but faintly though gratefully acknowledge. I refer you to one whom in the councils of our society and in the foremost race of English agriculture is recognised conspicuous by learning, by dignity, by wisdom, by courtesy, by eloquence, and whose almost universal fame and acquirements forbid our

society to claim more than a fragment of his wide reputation, but who in the lessons of his vast experience and consummate judgment, still, happily, prolongs from year to year the echo

of the proud recollections that we rely for our chief strength on our esteemed President, who is one of the first breeders in the world (loud and prolonged applause).

THE BATH AND WEST OF ENGLAND SOCIETY.

MEETING AT DORCHESTER.

Seldom has the celebration of a festival had to contend with such difficulties as that just held in Dorsetshire. But never were obstacles more manfully encountered or perseveringly overcome. To be sure, they rose again and again hydra-headed as certainly as they were supposed to be subdued. For the last fortnight the Directors of the Show have been engaged in one anxious struggle with the elements. Twice in that time has their encampment been utterly uprooted. All the ills of wind and rain have been associated with a site that, under the circumstances, turned out to be the worst possible that could have been selected. This was nothing more nor less than a low-lying undrained marsh, which two or three hours' rain reduced to a swamp, and that with the weather we have had of late, promised soon to become impassable. In fact, with the inevitable traffic consequent on the preliminary arrangements, it was continually coming to that caution a West of England man knows so well, as "Ware bog, there!" Waggoners sank over their axle-trees, and were soon hopelessly "fast." Men were up to their knees at every other step; while unhappy Jonathan Gray saw the fixing poles and posts of his much-beloved shedding imbedded in a soil of the tenacity of moist-brown sugar, and where of course his holdings "gave" at every gust that swept the unprofitable plain. By the Saturday previous to the opening, matters had reached such a crisis that the office of a "mud-steward" was determined on, and Mr. Gabriel Poole complimented with the appointment. Dikes were dug, testing holes fathomed, hundreds on hundreds of flake hurdles buried in the slush, and portions even of the place fairly boarded over. A council meeting was held on the ground after church on Sunday, and everything that well-directed energy and days and nights of hard labour could do employed to put things to rights. Indeed, that admirable management the Society is so famous for alone saved the meeting. It is the conventional fashion to close any account of almost any public proceedings with an expression of thanks to the officials, and of how much the occasion owed to their exertions. Justice demands a far earlier acknowledgment here. The Dorchester meeting owed everything to the indomitable endeavours of such men as Mr. Acland, Mr. Jonathan Gray, Mr. Pitman, Mr. Widdicombe, and others. Of Mr. Widdicombe's worth especially we heard on all sides. Never was there a more able Director—that is, if indefatigable industry, ready courtesy, and excellent discretion go at all to make up

the character; and Mr. Brandreth Gibbs must look to his laurels.

The great question, however, as with Mrs. Siddons when she heard of the Prime Minister locked up for the night by mistake in his *bureau*, "Poor gentleman, how gat he there?" is one that everybody echoed at Dorchester. When there was a grass-covered ample hill-side quite as handy, and that was hard and dry again in an hour after the rain had ceased, it certainly seemed something of an enigma how the poor gentlemen ever *gat* themselves where they did. It was said, though, that the Council bowed even in their experience to the Local Committee, who wished the visitors to parade in procession, as it were, down their high street to the show-ground. If so, they had something more of a sight than was perhaps bargained on; for, let an ankle be ever so neat, it hardly tells as well with a draggled petticoat and a dandy boot spoiled of its splendour. After all, the officers of the Society are of course responsible, and it is scarcely necessary to say how good a lesson this will be for their future conduct. They alone can judge properly of their requirements, and no false feeling of good-natured compliance should interfere with their demands and their decision.

"Under the circumstances," and our report must be taken altogether with this proviso, the Show was one of quite average excellence. The strong and weak classes of stock were well balanced one against the other, while the increased entry of implements went to make up for any deficit of interest in that department. The Society still preserves the happy art of drawing directly on the strength of the district it visits; and whether we regard the stands of the local manufacturers, or the prize animals of the County exhibitors, there was ever a ready key to tell where we were. Nevertheless, though even nearer home, as it were, than either at Cardiff or Barnstaple, there was one description of now famous stock that made no great mark at Dorchester. If not positively weak, the Shorthorns, either in numbers or excellence, were by no means remarkable for creating any extraordinary impression. And yet Colonel Towneley led off the lists with a Master Butterfly—the 5th, as he is distinguished—an upstanding, narrow, unhandsome-looking animal, that neither the judges nor the public could be induced to take to. Clearly the pick of the sort was the prize bull of this class, Mr. Hewer's Borrowby Lad, a big, useful, well-bred beast, of very good quality, but not quite so even over the quarter as "should be." Lady Pigott did

not send her nominations; and Mr. Stratton did a deal, though not as much as usual, for the remainder. In the three-year-old bulls he found no competition, Hickory Nut and Mr. Cozen's beast being the only entries. The two-year-olds were a far better lot; and Duke Humphrey, a clever young animal, with but a middling head, was in more congenial company. Both Mr. Hewer's and Mr. Holland's young bulls deserved their distinction, and each has something to trace back to. Mr. Hewer's is a son of Borrowby Lad, the prize aged bull of this season, and *the Duke of Cambridge* of another Duke of Cambridge, who held similar honours at Barnstaple. Amongst the local men Mr. Josiah Hill was pre-eminent for his pair of heifers, both bred by himself. Still the breed does not take so much in Dorsetshire, as was instanced by a sale Mr. Strafford had adjoining the Show-yard on Thursday. He here offered the entire herd of Mr. Whitehead, "carefully selected from the stocks of Earl de Grey, Sir Charles Knightley, and other eminent breeders;" and five-and-twenty guineas, even with all his influence and ability, was the highest figure he could get to. At this price Mr. Adkins bought a two-year-old bull. The weather was very unpropitious, as it rained hard at the time; but still the stock were not thought to come up to their character.

The Herefords are in far more favour here. They furnished, in fact, the strong point of the exhibition. And it was not Hereford men merely who did this. Indeed, the best of the breed, if not the best animal in the yard, was the three-year-old heifer shown by a new man, or rather by two brothers, the Messrs. James, who hail from near Blandford. With a sweet head, an almost perfect forehead, rare girth, and very grand over the loin, this heifer came in for continual commendation. Neither was she the only success; for Mr. Coate had a nearly equally good cow in the class above her, and one that was also bred in the county. Of those from the more classic land of the Herefords, Mr. Williams held the first place with his well-known prize bull, Sir Colin, a magnificent specimen of his kind, but now, as it would seem, utterly ruined by over-feeding. During the whole of Wednesday he lay on his side in the greatest distress, and with every sign of suffocation. The Judges, however, very properly awarded the prize "*conditionally*" on his proving of any further use, which does not seem probable. In the next class, Mr. Edwards' handsome bull, "*Leominster*," took another step, being the best three-year-old this year, as he was the first two-year-old at Barnstaple. But Mr. Duckham beat Lord Bateman for second with an animal undistinguished last season. He begins badly, with not quite the character of a bull's head, but is otherwise a serviceable animal. There was the like upsetting of previous decrees in the next division, where Mr. Perry had his revenge on their Worships of Warwick. "*Cowaryn*," that was nowhere at the Royal Meeting, is placed first here; and the Prince Consort's "*Maximus*," the preferred of all there, is in turn nowhere now. Good, though, great indeed, as we might record this display of Herefords, it lacked the support

of one of the most successful exhibitors of them—Mr. Price, of Pembroke. His entries were not sent, and will never more be seen in our show-yards. Only last week he was formally excluded from the Herefordshire Agricultural Society; and on the very day the Dorchester Meeting opened, he was prohibited from competing for any more of the Royal Agricultural Society's premiums. This lamentable affair is traceable to the career of a Hereford heifer, a winner during last season at Barnstaple, Warwick, and Hereford. She was called indifferently *Well-a-Day* or *Wisdom*, and was entered as of all sorts of ages but her proper one. It is seldom, in short, that a more clumsy business has been unravelled, as it has been mainly through an investigation of the Herd-book. Mr. Price declares that, strangely enough for so celebrated a breeder, he never kept a private register of his own stock, and hence the error—a very serious one when we see an animal only aging nine months in the twelve. However, Mr. Price has been promptly and properly dealt with; but what is the Council of the Royal Agricultural Society doing with the Scotchman and his barren beast? If he does not care to take up his own case, they should go into it without him. It is time it was settled; and the public looks for something decisive one way or the other. Or, why such haste with Mr. Price, and such delay with Mr. Tod?

The Devons only stood in the next degree to the Herefords; if, in the opinion of the judges who took the two breeds, they did not altogether excel them. As will be seen, they were far more liberal with their Commendations in the one than the other. With every justice they paid this compliment to the whole class of cows, nine in number, as well as to the eleven heifers which composed the next division. Mr. George Turner had the best of this distinguished company, as he took the first prize in either. His success altogether was remarkable, for including cattle, sheep, and pigs, Devons, Leicesters, and Essex, he made thirteen entries and had thirteen prizes. This must come as a capital prologue to the approaching sale at Barton in the autumn. Turner and Barton we had thought to be inseparable; but they are to be divided by Michaelmas twelvemonth, and hence the anticipated dispersion of much of the famous stock bred in such association. Vandine has now grown into the prettiest of cows, while Mr. Pope with three, Mr. Farthing, Mr. Halse, Mr. Smith of Bradford Peveril with two, and the Reverend Cecil Smith furnished her followers. It is rarely at *any* meeting that so good a lot of cows have been seen together. Of the heifers, beyond Mr. Turner's and Mr. Mildon's prizes, Mr. Buller, Lord Eldon, Mr. Dommett, Mr. Bradford, Mr. Hambro, Mr. Newberry, Mr. Pope, and the Prince Consort made up the show. Of all these, as every one has his fancy, ours went to the Prince's lovely-looking "*Lovelina*." Never surely was there a truer outline, a finer head, or a more thorough-bred look. But we were clearly wrong it seems. The Devon Judges, and there were at least two devotees out of

the three, went more by the hand than the eye, and Lovelia was "bad to handle," "wiry in the hair," and so on. This kind of criterion was yet more noticeable in the pairs of heifers, where one couple, especially of Mr. Pope's, a long way better than anything else to look at, were passed over in silence, and the award given in favour of "quality." Of course the orthodox thing is that a Somerset Devon should be coarse and a pure Devon fine; but Mr. Pope's cannot well be called coarse. They are by his own first prize bull, and trace back one way or the other to the Quarterly "Hundred Guineas," a rather high-sounding pedigree, when we remember that Napoleon the Second is a son of Bodley's Napoleon, a prize animal wherever he was shown. Many of these entries will come together again at Canterbury, and, as we expect, with some material alteration in the awards. Mr. Bodley's second prize bull is an own brother of Mr. Pope's in the aged class; but "the fancy" of all the males was a yet younger animal, Mr. Mogridge's Forester, a very level perfect one in shape, and equally excellent in his touch. So neat and so good is he already, that all such a little wonder has now to do is to grow on to his present form. This bull was far from well the first day, and never got quite right in his coat.

The horse shows of the West of England have never been extraordinary. There are no cart stallions to show at the time, and not many cart mares at any time. Hacks and hunters, again, cannot be brought to much affect the show-ground, and the only strong feature, and that a recent one, has been the ponies. Even this fell back at Dorchester. There was only one New Forester in the entry, and he was of a bad colour, common appearance, and no action. Then there was only one Exmoor; and she was beaten cleverly by a couple of Welsh mares, that with Mr. Wall's stallion, another Welsh one, had all the cream of it. Lady Pigott, tell it not in Ipswich, sent a Suffolk mare of a bay colour, with a black leg, a hairy heel, and a chestnut foal, and the judges gave her the prize; but without any idea whatever of her pure Punch origin, or of being by Catlin's Old Duke. A long way the best "agricultural horse" was Mr. Josiah Hill's two-year-old filly, of famous quality, great power, and size, and clean and lively-looking. Mr. Hill's young things deservedly distinguished him, whether it were the pair of short-horn heifers with which he beat Mr. Stratton, or the bay filly that beat everything about her. The Judges withheld one or two of the other premiums. Mr. Pain, of Salisbury, furnished the chief attraction of the riding-horse division with a yearling Joe Lovell colt, whose most noticeable defect was a rather mulish head; he had, otherwise, a deal of fashion about him, with a fine shoulder, and plenty of bone. He also sent a good three-year-old filly, by Safe Guard, that was well backed in her class by a Bowstring colt of Mr. Gapper. Still, neither the make up of the cart-horses, "nags," or ponies, was worthy of a meeting so strong in so many other matters. By far the most interesting feature of this section of the show were the Special Prizes, given by Mr. Miles,

author of the well-known Treatise on Horse-shoeing, for smiths to make and fix shoes. There were premiums of three guineas, two, and one guinea, with copies of Mr. Miles' work, and pairs of models of the horse's foot when properly shod. Ten men came to Mr. Galpin's forge on Wednesday morning, when they were divided into two sections, each taking his chance of a forge and the horse to work upon. The first division took the near fore-foot, and the other the off. The old shoe being then removed, and the foot left in a rough state, a time-keeper was appointed, and the sons of Vulcan set to work. They commenced by lighting their own fires, and then making the shoe and the nails from a fixed weight of bar-iron apportioned out to them. This occupied from 25 to 32 minutes, when the judges inspected the work. The performance concluded with putting on the shoe, a job of from five to seven minutes more. No filing was allowed, the object being a genuine trial of work and art: and the award embraced not only the three prizes, but also three commendations.

As an agreeable variety to these duties, that is of passing sentence on men as well as horses, the same set of judges were solicited to pronounce an opinion on the pigs. This was no great demand either, for the entry was a very short one, represented by good Berkshires in the large, and neat Essex in the small sort. Mr. Hewer's pen of Berkshire sows were very handsome, and Mr. Turner and Mr. Marden would have won the heart of the Fat Boy, by their knowledge of the art of breeding "nice pork." There was only one white pig in the exhibition, and he had better have been out of it. The show of sheep was far more important. The Leicesters and Cotswolds furnished some very good entries, and the Southdowns and mixed Downs were much better than usual. Still the Dorchester Meeting was chiefly noticeable, in this respect, for its Dorset or Somerset—much the same—horned sheep. These are the active, useful, good-constituted ewes that breed not two, but, as often as not, four lambs a-year. Mrs. Pitfield showed some famous pens of them; and, "under the circumstances," what with the wet and cold, no breed were seen in the way of a comparison to so much advantage. Much to be preferred by some, no doubt, were Mr. Holland's Shropshire Down ewes, while Mr. Turner's two-shear Leicester rams were declared to be as good as need be. The first prize one measured five feet three inches round, being four inches more than the Cotswold of the same year. Nearly all the latter were in sheets, and miserable enough they looked. Mr. Tombs and Mr. Garne sent two or three good rams, but the entry of them was very limited. In fact, the breeders complain that they do not have fair play in the prize list. They do not, perhaps, ask for as many premiums as the Leicesters, but they maintain what they do have should be of equal amount, whereas at present the rates are £6 and £4 against £5 and £3, and so on. Of course it is not the mere value of the prizes that is the consideration, but the estimate the difference would seem to put on the two

sorts of sheep. Is it worth while preserving so ungracious a distinction? Is not a Cotswold or a South-down now as much to be maintained as a Leicester? The mixed Downs, or "Downs," simply as their breeders write them, were in great force, with the Hampshires naturally here in a majority over the Shropshires. Mr. Holland was, indeed, the only exhibitor of the latter, sending two rams and the prize pen of ewes. In a most encouraging entry of pure Southdowns, with plenty of competition, the judges perhaps unconsciously evinced their partiality, as County Down breeders, for the more "useful" sheep. There was nothing struck us as showing more clearly the pure Down character than Sir Robert Throckmorton's rams; but they were not noticed, while his equally handsome ewes were more fortunate. Still, Mr. Harding is deservedly famous for his Down flock, from which he sent no less than fourteen rams, and Mr. G. J. Wood five. The prize list will show with how much success. With the exception of the Cotswolds, all the sheep classes were far more than generally good, and a reliable landmark of both the Society's and the district's advance.

By the report of the Council, as read at the General Meeting on Thursday, "A great increase is observable in the implement department. At Barnstaple the number of stands was 104, being an advance on all preceding meetings. At Dorchester there are no less than 135 stands, demanding an enlargement of the society's shedding to the extent of 1,000 foot-run. There are 29 exhibitors of machinery in motion, as against 18 last year; and the requests for uncovered ground have been in like proportion." Indeed there were very few firms not represented here. Those who go against the prize system made it, of course, a point to be present; and all the other leading makers not averse to open competition were in yet greater numerical force. They were well backed by local men, or rather by those living within the limits of the West of England Society's range. There are very many rising houses included in such a circuit that would be all the better for the opportunity and impetus of a little wholesome rivalry. Surely, at any rate, the Council should more directly encourage the introduction of new inventions. Let them admit, as they do, that they decline "the awful responsibility" of assuming to offer an opinion on works of established position—they might still, and as we should imagine without offence to any one, have a staff of judges to report and reward useful or even promising novelties. Is it quite fair, is it politic or advantageous to suffer the coming genius to wait in the cool shade of "established" success? Is it good that the visitor should have no guide or instruction to what we are all still craving after, "the something new"? Take, for instance, the case of the Chairman himself, Lord Rivers, who is about to bring out an implement of his own design. But Lord Rivers speaks far too well on this and other topics for us to attempt to speak for him. At the dinner, then, he said: "What changes in agriculture had they witnessed! The day had now almost arrived when it might be a

question how far the use of the plough might be abandoned. The society had lived to see the birth and growth of root crops. It had lived to see every kind of artificial manure being advertised as infallible. (Laughter.) It had lived to see steam applied to agriculture. It had lived to see sheep killed a year old, which would formerly have been allowed to come of age (laughter); and though last not least, and he said it without the slightest wish of provoking any political or party feeling, or causing any discord or difference, it had lived to see the prosperity of agriculture riding triumphantly over the desponding views which were at one time entertained. He thought this society had borne its full share in this improvement. Mr. Sillifant just now had said that he was a practical agriculturist, and therefore he would be expected to say a few words on that subject. Without criticising what he had seen in the show, he lamented the absence of what they really wanted: he had never seen an implement which had effectually and thoroughly cultivated the land. He had read 'Talpa' on the culture of a clay farm, and there the implement was fully described. The book had been published, and yet no ingenious implement-maker had as yet introduced such an implement; what he wanted was something that would do the work, he was going to say, of the rabbit. (No, no.) Well, he did not mean of a live rabbit. (A voice: A mole.) Well, they wanted that done which was effected by the rabbit, or, if they pleased the mole—such an implement which would diminish the cost of labour. At present they were plunging, cross-ploughing, harrowing, rolling, scarifying, and he did not know what, but he believed he had an implement in his head which he hoped, when brought out, would produce a satisfactory result. Mr. Samuelson would be the manufacturer, but he (Lord Rivers) might say he was the father, though it would appear in Mr. Samuelson's name, and he believed this implement would supersede fifty of the present unsatisfactory operations. If prizes had not been abolished he should be most happy to give one for an implement that would satisfy the requirements mentioned, and at the same time, he would say *he thought it was a mistake on the part of the society to do away with the prizes.* It was a mere matter of opinion with him, and perhaps that opinion was not deeply matured, but still he thought that it was a mistake on the part of a large and important society not to distribute prizes among the implement makers. (Hear, hear.) *The public had a right, or if that was too strong a term, they ought to receive from that society the best proof that could be given that the implement was a really good one.* Persons came to the yard and could judge for themselves, as to the best cow, sheep, or pig; but they had not the same means as that society possessed of deciding upon the merits of the implements. He would say a few words on one other subject: he maintained that it was—he would not say stupid, for the matter was a *vezata questio*—he did not see the use of bringing breeding stock in a state in which they could not breed. What litter of pigs could they expect from a sow that was

brought most carefully to the show, laid down on its side, and the greatest care taken to prevent its being suffocated. They laid on fat at an immense cost, and took it off at great risk."

There have been few short speeches that have ever contained more good practical matter, or sound sensible argument than this. It thus appears that the direction of the Dorchester Meeting was in this somewhat anomalous position—A majority of the Council declared against the Prize List, while their Chairman and an immense majority of the farmers themselves are in favour of such a test. But Lord Rivers was answered, and first by another noble lord and past President of the Society. "Lord Portman, although he was not one of those who had the slightest notion of the existence of finality, still thought the science of agricultural machinery and implements was so far advanced, and the task of deciding which exhibitor had the highest claims was so difficult, that it was not desirable for the society to give prizes for agricultural machinery, and thus giving its authoritative opinion, but rather leave it open to anybody to test the merits of the implements exhibited." And Mr. Acland, again, maintained "that the Society by offering premiums would incur too great a responsibility, and thought it better to leave everybody to choose for himself, without being biased by the Society's judgment." Lord Rivers may be well left to defend himself, and we would only counsel his lordship to not too readily question the soundness of his own opinion. There are hundreds on hundreds even in the Society he presides over who think with him. Let him offer the premium for the new implement by all manner of means, and let him direct Mr. Samuelson to enter for it.

As it was, the President led the way with the entries exhibited at work in the field. He sent a clod-crusher on the Northumberland form, pulverizing the land by friction, and driven from a seat fixed on the machine. Then Mr. Coleman showed off the merits of one of his well-known cultivators; while ploughs were ordered out by the Hornsbys, the Howards, the Ransomes, Page of Bedford, Reeves, Pearse, Wallis and Haslam, and Galpin. Hornsby had three ploughs at work during the two days at different depths, and Ransome, Page, and Wallis and Haslam two each. According to general opinion, so far as we could gather it, the names of these first three or four makers are given as they would have been placed had prizes been awarded. The point of excellence was clearly between these two now registered competitors—the Hornsbys and the Howards, with the former for choice. The Grantham people were thought never to have performed better; and they had from the first the lion's share of attention. Ransome improved considerably on the second day in what they had to offer, and Page and Reeves came close up with him. Combined reapers and mowers were put into action by Cranston, with Wood's American machine, and by Prentice; reapers by Cuthbert of Bedale, and Helland of Taunton; and mowers by Cranston (Wood's), Samuelson, and Prentice. Of all these the only one that did really good work was Cranston

with Wood's American combined machine, which took amazingly, and is just what all the world is looking for. Mr. Burgess, although in the yard, declined on the part of his firm to go into the field without judges were appointed by the Society. He has, it appears on some occasions, done so, when nearly every one of his opponents publicly announced hereafter that they had beaten the famous Newgate-street reaper. Indeed, we have very little doubt but that it will turn out by-and-by that every bit of machinery in work at Dorchester was the best of its sort, and that every body said so. Wallis and Haslam had their harrows in use, and Ashby his rotary harrow, as well as a hay-maker and horse-rake. Page, of Bedford, had also a horse-rake, which acted very efficiently. But the crowning point of the exhibition a-field was Smith's (of Woolston) cultivator, as shown by the Howards. It was put to work in a ley on a hill side, a piece of ground that from its rise, two or three years since would have been considered almost altogether impracticable for the purposes of steam cultivation. The Smith, however, did its duty admirably, and with a certain ease and regularity in the arrangements that shows how certainly it is coming into convenient use. Still the Dorsetshire farmers as a body hardly appreciated the services of so valuable an ally. In a word, we believe they did not practically understand it. They were unaccustomed to the smashing and tearing up, and so were disappointed in not finding something more sightly and neat in appearance. In the yard a long line of engines with the steam up was becomingly headed by Tuxfolds with their now "double first," while in something of succession followed Haywood, Turner of Ipswich, Clayton and Shuttleworth, Hornsby, Maggs, Cambridge, Garrett, Barrett and Exall, Ransome, Humphreys, Picklesby, and others. And then, scattered over an unusually large area, a great deal too much scattered in fact, were the stands or business depôts of all the houses we have mentioned, amply furnished with those commodities for which each is more or less famous, and that the very names of the different firms will suggest. To these we may add Richmond and Chandler, Nicholson, Smith of Stamford, Priest and Woolnough, Fry, Gardner, Carson, Busby, Crosskill, Holmes of Norwich, James, George Parsons, Tasker, Boby, Barnard, and an almost infinite *et cætera*, some of whom "under the circumstances" were nearly inaccessible. Even had the show ground been in a better condition, the strength of this section should have been more concentrated. As it was, a brook or bog, or some such a queer place, had to be negotiated, and one little colony was anxiously awaiting the extension of the telegraph to its shores. There was really no other means of convenient communication.

And, then, alas! the Arts Department boarded over and covered in, where ladies could find shelter, "combined with instruction and amusement," was at the uttermost extremity. Literally *through* that Slough of Despond had they to travel ere they could reach "the Moment of Victory," or learn from Mr. Acland how they should be really rigged out for rough weather.

Most opportune to the occasion, with riflemen in battalions and rain in a deluge, was this gentleman's mounted volunteer equipment, abounding in the most serviceable contrivances for protecting both man and horse from the elements—with rugs and cloaks that double up to next to nothing, and yet hold a change within their folds—with weather-proof helmets that turn back into travelling caps, and coats and trousers made from the undyed wool of the Exmoor sheep. In connection with his father Sir Thomas, Mr. Acland has formed a corps of mounted rifle volunteers, called the 1st Devon, of which he is captain; and hence his study of these well-considered appointments. The Arts Department was flanked on one side by two flower shows, and on the other by two tents of poultry, but all handsomely included in the one admission charge. Unfortunately, during the storm about mid-day on Thursday, the latter both fell in, amidst a great crowing of cocks and chuckling of hens. We so missed a curious cross between a Malay fowl and a Turkey that the learned in fluff and feather spoke to with much admiration.

The General Meeting was held in a moderate hurricane, and a very lengthy Report read to an imposing company of open umbrellas. By the extraordinary exertions of a troop of serving men, who held on like bull-dogs, the dinner camp was *not* blown away, and some hundred and fifty keen spirits made up their minds for the worst, and went to the dinner. However, if even her gracious Majesty could not command the sun for her Gala Day at Ascot, what could a Council of mere agriculturists expect, who selected a swamp as a matter of preference, and defied the elements forthwith? Verily they reaped their reward.

PRIZES FOR CATTLE.

DEVONS.

JUDGES.—E. L. Franklin, Ascot, Oxon.
H. W. Keary, Holkham, Norfolk.
J. Quartly, South Molton, Devon.

Bulls above three years old.

The prize of 10 sovs. to E. Pope, Great Toller, Maiden Newton, Dorset. (Napoleon II.)

Bull not exceeding two years old.

First prize of 12 sovs., to George Turner, Barton, Exeter, Devon. (Prince Fredrick).

Second, of 6 sovs., to John Bodley, Stockley Pomeroy, Devon. (Perfection).

Bulls not exceeding three years old.

First prize of 10 sovs., to R. Mogridge, Molland, South Molton, Devon. (Young Forester).

Second, of 5 sovs., to George Turner, Barton. (Earl of Warwick).

Third, of 3 sovs., to S. P. Newberry, Scruel Barton, Southleigh. (Bonaparte).

Cows in-calf, or in-milk, having had a calf within six months of the show.

First prize of 10 sovs., to George Turner, Barton, (Vandine).

Second, of 5 sovs., to E. Pope, Great Toller. (Tipler).

The class generally commended.

Heifers in-calf, or in-milk, not exceeding three years old.

First prize of 8 sovs., to George Turner, Barton. (Beeswing).

Second, of 4 sovs., to John Mildon, Woodington, Devon. (Jenny Lind).

The class generally commended.

Pairs of heifers not exceeding two years old.

First prize of 8 sovs., to J. W. Buller, M.P., Downes, Crediton, Devon.

Second, of 4 sovs., to George Turner, Barton.

SHORTHORNS.

JUDGES.—W. Bartholomew, Goltho, Lincoln.

J. Tremaine, Newlyn, Ccrawall.

Bull above three years old.

The prize of 10 sovs., to W. Hewer, Sevenhampton, Highworth, Wilts. (Burrowby Lad).

Highly commended.—B. Hambro, Milton Abbey, Blandford. (Snapdragon).

Commended.—J. E. Jeffery, West Orchard, Dorset. (Centurion).

Bulls not exceeding three years old.

First prize of 12 sovs., to R. Stratton, Broad Hinton, Swindon, Wilts. (Hickory Nut).

Second, of 6 sovs., to Robert Cozens, Pilton, Somerset. (Sir William).

Bulls not exceeding two years old.

First prize of 10 sovs. to R. Stratton, Broad Hinton. (Duke Humphrey).

Second, of 5 sovs., to W. Hewer, Sevenhampton. (Example).

Highly commended.—E. Holland, M.P., Dumbleton Hall, Gloucester. (The Duke of Cambridge).

Cows in-calf or in-milk, having had a calf within six months of the show.

First prize of 10 sovs. to C. H. Abbott, Long Ashton, Bristol. (Nonpareil).

Second, of 5 sovs., to R. Stratton, Broad Hinton. (Sultana 2nd.)

Heifers in-calf or in-milk, not exceeding three years old.

First prize of 8 sovs. to R. Stratton, Broad Hinton. (Harmless 3rd).

Second, of 4 sovs., to R. Stratton. (Matchless 6th).

Highly commended.—E. Bowley, Siddington House, Gloucester. (Warbler).

Pairs of heifers, not exceeding two years old.

First prize of 8 sovs. to Josiah Hill, Came Farm, Dorset.

Second, of 4 sovs., R. Stratton, Broad Hinton. (Kathleen, and Queen of the Harem).

HEREFORDS.

JUDGES.—E. L. Franklin.

H. W. Keary.

J. Quartley.

Bulls above three years old.

The prize of 10 sovs. (awarded conditionally) to John Williams, St. Mary's, Hereford. (Sir Colin).

Bulls not exceeding three years old.

First prize of 12 sovs. to T. Edwards, Wintercott, Hereford. (Leominster).

Second, of 6 sovs., to T. Duckham, Baysham Court, Ross, Hereford. (Franklyn).

Bulls not exceeding two years old.

First prize of 10 sovs. W. Perry, St. Oswald, Cholstrey, Leominster. (Cowarn).

Second, of 5 sovs., to Lord Bateman, Shobdon Court, Hereford. (Golden Horn).

Cows in-calf or in-milk, having had a calf within six months of the show.

First prize of 10 sovs. to H. Coate, Sherborne, Dorset. (Eva).

Second, of 5 sovs., to J. Taylor, Stratford Court, Hereford. (Fancy Leominster).

Heifers in-calf or in-milk, not exceeding three years old.

First prize of 8 sovs. to J. W. and C. James Mappowder, Blandford, Dorset. (Lisette).

Second, of 4 sovs., to J. Williams, St. Mary's. (Barmaid).

Pairs of heifers, not exceeding two years old.

First prize of 8 sovs. to Lord Bateman.—(Hebe and Nelly).
Second not awarded, no merit.

SHEEP.

LEICESTER OR LONG-WOOLLED.

(Not qualified to compete as Cotswold.)

JUDGES.—W. Bartholomew.

J. Tremaine.

Yearling Rams.

First prize of 6 sovs., to George Turner, Barton.
 Second of 4 sovs., to G. Turner.
 Third of 2 sovs., to G. Radmore, Court Hayes, Thorverton, Devon.

Rams of any other age.

First prize of 5 sovs., to G. Turner, Barton.
 Second of 3 sovs. to G. Turner.

Pens of Five Two-teeth Ewes.

First prize of 5 sovs., to G. Turner, Barton.
 Second of 3 sovs., G. Turner.

Pens of Five Ewes having bred Lambs in 1860.

The prize of 3 sovs., to G. Turner, Barton.

COTSWOLDS.

Yearling Rams.

First prize of 5 sovs., to J. K. Tombs, Langford, Lechlade, Gloucester.

Second of 3 sovs., W. Garne, Kilkenny Farm, Gloucester.
 Rams of any other age.

First prize of 4 sovs., to J. K. Tombs, Langford.

Second of 2 sovs., to W. Garne, Kilkenny Farm.

Commended.—E. Handy, Sierford, Cheltenham.

Pens of Five Two-teeth Ewes, Short-wools.

First prize of 5 sovs., to J. K. Tombs, Langford.

Second of 3 sovs., to T. B. Brown, Salperton Park, Andoversford, Gloucester.

SOUTH DOWNS.

JUDGES.—W. Humphrey, Chadleworth, Wantage.

J. Rawlence, Bulbridge, Wilton.

J. Whittaker, Bratton, Sarum.

Yearling Rams.

First prize of 5 sovs., to G. J. Wood, Athelhampton, Dorset.

Second of 3 sovs., to James Harding, Higher Waterson, Dorset.

Highly Commended.—James Harding, for two other rams; R. N. Grenville, Butleigh Court, for two rams; and G. Bartlett, Barwick, Yeovil.

Commended.—James Harding, for a fourth ram.

Rams of any other age.

First prize of 4 sovs., to G. J. Wood, Athelhampton.

Second of 2 sovs., to James Harding, Higher Waterson.

Highly Commended.—James Harding, for two other rams; and G. J. Wood for another.

Commended.—James Harding, for a third; and Sir R. G. Throckmorton, Bart.

Pens of Five Two-teeth Ewes.

First prize of 5 sovs., to Sir R. G. Throckmorton, Bart.

Buckland, Farrington.

Second of 3 sovs., to G. J. Wood, Athelhampton.

Highly Commended.—G. Bartlett, Barwick.

Commended.—R. N. Grenville, Butleigh Court, Somerset.

Pens of Five Ewes, having bred Lambs in 1860.

The prize of 3 sovs., to John Moore, Littlecott Farm, Wilts).

SHROPSHIRE DOWN, OR HAMPSHIRE DOWN.

(Not qualified to compete as Southdowns.)

Yearling Rams.

First prize of 5 sovs., to John Moore, Littlecott.

Second of 3 sovs., to W. F. Bennett, Chilmark, Salisbury.

Highly Commended.—George Harbin, Newton Surmaville, Yeovil, Somerset.

Commended.—J. W. Brown, Uffcote, Wilts; and John Moore, for two other rams.

Rams of any other age.

First prize of 4 sovs., to John Moore, Littlecott.

Second of 2 sovs., to George Harbin, Newton Surmaville.

Highly commended.—George Harbin, for another ram, and W. F. Bennett, Chilmark.

Pens of Five Two-teeth Ewes.

First prize of 5 sovs., to W. F. Bennett, Chilmark.

Second of 3 sovs., to J. W. Brown, Uffcote.

Highly commended.—John Moore, Littlecott, George Harbin, Newton Surmaville, and J. R. Neate, Northington Farm, Overton.

Pens of Five Ewes, having bred lambs in 1860.

The prize of 3 sovs., to Edward Holland, M.P., Dumbleton Hall, Worcester.

Highly commended.—John Moore, Littlecott.

Commended.—George Harbin, Newton Surmaville,

SOMERSET AND DORSET HORNS.

Yearling Rams.

First prize of 5 sovs., to F. Bond, Whitelackington, Ilminster.

Second of 3 sovs., to T. Danger, Huntstile, Bridgwater.

Highly commended.—Thomas Danger, Huntstile, Bridgwater, for another ram.

The class generally commended.

Rams of any other age.

First prize of 3 sovs., to E. Legg, Combe Down, Beaminster, Dorset.

Second of 2 sovs., to E. Legg.

Pens of Five Two-teeth Ewes.

First prize of 5 sovs., to Mrs. J. Pitfield, Eype Farm, Bridport, Dorset.

Second of 3 sovs., to T. Danger, Huntstile.

Highly commended.—J. A. Smith, Bradford Peverell, Dorset.

Commended.—F. Bond.

Pens of Ewes, having bred lambs in 1860.

The prize of 3 sovs., to Mrs. J. Pitfield, Eype Farm.

Highly commended.—F. Bond, Whitelackington.

MOUNTAIN SHEEP.

Rams of any age.

First prize of 4 sovs., to F. Quartly, Champson, South Molton, Devon.

Second of 2 sovs., to F. Quartly.

Pens of Five Ewes of any age.

First prize of 4 sovs., to F. Quartly, Champson.

Second of 2 sovs., to F. Quartly.

HORSES.

JUDGES.—H. Gibson, Haddon, Exeter.

J. Moon, Maristowe, Plymouth.

W. C. Spooner, Eling, Southampton.

FOR AGRICULTURAL PURPOSES.

Mares and Foals, or in-foal.

First prize of 10 sovs., to Lady E. Pigot, Branches Park, Newmarket, (Suffolk).

Second of 5 sovs., to J. and E. Symes, Coombe Farm, Sherborne, Dorset.

Highly commended.—R. Veysey, Coxpit, Bridgwater, Somerset.

Colts foaled in 1858.

First prize of 10 sovs., to R. Jacob, Baltonsborough, Somerset.

Second of 5 sovs., to E. Pope, Great Toller, (Suffolk).

Commended.—James Rawlence, Bulbridge, Wilton.

Fillies foaled in 1858.

First prize of 5 sovs., to Josiah Hill, Came Farm.

Second of 3 sovs., to T. Keable, Roudefield Farm, Devizes, Wilts.

Highly commended.—Henry Bailey, Walgaston Farm, Berkeley, Gloucester.

Colts or Fillies foaled in 1859.

First prize of 5 sovs., *not awarded, not sufficient merit.*

Second of 3 sovs., to Henry Bailey, Walgaston, for filly.

HACKS AND HUNTERS.

Mares and Foals, or in-foal.

First prize of 10 sovs., to Baron Hambro, Milton Abbey, Blandford, Dorset.

Second of 5 sovs., to W. H. Hawkins, Martinstown, Dorchester.

Fillies foaled in 1858.

First prize of 5 sovs., to Richard Passmore, East Down, Barnstaple, Devon.

Second of 3 sovs., to W. Lucas, East Coker, Yeovil, Somerset.

Commended.—J. W. and C. James, Mappowder.

Colts or Fillies foaled in 1859.

First prize of 5 sovs. to T. Pain, Laverstock Hall, Salisbury, for colt.

Second of 3 sovs. to W. Marden, Pen Mill, Yeovil, Somerset, for colt.

Highly commended.—W. Gapper, Duddleston, Somerset, for filly.

Colts or Geldings foaled in 1858.

No entry.

Horse, Mare, or Gelding foaled in 1855.

First prize of 5 sovs. to T. Pain, Laverstock Hall, for mare.

Second of 3 sovs. to W. Gapper, Duddleston, for colt.

PONIES.

Mares of any breed not exceeding thirteen hands.

First prize of 4 sovs. to J. C. Wall, Redland Lodge, Bristol (Welsh).

Second of 2 sovs. to W. A. Maule, Stoke Gifford, Bristol (Welsh).

Highly commended.—J. C. Halse, Mollaud, Southmolton, Devon (Exmoor).

Stallions of any breed not exceeding fourteen hands high.

Not sufficient merit.

PIGS.

JUDGES.—H. Gibson,

J. Moon,

W. C. Spooner.

LARGE BREED.

Boars not exceeding Two years old.

First prize of 4 sovs. to W. Yells, jun., Round Robin Farm, Wilts (Berkshire).

Second of 2 sovs. to W. Hewer, Sevenhampton (Berkshire).

Highly commended.—W. Hewer, for another Berkshire Boar.

Breeding Sows.

First prize of 4 sovs. to Sir R. G. Throckmorton (Berkshire).

Second of 2 sovs. to W. Hewer, Sevenhampton (Berkshire).

Highly commended.—W. Symes, Buckleford, Dorset (Berkshire).

Commended.—John Woodcock, Netherhampton, Wilts (Berkshire).

Pens of three Breeding Sows not exceeding Nine months old.

First prize of 3 sovs. to W. Hewer, Sevenhampton (Berkshire).

Second of 2 sovs. to Rev. H. G. Bailey Swindon (Berkshire).

SMALL BREED.

Boars not exceeding Two years old.

First prize of 4 sovs. to J. A. Smith, Bradford Peverell, Dorset (Black Dorset).

Second prize.—Not sufficient merit.

Breeding Sows.

First prize of 4 sovs. to George Turner, Barton (Essex).

Second of 2 sovs. to W. Marden, Pen Mill (Essex).

Pens of three Breeding Sows not exceeding Nine months old.

First prize of 3 sovs. to W. Marden, Pen Mill (Essex).

Second of 2 sovs. to W. Marden (Essex).

EXTRA STOCK.

A prize of 3 sovs. to Walter Farthing, Stowey Court, Bridgwater, Somerset, for Devon heifer (Rose).

A prize of 3 sovs. to J. W. and C. James, Mappowder, for Hereford cow (Fancy).

A prize of 1 sov. to C. Hambro, Milton Abbey, Dorset, for Brittany cow.

A prize of 1 sov. to C. Hambro, Milton Abbey, for another Brittany cow.

A prize of 1 sov. to Lord Rivers, Rushmore Lodge, Wilts, for Channel Island heifer (Beauty).

A prize of 1 sov. to James Harding, Higher Waterson, for Southdown ram.

A prize of 10s. to F. Bond, Whitelackington, for pen of Dorset ewe.

A prize of 1 sov. to Mrs. J. Pitfield, Eype, for pen of Dorset ewes.

A prize of 1 sov. to E. Olding, Amesbury, Wilts, for cart stallion (Major).

A prize of 1 sov. to Josiah Hill, Cames Farm, Dorset, for Norfolk hack gelding.

A prize of 2 sovs. to James Rawlence, Bulbridge, Wilts, for cart filly.

A prize of 1 sov. to J. C. Wall, Redland Lodge, Bristol, for stallion pony (Jack).

A prize of 2 sovs. to Samuel Strange, Haselbury Bryan, Dorset, for pony (Young St. Spira).

HORSE SHOING.

JUDGES.—H. Gibson.

J. Moon.

W. C. Spooner.

Making and Fixing a Shoe.

First prize of 3 sovs., to Thomas Barrett, Bradford Peverell, Dorset.

Second, of 2 gs., to Charles Way, Frampton, Dorset.

Third, of 1 gn., to Francis Cape, Ilminster.

Highly Commended—G. Rowe, Charminster, Dorset.

Commended—J. Tizard, Charminster, and B. Barrett, Fordington, Dorchester.

The JUDGES of POULTRY were—J. G. Andrews, Dorchester.

Dr. Cottle, Cheltenham.

E. Hewell, Birmingham.

THE ANNUAL GENERAL MEETING

Was held on the Thursday, in the Council Tent, on the ground, with a heavy rain blowing in throughout the proceedings. Lord Rivers, as president, took the chair.

Mr. MAULE, the secretary, read the report, which was received and adopted.

The Council have to report that notwithstanding several deaths, and the omission from the books of the names of many persons who, though nominally accounted members, have long ceased to contribute to the funds, the society not only maintains its ground, but shows an increase in the number of subscribing members. At the present show there are 119 exhibitors of stock, viz., from East Somerset, 9; West Somerset, 15; North Devon, 17; Cornwall, 1; Gloucester, 7; Wiltshire, 16; Hampshire, 1; Dorset, 40; other counties, including Herefordshire, Berkshire, Lancashire, and Suffolk, 13. The entries comprise cattle, 130; sheep, 369; horses, 58; pigs, 42; total, 599. The cattle consists of bulls, 56; cows, 25; and heifers, 49. Of sheep there were rams, 142; ewes, 327. The pigs comprise boars, 13; sows, 29. Among the stock are five entries from H. R. H. Prince Consort, who honours the society by continuing his membership, and who, by his practical support and encouragement, sets an example worthy of extended imitation. The steward of the poultry department reports entries amounting together to 373 pens. In the opinion of the judges the present exhibition has surpassed any former one, both in the extraordinary number of first-rate birds, and the almost total absence of inferior specimens. Some valuable varieties of table fowls have been exhibited for the first time. Attention was recently drawn to the importance of greater care in the selection of suitable baskets for the conveyance of birds designed for the exhibition; some slight alteration for the better, in this respect, is observable; but great necessity for improvement still exists. In the implement department great increase is observable. At Barnstaple, the number of stands was 104, being an advance on all preceding meetings. At Dorchester there are no less than 155 stands, demanding an enlargement of the society's shedding to 2,000 feet run. There are 29 exhibitors of machinery in motion, as against 18 last year, and the request for uncovered ground have been in like proportion. So great an increase of exhibitors was not anticipated, and the steward of the shedding discovered that the manufacturer of the canvas (expressly made for the Bath and West of England Society) had no stock in hand. Since the 21st April, however, nearly 2 miles of the society's canvas have had to be made in Scotland; and so late was it delivered, that had it not been for the facilities afforded by the use of the special protection building, it would have been impossible to erect the shedding in time for the exhibition. The whole of the shedding was in a complete state of readiness to receive the implements on the 20th May,

but owing to the situation and character of Fordington meadows, on which the meeting of the society is being held, all the shedding poles, instead of being firmly fixed in the ground, are sunk in 3 feet of water, and it has consequently been impossible to ram down the earth in the holes. On Sunday and Monday, the 28th and 29th May, so severe was the gale, and so wet the meadow, that the anchors slipped, the posts were lifted, and the whole of the canvas was slipped off by the violence of the gale. All was restored by the afternoon of Saturday, the 2nd instant, when a second gale caused a repetition of the damage effected one week before, and the steward of the shedding wishes it to be clearly understood by members that the great exertions which were used to complete the repairs, in time for the opening of this exhibition, would have been unavailing if he had not a second time made use of the wooden building. Encouraged by the success of the exhibition of fine and industrial art, attempted for the first time at the Barnstaple meeting, the committee have accepted the arts department as an established branch of the society's operation. Mr. E. S. Drewe, of the Grange, Honiton, has been appointed chairman of the committee; Mr. T. D. Acland, vice-chairman; Dr. Scott and Mr. Pycroft, stewards; Messrs. Daw and Son, hon. secretaries; and Mr. Gendall, curator. The council refer with satisfaction to the collection of works of art now in course of exhibition, for many of which they are indebted to the exertions made by firms in Dorchester. They may also call special attention to the decisive fact that firms which contributed to the success of the Barnstaple exhibition, have contributed even more largely on the present occasion. The council beg to acknowledge the liberality of the Committee of Council of Education, in placing at the disposal of the society a new selection of articles from the South Kensington Museum, made expressly for this exhibition. They beg to express their obligation to Mr. Worsnop, the government curator, for his care and assistance during the trying circumstances immediately preceding the opening the exhibition to the public. To Mr. John Mansel, elected to the council with a view to the representation of any objects of special interest in Dorsetshire, the society is indebted for his having successfully introduced new and attractive features in the exhibition of objects of natural history and archæology. The horticultural show, the success and completeness of which are owing to the liberality and enterprise of Messrs. Veitch, of Exeter and Chelsea nurseries, has proved an interesting and natural supplement to other attractions of the week. The special prizes for shooing, offered by W. Miles, Esq., of Exeter, have led to a satisfac-

tory amount of competition, and the liberality of Mr. Galpin, in placing his forge at the service of the society, has relieved the society of one of the principal difficulties in awarding the prizes. During the past year a Committee of Council (appointed at the suggestion of the secretary, to consider the increase of his duties), has recommended the appointment of an accountant. That recommendation has been carried into effect, and on the Society's Journal, vol. 8, part 2, will be found a detailed statement of the society's financial position. The council have to report the payment to the society's credit of £100 with interest, being a surplus fund arising from the Tiverton show. Thanks to the directors of the Great Western Railway and other railways for their liberality; the resignation of Mr. T. D. Acland, as editor of the society's journal, and the appointment of Mr. Josiah Goodwin as part editor; the society's meeting for 1861 at Truro; the retirement of 24 members of council by rotation, whose re-election was recommended; and an acknowledgment to the Mayor and authorities of Dorchester, were amongst the other points in a very lengthy report.

Mr. G. S. POOLE moved the appointment of Colonel Buller as President for the ensuing year. Hitherto their practice had been to select a gentleman from the county, in which the next annual meeting was to be held, to preside. At the last annual meeting he gave notice that he should bring before the consideration of the society the propriety of passing a rule that the president should be selected from among those members who were not resident in the county in which the next annual meeting was intended to be held. His object in giving this notice was that he thought there was nothing the society should more carefully avoid than mixing itself up with local interests, local divisions, and local difficulties. He should have submitted this as a substantive motion to-day, but he found that his notice was not a regular one, not having been in writing. He would, therefore, now give notice that, at Truro, next year, he would move the following resolution:—"That it be a rule of this society, that the president be elected from among the members not resident in the county in which the next annual meeting is appointed to be held." He would also move at the present meeting that, although this was not a rule, the society should act upon the spirit of it. They were not bound by any rule as to the residence of the gentleman whom they elected; and he was about to propose the name of a gentleman not resident in the county of Cornwall, to preside next year. Mr. Poole proceeded to propose Colonel Buller's election as president, and Mr. Drewe seconded the motion, which was carried.

THE SMITHFIELD CLUB.

A Special General Meeting of the Members was held on Wednesday, June 6, at 3 o'clock, at the "Freemason's Tavern," to receive the Report of the Committee appointed on the 22nd ult.; to confer with the solicitors in order to make the necessary arrangement with the company to carry the resolution with regard to the site for the exhibition into effect. On the motion of Mr. Morgan, seconded by Mr. Sidney, it was resolved unanimously that the reporter in waiting be admitted.

The report of the Yard Committee was as follows:—

"The Committee having considered the different proposals that have from time to time been made, are of opinion that the site known as Dixon's Layers, at Islington, is the most advantageous for the Club's exhibition." They therefore recommended "That, if a responsible Company be formed, who will enter into an agreement to erect a suitable building on the site known as Dixon's Layers, to the satisfaction of the Club; also to pay to the Club £1000 per annum, and to enter into an agreement on similar terms to those now made with Mr. Boulnois; the Club shall lease their exhibition for a term not exceeding 21 years, commencing 1862."

The chair was taken by C. Barnett, Esq., and the following gentlemen were present:—

Mr. Henry Waters, Mr. Charles Howard, Mr. John Clay-

den, Mr. Robert Morgau, Mr. John Giblett, Mr. B. Gibbs (Hon. Sec.), Mr. S. Sidney, Mr. John Banister, Mr. W. Collins, Mr. Jonas Webb, Mr. J. B. Simonds, Mr. R. Garrett, Mr. J. Adams, and Mr. Robert Leeds.

The minutes of the last meeting having been read and approved, Mr. B. Gibbs read the following report of the Committee, agreed to on the 2nd of June.

"The Committee recommend that a space be allotted to each beast not less than 10 feet in depth and 6 feet in width, and that accommodation on that scale be afforded for not less than 210 beasts."

Also—

"That the beasts be so placed that they can be conveniently seen by the public both in front and behind.

"That space be allotted for not less than 180 pens of sheep, and that the pens average 6 feet square."

Also—

"For not less than 90 pens of pigs, and that the pens average 8 feet by 6 feet.

"That 35,000 feet be allotted to implements and other articles.

"The above measurements both for live stock and implements, &c., to be exclusive of accommodation for the public to view the Show.

"The Committee beg further to report that a draft agreement as settled by the solicitors has been approved by the Committee, such agreement not entailing any liability either at law or equity on any parties executing it on the part of the Club."

Professor SIMONDS having moved the adoption of the report, and this motion having been seconded,

Mr. JONAS WEBB said, at the last meeting an insinuation was thrown out against the Inspection Site Committee to the effect that, after having been a year and a-half in looking about for a site for a new building, they had ended by forming a company for their own benefit. Now, he must remind the meeting, that when an amendment was proposed for postponing the matter, the number who supported it was very small.

Mr. B. GIBBS remarked that the votes were 16 to 8.

Mr. J. WEBB continued: What he wished to impress upon the meeting was, that the Company was formed by the promoters, not for their own benefit, but entirely for the good of the Club (Hear, hear.) He had only taken shares himself for the purpose of securing the formation of a company; and nothing would induce him to proceed without the general assent of the members. He did not consider a majority of 16 to 8 a sufficient indication of their feelings on the subject; and what he would suggest was, that the Secretary or the Solicitor should send a circular to every member, which would effect the object of the amendment proposed by Sir John Shelley at the last meeting. He could not allow it to be supposed that he and others had formed a Company for their own benefit; the object being, in fact, solely to benefit the Club: and therefore he wished every member to have an opportunity of saying whether he approved or disapproved of the course taken by the Committee. A statement had appeared in the *Mark Lane Express* that at the last meeting he was the only person among the originators of the Company who left the room when the question was decided. That was not correct. Besides himself, Mr. John Claydon, Mr. Druce, jun., and Professor Simonds retired. Mr. Webb concluded by proposing what he suggested by way of amendment.

Mr. GIBLETT observed that he was the only promoter who voted on the question.

Mr. GARRETT remarked that had it been true that none of the promoters except himself left the room, the majority of 16 to 8 would in fact have been very small.

Mr. B. GIBBS said that remark applied only to the division on the amendment. The original motion for the reception of the report being carried by 29 votes to 6.

Mr. GARRETT quite agreed with Mr. Webb that there must be no room left for saying that there was a separation of interests in this matter. The object of those who formed this Company was simply to provide increased accommodation, and if there was much difference of opinion it would be for them to consider whether it should carry out the project. Under all the circumstances, he thought every member of the Club should have a circular sent to him before any final step was taken.

Mr. SIDNEY thought the best course would be for the meeting to pass the resolution, and for Mr. Webb afterwards to propose what he advocated, by a substantive motion. He agreed with that gentleman that a circular should be issued before the contract was signed, because if anything was done which was against the wishes of the subscribers they might withdraw in consequence; but if the result of that meeting should be that the motion was postponed and the amendment carried, they would in fact be in the same position that they were eighteen months ago (Hear, hear).

Mr. WEBB said he should be happy to adopt Mr. Sidney's suggestion.

Mr. DORMAN (Solicitor of the Company) wished to know whether he was to understand that if the majority of the answers to the circulars were unfavourable, the scheme would be abandoned altogether?

Mr. J. WEBB: O, yes; decidedly.

Mr. MORGAN said it was necessary that a company should be formed, in order that some determination might be come to. The directors were obliged to put down their names for a certain number of shares, when the company was formed, merely in order that the Club might have somebody to deal with in the matter.

Mr. CLAYDEN remarked that it having been settled that the Club was not in a position to build, but must be a tenant, it was arranged that the shares should be offered in the first instance to the members, adding that the sole object of the directors was to secure suitable premises for the Show (Hear, hear).

Mr. ADE (solicitor to the Club) said the agreement simply bound the members of the Club, as was explained at the last meeting, in honour; assuming that the report of the committee, if adopted that day, would be the sole effect; but the company would, nevertheless, like to know whether or not the majority of the members approved of it. He trusted that if the report were adopted the Company would, before the arrangement was finally made, be enabled to ascertain the opinion of the members, because it was obvious that if the Company, who were desirous solely of benefiting the Club, should erect the building, and then find that the majority of the members were against it, the object would not have been accomplished.

Mr. GIBLETT believed that the Company desired to pursue that course which would be most agreeable to Mr. Webb. That gentleman was naturally sensitive when it was insinuated that the Company had been formed partly for his benefit (Hear, hear). Everyone there knew that everything which was done was done with the view of benefiting the Club (Hear, hear). He would suggest that for the purpose of attaining this object—namely, the satisfaction of Mr. Webb and the other directors—the solicitor of the Club should address a letter to every member, requesting that an answer might be sent within a certain period, and that silence should be regarded as affirmative.

Mr. SIDNEY said: On the last occasion, when a discussion took place on this subject, there were no reporters present; and hence, perhaps, it was that the arrangement with the Building Company contemplated had been represented as a sort of hole-and-corner affair, got up for the benefit of Mr. Webb and others. Now there was no foundation whatever for such a suspicion (Hear, hear). Eighteen months ago a committee, which included almost every influential member of the Club, was appointed to consider the subject, and the report ultimately made was adopted unanimously (a voice, "No"). Well, at all events, by a very large majority; there was, he believed, only one dissentient (Hear, hear). That report was submitted to an unusually large meeting of the Club, and obtained its approval; and there could not now be the slightest pretence for saying that there was anything like a hole-and-corner character in the scheme. It would, in his opinion, be very unbusiness-like not to adopt the report on that occasion; and at the same time he admitted that, for the sake of the Company, steps ought to be taken to satisfy them with regard to the opinion of the members of the Club. On the previous day he heard a whisper that if the club went to the Angel, a split would take place, and an attempt be made to form another

association. He did not think there was any danger of that, but he certainly thought that something ought to be done to put a stop to the notion that the scheme was concocted by a few persons in hole-and-corner meetings, for their own benefit (Hear, hear).

Mr. ALLEN RANSOME thought our best course would be to pass the resolution for the adoption of the report, with a rider, which rider did appear on the face of it to have been added at the request of the Company, for the express purpose of eliciting a general expression of opinion. One word with regard to the best mode of arriving at a result. He thought that when a society like that, which had been in the main worked by a comparatively small number of individuals taking a large interest in all its proceedings, adopted, in a case of this kind, that course which they deemed best in a matter with regard to which the vast majority of the members knew nothing, and perhaps cared very little, being contented to follow the lead of those in whom they reposed confidence, it was not the best mode of deciding a question to poll the members. There was a number of active gentlemen whom the Club had requested to form a committee to consider this subject. Gentlemen who were actuated by a desire to do what they deemed to be the best for all the members formed themselves into a Company; at the same time they practically ceased for the time to belong to the council of the Club, their own delicacy preventing them from voting, and hence the Club was left without the assistance of those who at the outset were selected because they were supposed to have the soundest judgment in the matter. He did not consider that state of things at all desirable; on the contrary, he thought it necessary that the intelligence of those who had long taken a deep interest in the Club should have its due weight, and that to make everything depend on the votes of those who took but little interest in the Club would be unwise. He thought that if anything like a poll of the members were resorted to, the circulars should be issued by the secretary of the Club, and not of the company. His judgment was entirely with the committee with regard to the site which had been selected; but he felt that however excellent it might be in itself, it would be obtained at too great a cost, if the selection resulted in anything like dissension among the members. He was glad, therefore, to see a desire on the part of the promoters of the Company to elicit a wider expression of opinion, and his only doubt was as to the best mode of eliciting that expression.

Mr. DORMAN said the reason why it had been suggested that the circular should be issued by the Company instead of the Club was, that at the last meeting the resolution of Sir John Shelley for an appeal to the members was rejected. They wished for their own sakes to ascertain the feeling of the members, but they also desired to do that without stultifying themselves and causing unnecessary delay.

The CHAIRMAN said, before putting the motion for adopting the report, he could not help remarking that it was very gratifying to him, as Chairman on that occasion, to see so much good feeling prevailing, and a disposition to obtain the opinion of the members of the Club generally; but he agreed with the last speaker, that they ought to be careful not to stultify themselves, and hence he would suggest that, at all events, the report should be adopted.

Mr. J. WEBB said he would withdraw his amendment.

The Earl of FEVERSHAM said, what he understood to be the understanding come to was, that the report be adopted, subject to the approval of the members of the Club, whose opinion the secretary should be requested to ascertain (Hear, hear). His lordship added, that he had long been an advocate for the removal of the show, and that his only object in

what he had said was, that the thing should be done in a proper manner.

The motion was then adopted unanimously, with the understanding that it would be followed by an adjournment, for the purpose of ascertaining the feelings of the members of the Club with regard to the subject of the report.

Mr. WEBB repeated, that it was necessary that the matter should be placed in a better position for proceeding with the undertaking. As one of those who had been accused of forming the Company for their own benefit, he was determined not to remain in that position; and he therefore requested that the meeting should be adjourned to a period which would enable the members of the Club to express their opinion before any further step was taken.

Mr. DORMAN said he understood Mr. Webb to mean, that if a majority should declare against the scheme, it would be abandoned altogether.

Mr. WEBB expressed his assent.

Mr. GIBLET observed, that a few days ago, the President, the Duke of Richmond, expressed a good deal of doubt as to the propriety of his signing the agreement, considering it a very serious matter, and he ultimately said that he thought it might be done by a much younger man than himself.

Mr. ADE remarked that the terms of the agreement were settled.

A MEMBER inquired whether it were not one of the conditions of the arrangement, that the agreement should be signed by the President.

Mr. ADE: No.

The CHAIRMAN having been asked whether he would consent to sign the agreement, said he felt bound to decline; and to the question whether he would sign it officially as Secretary, Mr. BRANDRETH GIBBS also replied in the negative.

Mr. WEBB observed, that if no one would sign on behalf of the Club, it would be impossible to proceed.

Mr. ODAMS thought the Company could hardly be expected to incur an expenditure of £30,000 if the document had no authorized signature attached to it to represent the Club in the matter.

Some further discussion on this point resulted in the passing, on the motion of Mr. Clayden, seconded by Mr. C. Howard, of the following resolution: "That the Legal Arrangements Committee be re-appointed, and that any two of them be authorized to sign the agreement." It was afterwards resolved, "That the meeting be adjourned until Tuesday, the 19th inst., at 3 o'clock, at Hatchett's Hotel, Piccadilly, to enable the company to ascertain for their own satisfaction the feeling of the Club generally upon the proposal, and that the execution of the agreement as settled be therefore postponed."

MALT.—The total number of quarters of malt made in the United Kingdom from the 1st of October, 1858, to the 1st of October, 1859, was 6,122,892, of which number 5,068,646 quarters were made in England, 691,258 in Scotland, and 362,988 in Ireland. Duty was only paid on 5,463,010 quarters, the remaining 659,882 quarters being free from duty either on the ground of exportation or for being for distillery purposes. The brewers used of the above quantity—in England, 3,077,049 quarters; in Scotland, 168,104 quarters; and in Ireland, 296,613 quarters; or a total of 3,541,766 quarters. The quantity used by the victuallers was—in England, 889,764 quarters; in Scotland, 24,774 quarters; and in Ireland, none. The retail brewers in England also used 410,098 quarters, giving a total used by brewers, victuallers, and retail brewers of 4,866,402 quarters.

COTTON-SEED CAKE AS AN ARTICLE OF FOOD FOR CATTLE.

The introduction of a new vegetable substance as an article of food, is at all times of sufficient importance to claim the attention of the grazier. This must be especially so after such a season of scarcity as has been experienced throughout the last winter and spring; amounting, as it did, to actual famine in many parts of Scotland and Ireland, and the north of England. It is therefore satisfactory to bring before our readers the results of analyses and experiments made on the article of Cotton-Seed Cake, a production of the southern states of the American union, and which is now offered to the British grazier in such a form as can hardly fail to render it a valuable acquisition to the present catalogue of grazing substances.

The first importations of cotton-seed cake were of a very crude and inferior description. The seed itself was composed of a hard husk, containing an oily kernel, the latter being the only useful portion. The cake was formed, like that from linseed or rapeseed, by first bruising, and then pressing the seed, for the purpose of extracting the oil. Whilst the export of the cake was yet in its infancy, this was the only form in which it came over. But when the analyses and experiments of the English chemists became known in America, the planters found that by improving the preparation a good market would be opened for it. They so listened to the suggestions of the importers in this country, and set about devising methods for the decortication of, or the separation of the bark from the seed, which would render it much more acceptable, because more valuable to the grazier. This, of course, could be more effectually done on the spot where it was grown; and the planters are now sending decorticated cotton-seed cake in three forms—namely, 1st, thick cake; 2nd, thin cake; and, 3rd, meal; the latter being the thick cake ground up, and put into casks, or flour barrels.

So long ago as 1850 Professor Anderson, of Edinburgh, instituted a series of analyses and experiments on cotton-seed cake, the results of which were very satisfactory. Having obtained a supply of seed from the United States, he had it crushed and manufactured into cake at a mill near Edinburgh. He first of all tested its palatableness by placing it before cattle, sheep, and pigs, and finding that all of them devoured it with eagerness, he entered upon the following course of experiments:—He selected eight bullocks that had been at turnips and straw all the winter, and in March he put four of them on cotton-seed cake at the rate of 6 lbs. per day each, and the other four on a mixture of 2½ lbs. of linseed cake, 2½ lbs. of bean meal, and 1 lb. of treacle, with chaff and a little salt. Both lots were allowed besides, as much of turnips and straw as they could eat. They were kept at this food six weeks, when the cotton-cake being finished, the two lots were sold to the butcher, the best two of those

fed on the cotton cake having gained the prize at the district cattle show.

This favourable, though rather vague result, induced Dr. Anderson to proceed further the next season. He therefore selected six beasts that had, like the former, been fed on turnips and straw up to the 10th January. Two of these he then put on an allowance of 4lbs. of linseed cake, two on 4lbs. of cotton cake, and the remaining two on 4lbs. of bean meal—all having, as before, turnips and straw *ad libitum*. On the 10th of April they were slaughtered, when the following was the result upon their being weighed. It is necessary to state that none of them were what is called "fat;" but the cotton-seed cake being finished, it was thought best to kill them all, in order to determine the result of the experiment. This will account for the actual weight, when dead, being less than that by measurement on the 10th April, it being a common occurrence that cattle not in a ripe condition do not weigh out, when dead, to the measurement when alive.

Description of Food.	Weight by Measurement, Jan. 10th.	Weight by Measurement, April 10th.	Weight after being Slaughtered.	
			Beef.	Tallow.
No 1. Linseed Cake....	894	977	903	16
2. Linseed Cake....	888	966	911	19
3. Cotton-seed Cake	861	950	955	49
4. Cotton-seed Cake	880	912	875	63
5. Bean Meal.....	888	945	882	58
6. Bean Meal.....	860	961	920	52

The cake used in these experiments had the husk remaining in it, which renders the result more remarkable. And although, owing to the different aptitude of cattle to accumulate flesh and fat, such experiments cannot be considered absolutely decisive, the above are sufficiently so to show the superiority of cotton-seed cake over linseed cake, the two beasts fed on the former having gained 251 pounds in the three months in beef and tallow, whilst the latter gained only 147 pounds in the same time. The following is Professor Anderson's analysis of six substances, including those on which the cattle were fattened:—

Constituent Parts.	Linseed Cake.	Cotton-seed Cake.	Rape Cake.	Bean Meal.	Oatmeal.	Barley Meal.
Water	12.44	11.19	10.68	15.84	12.66	15.27
Oil	12.79	9.08	11.10	1.70	6.12	1.88
Albuminous Compds.	27.69	25.16	29.53	4.70	10.16	7.74
Ash	6.13	5.64	7.79	3.36	2.68	2.14
Other Constituents....	40.92	48.93	40.90	5.51	68.40	72.27
	100.00	100.00	100.00	100.00	100.00	100.00
Nitrogen	4.33	3.95	4.38	3.89	1.60	1.22
Silica	1.05	1.32	1.18	—	—	—
Phosphates	2.73	2.10	3.87	0.49	0.65	0.56
Phosphoric Acid.....	0.55	0.15	0.32	0.46	0.01	0.35

With such results as the above with the ordinary

cotton cake, we may expect something much more decided from the improved decorticated cake. Dr. Voelcker has recently made analyses of seven different specimens, the results of which were given in the 19th vol. of the Transactions of the Royal Agricultural Society. And as this book may not be accessible to all our readers, we give it herewith as follows:—

Constituent Parts.	No. 1.	No. 2.	No. 3.	No. 4.	No. 5.	No. 6.	No. 7.
Water	7.67	8.27	9.01	10.37	10.01	9.41	10.19
Oil	14.93	19.19	17.93	13.98	17.21	15.64	13.50
*Albuminous compounds, flesh-forming principles	13.21	12.62	41.81	40.68	40.18	42.75	37.18
Gum, mucilage, sugar, and indigestible fibre, heat-producing matters ..	14.47	12.25	13.67	18.88	18.09	14.83	22.97
Cellulose indigestible fibre	11.45	10.12	8.80	9.01	6.67	7.71	8.71
† Mineral matters (ash)	8.27	7.45	8.78	7.08	7.54	9.66	7.45
	100.00	100.00	100.00	100.00	100.00	100.00	100.00
* Containing nitrogen	6.91	6.82	6.69	6.58	6.47	6.84	5.95
† Containing sand	Not determined.			.68	1.58		.46
Earthy phosphates ..							4.27
Alkaline salts, including phosphoric acid							2.77
							.82

These specimens were all decorticated thin cake.

The seven specimens averaged as follows in composition:—

Water	9.28
Oil	16.05
Albuminous compounds ..	41.25
Gum, mucilage, sugar, &c. ..	16.45
Cellulose fibre	8.92
Mineral matters (ash)	8.05
	100.00
Nitrogen	6.58

Since the above analyses were made, Mr. J. C. Nesbit has tried three samples of decorticated cotton-seed cake yielding the following results:

COTTON-SEED CAKE MARKED RESPECTIVELY.

	Maginnis. per cent.	Fisk. per cent.	Martin. per cent.
Moisture	8.00	7.50	6.00
Oil	13.65	16.80	15.68
Albuminous compounds ..	44.60	38.74	45.50
Ash	8.00	7.50	8.15
Carbonaceous constituents....	25.75	29.46	24.67
	100.00	100.00	100.00

ANALYSIS OF LINSEED CAKE, FROM JOHNSTON'S ELEMENTS OF AGRICULTURAL CHEMISTRY AND GEOLOGY.

Water	10 per cent.
Protein compounds	22 "
Starch, &c.	39 "
Oil	12 "
Husk	9 "

It will be seen from the foregoing analysis that the composition of specimens of cotton cake differ in their constituents as to amount; but in the decorticated cake this difference is not material enough to affect the value of the article. Not so, however, the ordinary

cake, or that with the husk in it. Certain samples have been imported in which, there is every reason to believe, a large portion of the husk from the decorticated cake has been worked up. Some of this cake was purchased by Mr. John Fryer, of Chatteris, who gave it to his cattle. One of them died; and upon opening it after death, the passages of the stomach were completely stuffed and stopped up with the husk of the cotton-seed cake. The farmers must therefore be cautious, before purchasing the ordinary cake, to ascertain by analysis the proportion of husk it contains, it being wholly indigestible, and consequently injurious, and even dangerous to cattle in excess.

We have still to speak of the value of cotton-seed cake in respect to the manure produced from its use in fattening cattle and other animals. Mr. J. B. Lawes has investigated this point. In the *Mark-lane Express* of the 23rd of January in the present year is a letter from him, in which is given the comparative value of the manure from the consumption of twenty-five articles of food. In order to render this account as complete as possible, we again insert the results of his investigations:—

TABLE,

Showing the estimated value of the manure obtained from the consumption of one ton of different articles of food, each supposed to be of good quality of its kind.

Description of Food.	Money value of Manure from one ton of each Food.
1 Decorticated cotton cake	£6 10 0
2 Rape cake	4 18 0
3 Linseed cake	4 12 0
4 Malt dust	4 5 0
5 Lentils	3 17 0
6 Linseed	3 13 0
7 Tarca	3 13 0
8 Beans	3 13 6
9 Peas	3 2 6
10 Locust beans	1 2 6
11 Oats	1 14 6
12 Wheat	1 15 0
13 Indian corn	1 11 6
14 Malt	1 11 6
15 Barley	1 9 6
16 Clover hay	2 5 0
17 Meadow hay	1 10 0
18 Oat straw	0 13 6
19 Wheat straw	0 12 6
20 Barley straw	0 10 6
21 Potatoes	0 7 0
22 Mangolds	0 5 0
23 Swedish turnips	0 4 3
24 Common ditto	0 4 0
25 Carrots	0 4 0

We conclude with the observations of Professor Voelcker on the result of a recent analysis of thin decorticated American cotton seed cake lately imported:—

“1st.—The proportion of oil in all the specimens is higher than in the best linseed cake, in which it is rarely more than 12 per cent., and 10 per cent. may be taken as an average. As a supplier of food, cotton cake is therefore superior to linseed cake. 2nd.—The amount of oil in the several specimens differs to the extent of 5½ per cent.—say from No. 7, 13.50 to No. 2, 19.19. 3rd.—Decorticated cake contains a very high

and much larger per-centage of flesh-forming matters than linseed cake; and it is therefore proper to give to young stock and milch cows. The dung also is very valuable. 4th.—In comparison with linseed there is much less mucilage and other respiratory matter in cotton cake. This is compensated by the larger amount

of oil. 5th.—The proportion of indigestible woody fibre in decorticated cotton cake is very small, and not larger than in the best linseed cake. 6th, and lastly.—It may be observed that the ash of cotton cake is rich in bony materials, and amounts to about the same quantity as is contained in other oily cakes."

LONDON, OR CENTRAL FARMERS' CLUB.

STEAM POWER IN AGRICULTURE.

The last monthly meeting of the Club for the season took place on Monday evening, June 4th.—Mr. L. A. Coussmaker, in the chair. There were also present Messrs. Owen Wallis, B. P. Shearer, John Thomas, H. Trethewey, W. Fisher Hobbs, W. Shaw, C. Howard, W. Smith (Woolston), S. Skelton, E. Little, James Thomas, J. A. Williams, James Howard, J. Bradshaw, C. T. Brickwell, Pike, J. Parkinson, G. Wilsher, J. B. Spearing, James Wood, H. Shotter, T. Congreve, R. Goldhawk, T. F. Wilson, J. Cressingham, J. Wood (Croydon), W. Eve, S. Sidney, Lay, Marsh, Fidler, Copeland, Hooker, Palgrave, &c.

The subject for discussion, standing in the name of Mr. J. Wells, of Booth Ferry House, Howden, was:—“To what extent is the Farmer benefited by the Substitution of Steam Power for Horse and Manual Labour?”

The CHAIRMAN, in opening the proceedings, said the subject before them was one to which public attention had of late been a good deal directed. They had nothing to do with the question what steam power had done for manufactures, or with the improvements which it had made in the communications of the country by sea and land. They had to consider the subject simply in reference to agriculture. There could be no doubt that steam power had to a certain extent benefited the farmer already; for example, as regarded thrashing, chaff-cutting, and other processes of that kind; but what they wanted was to ascertain how far it was applicable to the cultivation of the soil. Mr. Fowler, Mr. Smith, and other gentlemen, had devoted considerable attention to the devising of methods of applying steam to that purpose; and the subject would be introduced that evening by a gentleman who had, he believed, applied steam power on his farm to a considerable extent, and who was no doubt in a position to supply them with useful information. He was happy to say that they had among them on that occasion Mr. Smith, of Woolston. A short time ago a deputation from this Committee visited that gentleman's farm, and saw steam cultivation carried out practically, and, as he trusted, profitably; and he hoped that gentleman would address them in the course of the evening. The deputation did not see the steam-engine at work, but they walked over the farm, and found the system pursued to be most efficacious. As a member of the deputation, he must say that he never saw land better broken up in his life (Hear, hear).

Mr. WELLS then said: Mr. Chairman and Gentle-

men of this Club at the close of the last session, I offered to the Committee appointed for the selection of subjects for discussion during the present year to read a paper on steam power, so far as regards “the benefit the farmer has derived by its substitution for manual and horse labour,” and also as to “the expediency of having any portion of such power stationary.” This latter part of the subject does not appear on the card; the reason why, I must leave the Secretary to explain, as I have long considered the part omitted was *per se* a point of great importance. I should not have alluded to the omission, but I hold it to be essential in all subjects brought forward for discussion that the introducer should, as far as lies in his power, confine his arguments within the limits of the title of his paper. The advantages to be derived by the use of steam in agriculture have recently been so fully detailed to the members of this society by Mr. Mechi, that any comment from me on that ground *alone* would be a waste of your time, had there not been in some portions of that gentleman's able paper a little too much stress laid on the theoretical, and rather too stringent a condemnation of my brother-farmers for not having more generally adopted the views propounded by him on that occasion. I am aware, from many years' experience, that in the introduction of all novel appliances the greatest difficulty to combat is prejudice; but the innovator (if I may so term the spirited farmer who is determined to test fairly the different systems brought forward for improved agriculture) ought to be very careful that he does not fall into the error he is guilty of ascribing to others. I feel convinced, and the practical assemblage I now see before me will bear out my assertion, that what is an improvement and a saving on some soils, and in some districts, proves of little or no avail in others; and, therefore, in laying down any new system, soil, climate, locality, nature of tenure, buildings, &c., should be taken into account before condemnation is passed upon those who hesitate to adopt any of the various agricultural opinions which of late years have been so plentifully advanced. Steam power a few years ago was confined in agricultural operations to thrashing out the produce of the farm, cutting hay and straw, bruising horse and pig corn, and sawing refuse of timber; and even in those works only very partially employed until the locomotive was introduced. Where fixed machinery propelled by horse power indeed now exists, we find that mode of making the produce ready for market to be the exception rather than the rule. This leads me to the

first consideration of this day's discussion, whether fixed or locomotive engines arc most desirable; and, having been in the habit of using both for several years, I will as briefly as possible lay my experience before you. In the year 1840 I commenced farming an area of about 300 acres, land subsequently increased to 450 acres. The steading principally required rebuilding, which I arranged as conveniently as possible for machinery, to be worked by a six-horse wheel, capable of propelling thrashing-machine, linseed-crusher, a pair of stones, chaff-cutter, and cake-breaker, the cost being £165.

No. I.

COST OF WORK PERFORMED—THRASHING.

	£	s.	d.
By 3 pair of horses, at 5s.	0	15	0
4 men and 2 boys	0	11	0
Ditto half a day dressing, and blowing twice over, and carrying away	0	6	3

£1 12 3

Quantity per day 18 qrs.; or, manual labour 1s. per qr.; horse labour 10d. ditto.

CHOPPING 9 TONS HAY AND STRAW PER DAY.

2 pair of horses, at 5s.	£0	10	0
Manual labour, 2 men and 2 boys ..	0	6	0

£0 16 0

Or 1s. 9 $\frac{3}{4}$ d. per ton.

BRUISING OATS, &c.

2 pair of horses	£0	10	0
Manual labour, 1 man and 1 boy ..	0	3	0

£0 13 0

Or 8 $\frac{1}{2}$ d. per qr. 2 qrs. per hour.

TOTAL COST OF WORK PERFORMED DURING THE YEAR BY HORSE POWER ON THE FARM.

400 acres arable land, producing—			
100 acres wheat, at 4 $\frac{1}{2}$ qrs. per acre ..	450	qrs.	
80 acres spring corn, equal to	450	„	
	900	„	s. d.
900 qrs., at 1s. 10d. per qr.	82	10	0
180 tons hay and straw chopped, at 1s. 9 $\frac{3}{4}$ d. per ton	16	6	3
Brusing 400 qrs. oats and barley, at 8 $\frac{1}{2}$ d. per qr.	14	3	4
Depreciation in wear and tear of machinery, at 10 per cent.	16	10	0

Total annual cost by horse power £129 9 7

In 1846 I succeeded to another farm of similar area and quality of land. The inconvenience I had suffered during the spring and autumn in having to break off from sowing corn, planting and lifting potatoes, to thrash and chop, convinced me that the substitution of steam for horse-power to carry out these operations would be ultimately advantageous, if even no saving in a pecuniary point of view was effected. The proprietor gave me materials for altering the barn, building the engine-house, chimney, &c., on the understanding that I discharged the labour connected therewith. The outlay stood thus:

Labour Bill for building engine-house, chimney, alteration of barn and chop-house, and adding mill-house.	} £100
Engine 10-in. cylinder, 12-in. crank, 2-ft. stroke at 30lbs. pressure, 7-horse power boiler, and shafting, all fixed complete, but safe to use at 60lbs.	
Thrashing machine and chopper, pair stones, cake breaker, linseed crusher, and saw table.	} 210
	} 185

Total outlay £495

WORK PERFORMED.

I find the most economical plan is to thrash one-half of the day; the other half to chop, grind or crush horse-corn, and break cake. By adopting this principle,

if the weather is suitable, it gives the farmer the opportunity of having his horses at work at the same time: the only loss sustained is the engine driver's time, half a day.

MORNING'S WORK

From 6 a.m. to 12 thrashing.

	s.	d.
Five men 10s. 6d., one boy 1s., engine driver 2s. 6d., half a day	7	0
Coals 6 cwt. 2s. 6 $\frac{1}{2}$ d., oil 6d.	3	0

10 0

Work performed 17 quarters—dressed, weighed, and ready for market, being

Manual labour	5d. per qr.
Fuel and grease	2d. „

Total..... 7d. per qr.

I have thrashed 70 loads, or 26 $\frac{1}{2}$ qrs. within the time named above; but in making the above calculation I have taken an average of years, some seasons the yield being so much greater than others, in proportion to the straw: and I never like the corn to be put too rapidly through the machine, as I find by so doing the straw is not so clean thrashed, and consequently the saving of labour is not true economy. I ought not to omit mentioning that on the warp land districts the quantity of straw in proportion to yield of corn is much greater than the average growth of most other soils.

AFTERNOON'S WORK,

From 1 p.m. to 6 p.m., one hour stopping.

	s.	d.
Half a day		
Chopping 2 tons per hour—2 men 4s., 1 boy 1s.	} 5	0
Grinding horse corn 2 qrs. per h. { 1 man 2s. 6d.		
Or cake-breaking 2 tons per h. { engine driver 2s. 6d.		
Fuel and grease.....	3	0

Total 8 0

	s.	d.
3 tons hay, at 9d.	6	0
8 qrs. corn, at 3d.	2	0
Manual labour at 6d. per ton cutting, fuel at 3d. per ton cutting—total 9d. per ton.		
Grinding at 1 $\frac{1}{2}$ d. per qr., fuel at 1 $\frac{1}{2}$ d. per qr.—total 3d. per qr.		

No. II.

TOTAL COST OF WORK PERFORMED BY FIXED STEAM-POWER ON THE FARM.

	£	s.	d.
900 qrs. grain at 7d. per qr. fuel and labour	26	5	0
100 tons hay and 80 tons straw at 9d. do..	6	15	0
400 qrs. oats and barley bruising at 3d. do..	5	0	0

£38 0 0

Wear and tear of engine on £210 at five per cent. 10 10 0

But the actual cost of repairs of engine and boiler for 7 years was only £6 5s. per annum, or about 3 per cent., as follows:—

	£	s.	d.
1853-4 ..	7	4	9
1855....	7	5	4
1856....	6	2	6
1857....	2	10	6
1858....	2	4	4
1859....	12	1	9

Wear and tear of machinery on £185, at ten per cent. .. 18 10 0

29 0 0

Total cost by steam power, exclusive of interest on outlay calculated below .. £67 0 0

Total cost of same work by horse-power, exclusive of interest on outlay, calculated below £129 9 7

Saving effected by fixed steam power .. £62 9 7

On difference in capital employed—			
Fixed steam power	...	...	£495 0 0
Ditto horse-power	...	...	165 0 0
Extra capital	...	...	£330 0 0

Showing a profit on investment of $37\frac{1}{2}$ per cent., without taking into consideration the breaking of 30 tons linseed cakes per annum for beast and sheep feeding, pumping 8,000 gallons water weekly for cattle and domestic use, sawing up old wood and stumps for fuel, timber and deals for the repairs of the farm carts and implements of husbandry, and two days per week steaming refuse potatoes or other roots with the spare steam, independently of offering an opportunity of *pulping* roots, which I am convinced will prove a considerable item of saving if attached to the engine.

As much, however, depends on the arrangement of the buildings, I have drawn a ground plan of a new farmstead I am now erecting, and which is calculated, to the best of my judgment, for facilitating the different operations enumerated, at the same time having regard to the saving of labour. On the farm where horse-power is fixed, the aid of a portable steam thrashing machine is occasionally resorted to. The expenses run as follows:

	No. III.	s.	d.
9 men at 2s.	18 0
1 man at 2s. 6d.	2 6
6 women at 1s.	6 0
Allowance	4 0
Fuel 12 cwt. at 8s. 6d. per ton	5 4 $\frac{1}{2}$
Blowing over for market	3 0
Fetching water	2 0
Quarters thrashed 35	...	£2	0 10 $\frac{1}{2}$
Or 1s. 2d. per quarter.			

If the engine is the property of the farmer, the wear and tear must be calculated at a higher rate than a fixed one, for reasons to be subsequently stated; and if hired, the price paid averages in my district 1s. per qr., to which must be added the value of six horses fetching or returning the machinery, which will increase the cost per quarter, in proportion to the quantity required thrashing, prior to sending the machinery home, and the distance to be fetched or returned. Having thus shown the pecuniary saving effected, by the substitution of a fixed steam engine for horse-power in preparing the produce of the farm for market, and the food for the cattle, I will proceed to notice some of the objections which at various times have been urged against the general adoption of steam-power for these purposes. First, we are frequently told that during the time the engine is working the horses are *idle*; secondly, that farmers have not generally the command of capital for carrying out such expensive arrangements; and thirdly, that for want of security of tenure (if even the capital was forthcoming) prudence forbids its investment in such a manner. My answer is, that no doubt in some instances the horses are not working; but *idleness* and *rest* are two very different things, and I think I shall be able to prove that the farmer's interest does not suffer from the portion of the work we have been describing being carried out by steam in lieu of horse-power. I practically find that on the farm where I entirely use steam, though I have not reduced the number of horses previously employed, I can keep them in the same condition with one-third less corn, leaving a clear saving of upwards of £80 per annum, or £4 per horse. This is easily accounted for, when we consider how injurious it is for a horse to be for hours exercising a circular motion, pulling in such a manner that his muscular strength is not properly balanced; add to this diminution of his physical power the still further injurious effect of having to stand in a con-

stant draught whilst in a heated state during the frequent stoppages necessary to rest the work-people, oil the machinery, and clear away the chaff and pulls, as it happens the horse-wheel is invariably constructed in such a manner that every thorough current of air that is possible to be had is obtained. Again, how often do we see in a busy season the poor animal taken to the wheel after a hard day's work, for an hour's thrashing or chaff-cutting, stimulated to go through the additional labour by an extra feed of corn! This very excitement itself entails a serious detriment to the horse, as a depressing reaction must inevitably follow. In reply to the second objection, I think all present will agree with me that the day is past for opposing the adoption of any system which tends *profitably* to increase the produce of the soil, on the ground of outlay. The last objection is one which deserves great consideration from all connected with agricultural pursuits. It cannot be expected that tenant farmers will, as a rule, incur the risk of investing large sums in fixed machinery upon yearly tenure, without some prior understanding as to its disposal in case of leaving their farms. I remember only last year an occupier in East Yorkshire giving up his farm, and his successor refusing to *buy on any terms* the machinery which had only been erected two or three years previously by one of the first firms in England. The consequence was, an outlay of nearly five hundred pounds did not realize one-third of the original cost; and the buildings, which the proprietor had erected expressly with a view to the convenient working of the machinery, were rendered useless. In my own case the arrangement was that every portion of the machinery should be put up of the best construction, and in the event of my leaving the farm the whole should be taken by the in-coming tenant at a valuation, to be made by two valuers or their umpire in the usual manner. Upon the several estates I have the honour to have entrusted to my management, I have authority to offer the same facilities to any of the tenants who are desirous of adopting similar fixed machinery and power; terms which all must consider liberal, and which also, if it were not for fear of extending my remarks this evening to too great a length, I should have no difficulty in proving are advantageous to all connected with landed property. In the absence of such an arrangement, or of a lease of the farm, one other course is open, viz., that a prospective yearly interest to the tenant so erecting be agreed upon by both parties previous to the erection, and should the tenant from any cause quit his holding before the expiration of the specified time, compensation for such portion of the unexpired period be allowed him. The farmer who erects a fixed engine and machinery should be careful, when securing his corn to make the dimensions of his ricks correspond with those of his barn. He is then enabled to get a stack under cover when the weather permits, and on the first broken or wet day at his command it can be thrashed out. By adopting this course he will find himself enabled to thrash out one-half of his produce at seasons when, in all probability, his farm-servants and labourers would lack employment, independently of the advantage of having the straw fresh thrashed, sweet, under cover, and on the spot required for consumption, likewise giving him an opportunity of marketing his corn at regular intervals. I may observe, by the way, that this practice on the average of years I have found to be the most profitable. I am aware that some farmers object to this course on the ground that thrashing ought not to be carried out during damp weather; but the advantages I have enumerated will counterbalance any such fancied deterioration, more especially when you take into consideration that the farmer is precisely in the same position as

regards thrashing by fixed horse-power, and still worse by locomotive machinery, as I shall hereinafter lay before you. In concluding my remarks on this portion of my subject, I would warn my brother-farmers against the doctrine laid down in the paper by our friend Mr. Mechi, that "it is a great convenience to your neighbours to send in their corn to you to be ground;" and, further, "I find that in this way the money I receive for grinding for others pays for all my coals, so that my engine only costs the wear and tear and attendance, and still does all my work." If this system is to be taken as the basis of profitably introducing steam-power on farms, why not apply it to the whole of the cereal produce grown thereon, as has been tried on the experimental farms at Patrington, Fairfield, &c.? This opinion rests on the assumption that no public mill exists in the neighbourhood, also that the erection of fixed steam-power on farms is still to continue an exception to the rule, and that the occupier must be a miller, or keep up a regular staff to conduct the grinding department, all of which is not only out of the category of common farming, but is likewise an argument that without extraneous aid the area and quality of the farm will not produce sufficient to re-imburse the occupier for the expense attendant on the introduction of steam-power. In offering an opinion on how *small* a farm it will pay to erect a steam-engine, it ought to be calculated by the produce and not by the area; and I have no doubt that any farmer occupying land producing annually from four to five hundred quarters of grain, and requiring food for eight or ten horses with the other usual stock in proportion, would find a fixed engine, and such machinery as I have described, a profitable investment. The advantages derived by the use of locomotive steam-power are the saving of loss of corn by shaking, and the expense of getting the rick into the barn; the escape by the work-people from the annoyance of dust, which naturally is more confined in a building, and (where the occupier has separate holdings) a saving of outlay, by the removal of the engine from one steading to another. The argument sometimes used that he can thrash his neighbour's corn as well as his own, I treat precisely on the principle as the miller's work by the fixed engine; and if steam cultivation, which is referred to hereafter, comes into general operation, no doubt it can be made available for that purpose. These disadvantages I believe, on examination, will be found to out-weigh what I have enumerated; and in this I am borne out by the fact of three gentlemen resident in my own neighbourhood, who had purchased locomotive engines with the idea of carrying out more or less the views I have laid down, having either made fixtures of them, or changed them for fixed engines. Let us, therefore, consider the cause. First, then, as regards an engine of equal power, the prime cost of a locomotive is 10 per cent. above a fixed one; this, with a shade, brick-built and tiled or slated, for the protection of the engine and machine when not at work, will be about equal to the cost of the additional buildings for a fixture. The piston of an engine makes two-hundred and twenty feet per minute, the crank of a fixture being generally one-third larger than a locomotive; thus a fixed engine with twelve-inch crank would require a two-foot stroke, and make fifty-five revolutions per minute, where the locomotive with nine-inch crank and eighteen inches stroke would, to perform the same work, have to make seventy-three revolutions in a similar space of time, consequently causing considerably increased friction; the horizontal position of the piston, without great care, rapidly becomes oval-shaped, which is not so liable to be the case when perpendicular. The concentrated form of the boiler,

compared with those attached to fixed engines, is another serious item in expense; being multitubular, it is difficult to clean, and wears rapidly away; and, what is still more fatal, the injurious effect produced by transition on bad roads, and constant oscillation when working. From these causes I think I may safely estimate the wear and tear of a locomotive to be fully 20 per cent. above that of a fixed engine. The slovenly state the stack-yard has for a time to be left in after a thrashing-day, the detriment to the chaff and pulls, the increased number of hands required (about double)—many, not being regular labourers, have to be paid a higher rate of wage—the extra liability to accident by fire, the fetching of water, carrying away of corn, restacking of the straw, and the not unfrequently having all thrown out of work by wet weather sometimes for days, and at other periods during the day by storms or by thunder-showers, all tend to injure the produce and increase the expense. The reasons I have advanced, and the calculations I have this evening laid before you, I think must prove the advantages gained by the substitution of steam for horse power in that department of agriculture that I have introduced for discussion; and, further, that where the quantity of produce on the farm is such as I have previously intimated, the occupier who is desirous of adopting the most economical, safe, and convenient course will determine in favour of a fixed engine. Though more a landlord's than an occupier's question, I must not omit mentioning the benefit arable land lying below the level of the nearest outfall has derived from the introduction of steam-power in conjunction with the Appold and other pumps, which, by raising the water to a sufficient altitude to allow it to pass away through high-level drains, has converted many thousand acres of unimprovable waste into land of the most fertile description. This subject was so ably introduced by Mr. Mechi in his paper on steam in agriculture, that it would be bad taste on my part to comment further thereon.

The next subject I propose for consideration in conjunction with steam is the pipe or tile draining plough; and no doubt, if this could have been brought into general use, it would have superseded more manual labour than all other appliances of steam to agricultural purposes. Those who have witnessed its operations must have been pleased with the ingenuity and perseverance of its spirited introducer; and on strong land of an undulating character I saw, in Cleveland, several years ago, some apparently good work, though I have since learned that it has proved far from perfect. I was, however, at that time induced to ask Mr. Fowler to inspect the estate in the neighbourhood where I reside, for the purpose of ascertaining whether a contract mutually advantageous could be entered into for its drainage. Three difficulties, however, arose: first, the flatness of the surface, which would have caused considerable manual labour in preparing the land for the plough; secondly, the draining of the lands *in summer*, entailing a loss to the occupier of a year's rent; and, lastly, the actual cost per rod or chain by manual labour for laying the pipes three feet six inches in depth was less than Mr. Fowler could undertake to contract for. The drainage plough was likewise tried on a strong-landed estate a few miles from me, and with no better success; the great drawback at that time seemed to be, as in my case, the inability of laying an even-bottomed drain over an uneven surface. I believe some further improvements were afterwards effected, but it certainly has not acted generally in a manner to supersede manual labour, and as such I can claim no advantage for the farmer by its introduction.

Whether the traction engine, Romaine's and the Archimedian cultivator, and other rotary ma-

chinery, or Halkett's railway system of steam culture, may ultimately prove so beneficial as to displace manual and horse labour to any great extent I am not in a position to offer an opinion. Mr. Algernon Clarke, in his prize essay on the application of steam-power to the cultivation of land, says "a rotary steam-cultivator can produce the most economical results, and possesses the greatest advantages were it not that a further simplification of mechanism and a relieving of the soil from excessive pressure are still to be sought." I, therefore, pass them over, and proceed to the last, and to many the most interesting, portion of this evening's discussion—"steam-ploughing and cultivating." Personally, I have no experience in this matter, though I possess the advantage of having within a few miles of me two of Smith's cultivators and one of Fowler's ploughs, frequently at work; the opinion I express will, therefore, be what I have derived from my neighbours Mr. Saltmarsh, Mr. Robertson, and Mr. Coulson. The great controversy at present seems to be whether the cultivator or the plough is to be esteemed most beneficial; no doubt each has its merits, but it is highly important that the best system should be arrived at and recognised. In working arable land I incline to the opinion that from the first commencement of spring operations to the breaking up of the stubble, the cultivator is the best implement, and that for winter laying the turn-over or ridging should be adopted. Fowler's plough, as used on Mr. Saltmarsh's estate, appears to me perfect in its operation as a turn-over plough, and, no doubt, would be equally so as a cultivator; but the machinery and engine are more costly and heavy, which, I think, will militate against its coming into general use except on the principle of hire. Neither Fowler's nor Smith's reduces the amount of manual labour; the average cost of work done by Fowler's plough last autumn, as stated by Mr. Saltmarsh of Saltmarsh, at the Howden Farmers' Club, was 170 acres, at a cost of—for coals, manual labour, and sundry out-payments—£68 3s. 7d., or an average of 8s. per acre; but this did not include wear and tear, Mr. Fowler having agreed to keep the engine and implements connected therewith in good working order up to that time. No farmer could desire better work than what was performed on the last occasion of my seeing it, and I do not hesitate to say that upon strong clay land, if ploughed nine inches deep, and I were the occupier, I should think the plough invaluable. No comparison can be made as to relative value with horse-power, for the latter could not effect such work. Every practical agriculturist knows that it would be impossible to get four horses to turn over strong clay soil from six to nine inches deep and leave a level sole, independently of having it done without the pressure of a hoof, which, on such soil in wet weather, is injurious to the highest degree. Mr. Saltmarsh's machinery was drawn by a ten-horse power engine, with self-moving and reversing gear. The engine was put in motion by attaching a pair of horses to it, and went well until it came to where it had to cross a headland one hundred yards in length to another field; here, for want of power of the self-moving process, it became stationary; with the aid of half-a-dozen men and four good horses, after an hour's delay, the difficulty was surmounted. On this point, at the meeting alluded to, Mr. Saltmarsh strongly animadverted. I name this particularly, that Mr. Fowler's attention may be called thereto; for in the strong clay districts in East Yorkshire, with the exception of the public highways (and I cannot say much in favour of them), the roads from field to field, when you leave the farmsteadings, are of a most wretched description. I could point out miles of accommodation lanes, where it would be impossible to get the engine I saw to traverse, if the performances I allude to were any criterion to go

by; and I feel it to be a duty I owe to my brother-agriculturists, whilst bearing testimony to the merits of its work, that I should not be acting justly if I were not equally impartial in denouncing what I consider its drawbacks—more especially when I find it stated in Mr. Fowler's introductory remarks recently published, "that the improvements made in the tackle since last year have been the lightening and cheapening the windlass, combining it with the engine, and making them both self-moving by the aid of steam, so that with the aid of one or two horses in the shafts to steer the engine it can be moved from field to field and place to place, whereby a great saving of time is effected, and much inconvenience is avoided, the farmer being rendered almost independent of horses for cultivating operations." Mr. Saltmarsh considers that by the introduction of this plough he will be able to work his farm of 450 acres of arable land with ten horses less. Mr. Saltmarsh has a fixed steam-engine for thrashing, chaff-cutting, and grinding; so that the reasons assigned by Mr. Mechi for not having introduced steam-ploughing at Tiptree Farm have not deterred his northern neighbour from adopting the valuable implement, the merits of which I need not go further into, after the many practical examples which have already been published in the Royal Society's Journal. I will only detain you with a few remarks on the cultivation of the soil on the Woolston principle (as carried on by Mr. Coulson and Mr. Robertson; the former gentleman having only used it partially for three years, I shall confine myself to the description given by the latter). Mr. Robertson, in the spring of 1859, entered on two farms—one consisting of about equal portions of strong and convertible land, and which had been previously creditably farmed; the other cold strong clay, undrained, poor, and wretchedly out of condition; the two together comprise about 380 acres. Mr. Robertson, since his entrance, has cultivated equal to 800 acres, at a cost of 3s. 4d. per acre in manual labour, and 4s. per acre for the wear and tear; having never had during the twelve months he has been there more than four pairs of horses, he is enabled to tell pretty accurately the difference in cost of cultivation. He is now working for hire adjacent lands at 8s. per acre, exclusive of fuel. These sums nearly correspond with the reports published detailing the experience of other gentlemen who have tried this mode of cultivation, excepting wear and tear. In the report on Woolston farming, Mr. Smith calculates the latter at 1s. 6d. per acre. Mr. Randall, of Chadbury, who speaks highly of the system, puts down for the wear and tear of the rope alone 1s. per acre; whilst Mr. Robertson, after executing 800 acres of work, informs me he requires a new rope, which, at £60, would by itself be the total sum stated by Mr. Smith to be the wear and tear; the old rope is certainly useable for fencing, and ought to have a little allowed for it, but that will leave too small a margin for everything else. There are, however, two objections to this system, from observations I have made during the time it has been in operation on the Spaldington Estate, which, as I have not seen them noticed in any printed report, may lead this evening to some explanations. The first I allude to is that in wet weather, during the first operation, the implement seems to go through the soil without tearing it sufficiently up; the other, that, if the weather has been favourable for the first operation, should a continued change occur, the crossing is constantly impeded by the adhesion of the soil to the wheels. Having now briefly adverted to the two systems at present principally in use for the cultivation of the soil by steam-power, I proceed to consider to what extent it displaces manual labour and horse-power, and also how far it can be made available for general introduction. First, then, as regards manual labour: I am of opinion that no

saving in this portion of the farm expenditure is *directly* gained by the introduction of steam cultivation. In the whole of the calculations I am going to submit for your consideration the reverse will be found to be the result. Mr. Fowler's plough averages, on two hundred working-days, 16s. 7½d. per day, without including the labour of fetching coals, and the removal of the engine and apparatus, but inclusive of water-carriage; and if I average the work performed at 4½ acres per day on 200 working days, giving 900 acres per plough per annum of soil turned over, or 3s. 8d. per acre, I trust it will be considered a fair basis to found an opinion upon. Mr. Smith's cultivator averages 17s. 4d., which, on the same calculation, gives 3s. 10d. per acre. So far, therefore, as manual labour is concerned, both may be considered on an equality. On strong clay-land, it will take one man at 2s. and one boy at 1s. to plough, with four horses, an acre of land as deep as the animals can draw the plough, to move steadily, and which will not exceed six inches on the first ploughing, costing, in manual labour, 3s. per acre; whilst on light soils one man at 2s. per day, with one pair of good half-bred horses, will plough six inches deep an acre and a half *per diem*, costing in manual labour 1s. 4d. per acre, on the calculation of 10 working hours per day, of 200 working days per annum, as per table No. VI. It is, therefore, very evident that in neither case is there any displacement of manual labour by the introduction of steam cultivation. Secondly, as regards horse-power, I believe it is universally admitted that to work arable land well it requires, on the average, two pairs of horses for every hundred acres, where steam has not been introduced. In corroboration of this, I may state that, in the year 1850, I applied to the occupiers of ten distinct farms, situate in the counties of York, Nottingham, and Lincoln, varying in area from one hundred to one thousand acres, and representing in the whole upwards of 3,400 acres of strong clay, sand, wold, and warp land, for an account of the number of agricultural horses working on each separate holding. The return I received showed the number of horses so employed to be 137, or one pair for every 49½ acres. The cost of horse-keeping at that time was about 25 per cent. less than at present, so that I prefer at the present date, to prevent any comment on undervaluing the expense of maintenance, to take Mr. Morton's tabular statement on the cost of horse-power, published in the Royal Agricultural Society's Journal, vol. xix., p. 451, Table 3, which shows the keep on 21 farms to average annually for each farm-horse £24 2s. 8d. This, with £5 10s. for depreciation of the animal, blacksmith's, saddler's, and farmer's charges, makes a total of nearly £30. My own experience on 50 draught-horses, with interest on average value added, corresponds with this amount. Mr. Robertson, as previously stated, cultivates his farm of 385 acres by Smith's cultivator, with only eight horses; and Mr. Saltmarshe by Fowler's, with nearly five hundred acres, proposes to reduce his number from 25 to 15. Mr. Redman, of Overton, on 410 acres arable land, has dispensed with three teams of oxen and one of horses. Mr. Hallam, M.P., in his speech at the East Gloucestershire Society, stated that, "instead of 20 horses, he only now keeps 12." Mr. Richard Burniston, of Henley-on-Thames, on one thousand acres, calculates to spare 10 horses; and Mr. Pike, of Stevington, who uses Smith's, says, "I have reduced my horses from 15 to 11, and flatter myself I can do with nine." It is, therefore, a fair basis for calculation, to presume that the introduction of a steam-plough or cultivator will displace eight horses, Mr. Saltmarshe and Mr. Burniston, who take the higher number of ten, not having yet reduced theirs to

that number, whereas Messrs. Robertson, Redman, Hallam, and Pike speak as to the actual deduction.

No. IV.

FOWLER'S PLOUGH.—*Capital required.*

Tea-horse engine (double cylinder), with self-moving and reversing gear, windlass, water-cart, anchor, 800 yards steel rope, headland ropes, 16 rollers, 2 snatchblocks, and field tools	622
Four-furrow plough (adjustable to any width of furrow), with scarifier iron	81
Sundry expenses and other implements connected therewith—say	17
	<u>£720</u>

Mr. Fowler, in his calculation, puts it at £750.

LABOUR AND EXPENSES REQUIRED TO WORK THE ABOVE

	Manual Labour.			Coals.			Removal by Horse.			Oil.			
	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	
The Calculation in the Chester Report	0	18	0	0	10	0	0	4	0	1	0	0	
Ditto Stirling Report	0	19	9	0	7	0	0	4	0	1	6	6	
Ditto Mr. Redman	0	14	2	0	10	0	1	0	1	2	1	6	
Ditto Mr. Saltmarshe	0	14	6	0	5	0	2	0	1	0	0	0	
	4)	3	6	5	1	12	0	11	25	0	0	0	
		£	0	16	7	4	0	8	0	2	9	1	3

	£	s.	d.	
Average manual labour	0	16	7½	
Ditto coals	0	8	0	
Ditto removal	0	2	9½	
Ditto oil	0	1	3	
		1	8	7½

Mr. Bird, who has not divided his calculations, puts down for the four items .. 1 11 0

2) £2 19 7½ =

£1 9s. 10d. per day, exclusive of

WEAR AND TEAR, AND INTEREST ON OUTLAY.

£ a. d.

The Chester Reports puts this down at Five per Cent., and Fifteen per Cent. wear and tear, assuming the first cost £650, which is an error, 13s. per day of 200 working days	130	0	0	
The Stirling Report places the interest at Five per Cent., the wear and tear at Twenty per Cent. on 203 days at 10s. 6d.	109	4	0	
Mr. Redman calculates interest and wear and tear at Twenty per Cent. on £750, or 15s. per day on 200 working days.	150	0	0	
Mr. Bird takes Twenty per Cent. on £850, or £12 11s. 3d. for 15 days, being 16s. 9d. per day on 200 working days	167	10	0	
	4)	556	14	0

139 3 6

MR. FOWLER ESTIMATES ON A DIFFERENT SYSTEM :

Renewal of steel rope per year	£	s.	d.
Maintaining windlass & tackle in order	35	0	0
Maintaining boiler and engine	25	0	0
	15	0	0

Add contingencies 75 0 0

25 0 0

100 0 0

Interest on outlay—Five per Cent. on £750

37 10 0

Total expenses of preserving the efficiency of the whole machine, with interest on outlay

137 10 0

£276 13 6

Average annual estimated cost of wear and tear and interest as per above statement	£138	6	9
Average daily cost of manual and horse labour, coals, and oil as per above statement—£1 9s. 10d. per day on 200 working days	298	6	3
Will give the annual expenditure required for the effectual working and renewal of Fowler's machinery	£436	13	0

No. V.

Let us now proceed to estimate the capital required for MR. SMITH'S CULTIVATOR.

Eight-horse (double cylinder) engine	£250	0	0
Windlass, eight iron anchors, six snatch blocks, 30 rollers, 2 wood anchors, 3 wood levers, 2 beetles, and 2 crow bars	125	0	0
1,400 yards steel rope	60	0	0
No. 3 B implement £16 10s., turning bow £21	37	0	0
	472	0	0
With subsoil and trenching ploughs, and No. 4 cultivator, extra	42	0	0
Expenses of carriage, &c.	6	0	0

Total outlay.....£520 0 0

Mr. Robertson's outlay was rather above this amount.

LABOUR AND EXPENSES REQUIRED TO WORK THE ABOVE ADVANTAGEOUSLY.

	Manual Labour.			Coals.			Oil.			Removal by Horse		
	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
The Calculation in the Chester Report	1	2	9	0	10	0	1	0	4	0	0	0
Ditto Mr. Pike, of Stevington	0	15	8	0	9	6	0	6	1	6	6	6
Ditto Mr. Robertson, of Spaldington	0	13	6	0	5	6	1	0	2	0	0	0
3)	2	11	11	1	5	0	2	6	7	6	6	6
	£	0	17	4	0	8	4	0	10	2	6	6

	£	s.	d.
Average manual labour	0	17	4
Ditto coals	0	8	4
Ditto oil	0	0	10
Ditto removal	0	2	6

Per diem£1 9 0

WEAR AND TEAR AND INTEREST ON OUTLAY ON SMITH'S STEAM CULTIVATORS. £ s. d.

Mr. Pike puts the wear and tear, not including rope, but including interest upon prime cost, at 15s. per cent. on £165, per week	1	4	9
Wear and tear of engine, 15 per cent. on £115 (half-price), per week	0	15	3
Wear and tear of rope, 2s. per acre, at 30 acres, per week	3	0	0

And limits his calculation to 20 weeks in a year, or £100 per annum. £ s. d.

Mr Robertson has used his rope one year and requires another, that is, £60; deduct value of old material £10	50	0	0
To this ought to be added, 200 days wear and tear on the coat of engine and machinery, 15 per cent. on £460	37	16	0
And 5 per cent. per annum on total outlay of £520	26	0	0

	113	16	0
The Chester meeting puts down 5 per cent. interest and 20 per cent. wear and tear on prime cost of £430, taking 200 days at 10s. 9d. per day	107	10	0
Mr. Pike's estimate	100	0	0

3) 321 6 0
Total expenses of preserving the efficiency of the whole machinery, with interest on outlay ... £107 2 0

Average annual estimated cost of wear and tear and interest on outlay as per above statement	£107	2	0
Average annual estimate for manual labour, coals, oil, and removal—200 days at £1 9s. as per above statement	290	0	0
Will give the annual expenditure required for the effectual working and renewal of Smith's cultivating machinery	£397	2	0

Total annual expense of Fowler's system	436	13	0
Ditto Smith's	397	2	0
	£ 39	11	0

Or upon 200 working days at 4½ acres will make Fowler's apparatus stand to 9s. 8d. per acre, and Smith's ditto 8s. 10d. per acre.

Mr. Bird estimates Mr. Fowler's at 10s. 3d. per acre with wear and tear and interest.

Mr. Redman ditto at 8s. 2d. ditto.

Mr. Saltmarsh ditto at 8s. without wear and tear and interest of money.

Mr. Randall estimates Mr. Smith's cultivator at 12s. per acre on strong land, and 8s. on light land, or 10s. per acre if of equal area.

Mr. Robertson 8s. per acre if of equal area.

No. VI.

HORSE POWER.

CAPITAL REQUIRED.

Eight horses at £30.	£240	0	0
Implements and gearing &c...	40	0	0

£280 0 0

Eight horses—Maintenance, saddler, farrier, and Blacksmith; depreciation and interest as per former statement at £30..... £240 0 0

IMPLEMENTS.

Four ploughs, two pair harrows, and one drag, swingletrees and gearing for eight horses, interest, repairing, and renewing at 25 per cent. 10 0 0

LABOUR.

2 men 4s., 2 boys 2s. 6d.—6s. 6d at 200 days	65	0	0
1 man 11s 3d. at 2a.	11	6	0

£326 6 0

Or by horse power the annual expenditure would be £71 per annum less than by the use of Smith's cultivator, and £100 per annum less than by Fowler's plough, &c.

I have now arrived at the last portion of my subject, viz., "how far steam cultivation can be made profitably available," and to gain this information, I purpose to consider first its separate bearings on heavy and light soils, and then whether the area of farms in England is of sufficient extent to afford this costly addition. I think there cannot be a doubt as to its profitable introduction on cold, strong, and tenacious land; the experience of every cultivator of the soil tells him that deep dry cultivation is what nature requires to nourish and bring to perfect maturity the seed committed to her care. It is not a question of a few shillings per acre betwixt the shallow ploughing and treading of the soil during the operation by the slow heavy draught-horse, which on strong lands the farmer is compelled to use. Let the occupier at harvest time cast his eye over a field of grain which he has thoroughly drained the preceding year, and he will instantly detect by the colour and the length of the straw where every drain has been cut. Deep cultivation prepares the soil to receive and retain a larger amount of moisture, and as a natural consequence to resist for a much longer period a droughty season. The consideration of the beneficial effects produced by deep cultivation is alone sufficient for an evening's discussion: as such I will not further advert to it, but turn to another description of land, viz., light-landed farms, and under this head I class sand, wold, gentle warp, light loamy, and peat soils. It is upon land of this description that the practical benefit to be derived by steam-power has not yet to me been

satisfactorily proved. I have already stated, in treating on the expenditure of manual labour, that light soils may be ploughed from 6 in. to 9 in. in depth, at an average rate of one and-a-half acres per day, with one pair of horses; and here I must join issue with the calculations of our friend Mr. Smith, on the cost of horse-power on light soils. I quite agree with that gentleman, and others who have arrived at similar conclusions, that valuers will allow the prices put down for the work performed at the rates stated by Mr. Smith in his recent letter, addressed to Mr. Disraeli, on steam-cultivation, page 14; but these prices are expected to remunerate the occupier for the work performed. In arriving at a correct conclusion we must confine ourselves to the actual cost if we can, and if not, as near an estimate as possible. I have already fixed, from the best sources I could command, coupled with my own experience, £30 as sufficient to cover every expense connected with the maintenance, depreciation, and interest on a farm horse for one year. Taking, therefore, the cost of eight horses, manual labour, depreciation, and repairs of implements connected therewith, as per statement No. 6, at £326, we arrive at an average of £81 10s. per pair of horses, which on 200 working days, gives about 8s. 1d. per day.

MR. SMITH'S ESTIMATED COST ON LIGHT LAND.		ESTIMATED COST BY THE ABOVE STATEMENT.			
	£ s. d.	s. d.	acres.	s. d.	s. d.
Turnips—3 ploughings	1 1 0	8 1	1½ per day	5 4 3	16 0
2 scuffings	0 4 0	{ 8 1 Extra man 2 0 }	8 "	1 3 2	2 6
2 ridgings	0 6 0	8 1	4 "	2 0 2	4 0
Barley—1 ploughing	0 7 0	8 1 1½	1 "	5 4 1	5 4
2 scuffings	0 4 0	10 0	8 "	1 3 2	2 6
Wheat—1 ploughing	0 7 0	8 1 1½	1 "	5 4 1	5 4
	£ 2 9 0				£ 1 15 8

Or 12s. 3d. per acre.

Or 8s. 10½d. per acre.

From this it is evident that no steam-plough, as at present worked, can compete generally with horses on light soil, though I think if I could hire on fair remunerative terms a steam cultivator, and a competent staff to work it, to break up the stubbles as soon as cleared, it would be advantageous, that being a period when all regular hands are employed with harvest operations. I feel, however, bound to dissent from calculations put forth to show the saving of any peculiar system at extreme rates; thus we are told Mr. Redman had sold his horses off at £40 each. I have horses performing regular draught work that would realize more than that amount; and I should think, every farmer drawing five pair of horses could select some of equal value; but I find on reference to my books for ten years, that the average value of my fifty draught horses, at stock-taking time, did not exceed £25 each. Surely credit should only have been taken for the average value of the working horses, if the merits of the system were to be dispassionately discussed. The last point for consideration is, on how small a holding can steam-machinery be profitably introduced except on the principle of hire. It was stated by a deceased member of this Club in this room some time ago (the Rev. Mr. James), that "there are held by British farmers 78,000,000 of acres in the area of these kingdoms, of which 14,000,000 are unimprovable waste, and a nearly similar area is unencultivated but improvable land; the farms occupy two-thirds of the land of England; their number is 225,318; the average size is 111 acres, and two-thirds of the farms are under this size; but there are 771 of above 1,000 acres, the large farms abounding in the south-eastern and eastern counties, the small farms in the north. There are 2,000 English farmers holding nearly 2,000 acres, and there are 97,000 English farmers not holding more, and of this quantity there are upwards of 40,000 farmers who do not employ more than five labourers each. To make steam-cultivation a sufficiently payable adventure for a farmer to expend the necessary capital, I have shown that in my opinion he must be the occupier of a strong-landed farm, and that its introduction should be equivalent to the work of eight horses. I have also shown that the farmer occupying 200 acres of land requires four pairs of horses to carry on the farm under the ordinary mode of culture; and that the saving effected by the introduction of steam-power is, or ought to be, equivalent to the same number. The carting of manure, drilling of corn, harvesting of crops, and marketing of produce, will still have to be performed by horse-power, so that upon a holding of the area I have named six horses must be retained to carry on these operations at their respective seasons. The idea suggested by some parties to meet this difficulty, is to purchase extra horses at certain seasons, and resell them when not required; this is too theoretical to need further comment. I have therefore arrived at the conclusion that 350 acres should be the area, but certainly not less than 300 acres, as the limit for the profitable introduction of steam-cultivation, *excepting on the principle of hire*; and upon this principle, allowing a fair remuneration to the letter out, I am equally satisfied that the occupiers of strong land under the area named will find steam-cultivation advantageous; and when we consider that 100,000 farmers' holdings are not half the area I have named, and further that the smallest holdings are generally of the most tenacious description of soil, it is evident to my mind, that unless a system of letting out be adopted on a similar principle as is now practised for thrashing, but still better *if with a regular working staff*, steam-cultivation will for a lengthened period be the exception to the rule. Before concluding I must not omit to refer to one great advantage the farmer derives from the aid of steam-power: I allude to the op-

portunity it gives him of embracing any sudden movement of an upward tendency in preparing his produce for market, or, in any peculiar season, the soil for the reception of the seed, in case he can command a *sufficient working staff* independently of what is necessary for the regularly working of the farm.

Mr. Chairman and Gentlemen, I have to thank you for the patient hearing you have given to these lengthy remarks. I had no idea, when I volunteered to open this subject for discussion, that so much could have been introduced, especially as other papers bearing on the merits of steam-power have previously been before the Club. I can only add, I have endeavoured candidly to set before you the advantages to be derived by the farmer under certain conditions, and the disadvantages that may accrue from other causes by the use of steam-machinery, and I now leave it in your hands for discussion how far fixed steam-power and machinery is superior to locomotive in preparing the produce for market, and the other necessary works previously detailed, and whether, on the other hand, the introduction of steam-machinery for the cultivation of the soil will be more rapidly developed on the *hiring system*, or on that at present in operation; but whatever may be the opinion ultimately arrived at, all I think will agree that agriculturists are greatly indebted to the promoters of this powerful agent for what it has already accomplished.

Mr. SMITH (Woolston) said, from what they had heard from Mr. Wells, it would appear that there was very little chance for steam cultivation. According to him, nearly all they could hope for was that steam, as applied to thrashing, grinding, and so on, would beat horse labour—a matter with regard to which they had had twelve years' experience. Now, before they condemned steam cultivation, let them look a little ahead, and see what evidence they had with regard to it. Mr. Clarke said the rotary cultivator was the best. That remained to be proved: there was no evidence on the point, and consequently that part of Mr. Wells's paper must go for nothing. Again, Mr. Wells said that he (Mr. Smith) did not reduce manual labour. That was a most important point. He would prove that he did reduce it. On his cold heavy land, which the deputation visited, he had never in his life been able to plough more than five acres with six teams of four horses once over; and he never crossed it with less than three horses in five days; that was tremendously hard work. Now he could smash-up easily with his eight-horse power engine, using only 45lbs. of steam, five acres in a day. Last year, after having smashed it up once by steam, he put it into ridges the next time for his turnips, and they were growing now. He could not have ridged after one ploughing, so that he must have cross-ploughed before he ridged. Let them now observe the cost. At present he expended on five acres for 7 men and boys 17s. 6d.; formerly he employed 11 men and 11 boys for the same work at an expense of £1 7s. 6d. There was 10s. extra for manual labour as compared with steam. The next point was wear and tear, which was a very important matter. He must confess that at present he had never gone upon anything but estimates, for he had not yet worn out a set of ropes. He bought a set of ropes for £34 five years ago, and they were still in good working order. His farm consisted of 110 acres, consequently the ropes might be said to have served for 550 acres, with the exception that he had bought some new tackle for experimenting with, last Winter, and in the Spring. How much longer his ropes would last he could not conjecture, but allow he had made it do for five years, that item of expense could not be said to have gone very deep into his pocket, especially when he had deducted the saving in blacksmithing and gearing his reduced number of horses, say two less at £1 10s. a-year each. He would now proceed to explain his system. That system was to take advantage of the best weather directly after harvest. Immediately after his harvesting was finished, he got his steam cultivator to work on his bean stubbles, mashing them up

once, while his horses were ploughing his clover-leys. The moment the smashing was over he had the manure, while the land was aerating for wheat, put on the wheat stubbles for beans and turnips. The horses then went back to cultivate his bean stubbles and drill his wheat, his steam cultivator being at work upon his stubbles, smashing them up, and preparing them for Winter. His ridging work on 110 acres was all done last year in September and October in ten days. The whole of the work was done by the first week in November, the ridging by horses; and the land was laid up for the Winter like a garden. The deputation saw it a few weeks ago in the same condition in which it was left last November, and he would leave them to say whether the work was done well, or whether horses could touch it. He had gone 14 inches deep. That 14-inch work Mr. Wells had not said much about; but he (Mr. Smith) could tell them that it was a most important item. The land was not in that pitch-plaster state in which horses left it, treading it as they did till it almost resembled a turnpike road (Hear, hear). With horse labour the rain fell into the furrows, and carried the muck with it into the sea. The steam cultivator, however, opened the land, so that the water passed through; the earth picked up all the good that was contained in the water, and as soon as the water was gone the air passed in, and acted upon the mineral muck which was under foot. It was that which gave them food, as the result of the Lois Weedon system had placed beyond question. It was to the subsoil that the farmers of England must look; and he contended that steam had beaten horse-labour all to pieces.

The Chairman called upon Mr. Owen Wallis, as a member of the deputation who visited Woolston, to state the result of what he saw there.

Mr. WALLIS (Overstone) was happy to have that opportunity of saying a few words with regard to the very satisfactory character of that visit. He was quite sure all who accepted Mr. Smith's invitation would agree with him in stating that they saw a most interesting and a well cultivated farm (Hear, hear). They saw land cultivated by steam-power which he, for one, should have thought altogether impracticable for such cultivation. The soil was, in some parts, of a stubborn and tenacious character, and there was great irregularity of surface; yet the work of the steam-cultivator was done in a most satisfactory manner. The land had evidently been deeply cultivated and well ridged, and the crops cultivated were in every respect as good, he believed, as any that had been seen on land of the same description. He was now speaking of Mr. Smith's clay land, and his strong soil. Upon his better description of soil, which exhibited all the characteristics of garden farming, the cultivation was very deep—indeed, he never saw any so deep; he never saw land so friable, and with so beautiful a tilth for the reception of any class of plants which it might be thought desirable to grow. With regard to steam cultivation generally, he thought too much stress had been laid upon the relative cost of steam-power and horse labour (Hear, hear). He admitted that when the two were compared, horse labour was in some instances apparently the cheapest; but when they considered the results of the operations, the comparison was in favour of steam. Although steam might in the first instance cost more per acre than horse labour, yet the land being left by it in the most desirable state for after-cultivation, it might in the end be the cheapest. One great advantage of steam was, that it enabled them to do a great quantity of work at the time when it was most desirable that it should be performed, namely, immediately after harvest—at the period when, in consequence of the land being warm, the work led to the greatest results. They must get the land well broken up while it was in a dry state, and when the twitch was on the surface. He entirely concurred with Mr. Smith that twitch ought never to be ploughed in. Let them plough it in, and every bit of it would rise up in judgment against them some day or other; let them keep it on the surface, and what they did not destroy in the autumn would be nearly all killed for them by the frost of winter. Supposing that they had succeeded in bringing the land into a good state for receiving manure, he thought it was safest to put the manure on in dry weather. He was one of those who thought that no harm was done by letting manure lie on the surface; indeed, he thought it did more good when

it was left on the surface than when it was ploughed into the subsoil. In that way it was left ready for turnips or mangold wurzel, or any other crop, and that, too, at a time of the year when they were all most busy—namely, in the spring. He had no wish to enter into the vexed question whether Mr. Fowler's system of operation or Mr. Smith's was the most advantageous; that was a question which farmers and purchasers must determine for themselves. All he could say with regard to Mr. Smith's system was that he was perfectly satisfied that, as far as scuffling went, nothing could be better done than what the deputation saw at Woolston. They all knew that ploughing could not be dispensed with. They must all keep a certain number of horses on the farm for carting and other operations; and while the steam cultivator was employed for the stables, ploughing might be advantageously resorted to for the clover leys for the wheat crop. Although steam cultivation was a most valuable auxiliary—nay, the most valuable auxiliary ever placed at the farmer's command, it would not enable him to dispense with horse labour altogether. The use of the two conjointly in farming would, he believed, always prove more economical than the use of either separately. As regarded the relative economy of fixed and portable engines, it was clear that the fixed engine was most economical for operations carried on at a fixed place; but where thrashing and other operations of the same kind could be carried on by means of a portable engine, and that engine could afterwards be taken into the field for the cultivation of the soil, the portable engine was the most economical of the two.

Mr. T. E. WILSON (Essex) said, as regarded heavy land, the question at issue was not so much one of cost as it was a question whether at certain times, as regards weather, the work was to be done at all. He had, over and over again, applied to Mr. Fowler, and he would have paid almost any price to plough up certain land for him, from 100 to 120 acres, immediately after harvest, and there was no response. The rich farmer was cautious and timid, and would not buy the engine, although he might infer, from what he had seen, that it would answer his purpose. The poor farmer could not buy it, and all such farmers could do was to institute a company, take shares in it, and get the work done through that means at the lowest price. That was the course which had been pursued in his own neighbourhood with regard to thrashing; a company had been formed, an engine obtained from Messrs. Ransome and Sims; the shareholders obtained 5 per cent. for the money invested; the profit was expended in securing fresh steam power; and the result was that, after the harvest of 1860, there would be three thrashing machines at work from the accumulated profits of the first one. The company had been solicited to use the engines for ploughing when they were not wanted for thrashing; but they refused to do so, saying that it could not be done under their deed of co-partnership. He had been to several people in his own neighbourhood to ask them to undertake steam-ploughing, but they declined. If he had five or six hundred pounds to spare, he would gladly attempt it; but, as an individual farmer, he had this great difficulty, that he could not always get skilled labour. [A voice: "You don't want it."] O, a fool might work it! He was glad to hear that, for there are plenty to be had. (Great laughter.) The use of steam power involved the necessity of skilled labour; without it, indeed, no one would think of resorting to it. He repeated, then, that the real question was, by what means farmers generally were to obtain the command of steam power for the cultivation of the soil, and in his opinion the thing could only be done by combination.

Mr. JAMES HOWARD (Bedford) said, notwithstanding what had fallen from Mr. Wilson, he believed there was sufficient enterprise among farmers to carry steam cultivation to a successful issue without the formation of public companies, and having sold to private individuals some eighty sets of Smith's apparatus for the purpose, he thought he had good grounds for his opinion. Some people argued that because the letting out of steam thrashing-machines had been successful steam cultivators must also be successful. The two things were widely different. A steam thrashing machine was mounted on wheels, and drawn readily from place to place; but a steam cultivator, weighing altogether 8 or 10 tons, and distributed over a 30 or 40-acre field, was not loaded and transferred from place to place quite so

readily as machines drawn on four wheels. The expense of removing the tackle from place to place would militate against any public company that might be started to carry out steam cultivation. Steam cultivators were most valuable for seven or eight weeks in the year; but if a public company invested three or four thousand pounds in the purchase of half-a-dozen of them, they would soon discover to their cost that the demand for them did not extend beyond that period. He thought, therefore, that if farmers waited for steam cultivation until public companies had been formed, they would have to wait a very long time (Hear, hear.) Mr. Wilson talked of skilled labour: now "skilled labour" was a comparative term. His firm had had great experience with regard to steam cultivators, and had never found any difficulty in getting men on the farms who were intelligent enough to work the machine after having received two or three days' instruction. On the farm of the Emperor of the French, he might observe, there were six Frenchmen, and after two days' instruction they were equal to any six Englishmen. (Laughter.) Mr. Wells made some remarks about the wear and tear of wire ropes. When they had worn out a rope or two, they would know how to use them, and he would guarantee that the second rope which was bought would prove equal to two or three of the first. Everything depended upon the way in which such things were managed, and nothing required greater care than the wire rope used in steam cultivation. In listening to Mr. Wells's paper, it occurred to him that that gentleman overlooked the fact that the farming of this country had arrived at a crisis in which some power other than horse power was imperatively required, seeing that the value of autumn cultivation was now fully known and appreciated. The question was not whether land could be ploughed as cheaply by horse power as by steam power, but whether, when farmers had offered to them a valuable auxiliary, they should avail themselves of it for a few weeks in autumn, and at other periods when it might be resorted to advantageously. That was the point for farmers to consider. Knowing how much the question of steam cultivation has been discussed in the public journals, he was surprised to find that it was so little understood. He thought that if that club were to appoint a deputation of some half dozen practical men, to visit some ten or a dozen farms which had been cultivated by steam power, between the present time and the next harvest, and furnish a report, much information would be thereby diffused, the employment of steam power increased; and the Club would, by pursuing such a course, raise itself still higher in the estimation of the farmers of England. He should himself be happy to furnish a list of fifty or sixty farms, and no doubt Mr. Fowler and others who had supplied steam cultivators would be ready to do the same.

Mr. PIKE (Stevington) said he should be sorry to be obliged to go back to horse power on his cold, heavy land. He used at this time of the year to be working fifteen horses, but had reduced them to eight, and he was so forward always with his work that his horses were then out at grass, and he had plenty of opportunities for coming to London or going anywhere else. (Laughter.) He had used steam cultivation now for two years. Mr. Smith said they should have horses ploughing the clover leys. He differed from him on that point. He cultivated his clover leys, and he had a better plant than his neighbours who ploughed. He advocated breaking up clover ley early on strong land—July or August. Steam cultivation had been compared that evening with horse ploughing. He should rather be inclined to compare it with spade husbandry; and he maintained that it left the land in a better state than even that. He had been asked what he would do if they had a wet season? and of what use his steam ploughing would be then? Well, the present season was not a very good one; but he was happy to say that his land did not look worse than that of his neighbours. On the contrary, he thought it looked a little better. His farm was in Bedfordshire. The soil was all strong; yet he had a 50-acre field without a furrow upon it. Indeed, although his farm was hilly, and used to be laid in 3-yard lands, he now had not a furrow or a water gutter upon it.

Mr. JOHN THOMAS (Bletsoe) said that, as one of the deputation who paid a visit to Woolston, he wished to observe that he was not merely pleased, but astonished, at the

beautiful manner in which Mr. Smith's heavy clay land was laid out. He had no doubt but, upon clay lands, steam cultivation would be a considerable advantage to farmers, whether practical or amateur. As regarded light land, the advantages of the use of steam power were by no means clear. He could corroborate all that Mr. Wallis said with regard to Mr. Smith's farm. The superiority of the land, compared with other land in the neighbourhood, was very marked indeed; and that was saying a great deal. He thought that, where a farmer occupied four or five hundred acres of arable land, the use of steam must answer very well: for much less than that quantity, he questioned whether it would be advisable to resort to it. With regard to the comparative advantages of a fixed and a portable engine for general purposes, he would observe that, if he were to start a portable engine to-morrow, he would probably find that he required a fixed engine as well. Upon a stock farm, where the engine would have to grind and perform other operations of the same kind very frequently, there would, if it were portable, be a great deal to interfere with steam cultivation.

Mr. PARKINSON (Notts) said, if any land could be ploughed at the rate which Mr. Wells had mentioned, it was such land as that gentleman was himself farming. He knew very little land in England of the same depth and description of soil that was so easy to work. Mr. Wells' remarks on steam cultivation must be viewed with caution, because his was not a district which was as well adapted to show the power of the steam engine as the stronger lands referred to by Mr. Smith and Mr. Howard.

Mr. WILLIAMS (Baydon, Hungerford) thought with Mr. Smith, that the paper read that evening was not much in favour of steam cultivation; but he would appeal to all who were possessed of a steam plough or cultivator, or who had ever tried one, as to the successful working of that implement. A friend of his—Mr. Richard Stratton, of Broad Hinton—had a twelve-horse engine of Fowler's, with which he had broken up two hundred acres this spring at an average rate of from seven to ten acres a day. Mr. Stratton's land was some of the strongest, stiffest, and wettest soil that could be met with; and yet he expressed himself perfectly satisfied with the result. In fact, it would have been utterly impossible to bring the land into its present condition by means of horse-power. Taking into account the compression from the horses' feet—treading the ground as they did, and the subsequent labour required on that account—he believed steam cultivation to be equal to two ploughings by horses. The subject on the card was steam *versus* horses and manual labour; and not as to what system was the best, and he would read a letter he had received from Mr. R. Pallen, of Sutton Courtney, near Abingdon, who was using Mr. Smith's tackle; and although he was interested in Mr. Fowler's, it was the system he was advocating, and he was pleased to place such a testimonial before the meeting—

March 25th, 1860.

"Agreeable with your request, I will give you the results of my experience on steam cultivation. I bought my apparatus in the autumn of 1853, which was a very dry one, in fact, my strong land was so hard I could not plough it with Howard's ploughs, but the steam cultivator smashed it up and nearly cleaned the land at one operation, and I think the advantage derived therefrom was nearly equal to the outlay of the apparatus. Another advantage is in the saving of horse labour. I worked on the average 30 horses before I applied steam power, I have only worked 18 since, and am always forward with my work, which last autumn was of very great importance. The first 100 acres of wheat I drilled one bushel to the acre, and my wheat looks as well as it is possible for wheat to look, while, on the contrary, my neighbours, who never plant less than two bushels per acre, have not got half a plant, and some are drilling more in with it, and others are ploughing it up and sowing barley."

He thought this would be convincing to all, of the good effects of steam power; and he had no doubt it was the effect of early tillage which steam alone enabled him to do. Again, last week, being at Mr. King's of Beeton, who was a member of the committee of that club, he saw him using a steam cultivator which Mr. Plummer, who had taken Peasemore Farm just by, had put on the farm as part of the stock, and had let it out to hire, Mr. King paying the owner 10s. an acre for cultivating about one hundred acres for him. Mr. Plummer

was very well satisfied with the sum which he received for the use of the machine; and Mr. King was equally satisfied with the manner in which the work was done—in fact, he said he never saw such work before. Ten shillings an acre was the expense, exclusive of coal and water, and of beer for the men employed. In fact there was not a single individual who he knew possessed a set of tackle, whether of Mr. Smith's or Mr. Fowler's, but was perfectly satisfied with the results. He reflected with pleasure on the part which he had taken in that room, and elsewhere, in promoting the cause of steam cultivation. All the anticipations in which he had indulged as to its beneficial effects in actual working had now been verified. With respect to the observations made by Mr. Thomas, that the land would suffer on account of the manure if the horses were done away with, he would beg to read a short paragraph from the Journal of the Club, for May, 1855. The paper in which he had the pleasure of reading in that room, and which was a similar subject to that read this evening, "I have been often asked the question, 'If you do away with your horses, what will you do for manure?' The question would be better put, what will you do with the food the horses would consume?" If they had a certain amount of farm-produce to turn into manure, they must have that manure, whether it were consumed by bullocks or by horses; and he maintained that the food which was saved from the consumption of horses by the employment of steam would make an equal amount of manure in passing through a number of bullocks or sheep, while there would be an additional quantity of manure in the form of the soot and ashes which the engine produced. This question had an important bearing on the supply of the population with animal food. Last week mutton was quoted in the metropolitan market out of the wool at 6s. 6d. per 8lbs., a price which he never scarcely heard of before; and if the British public were to be called upon to pay the price which must be demanded by the butchers under such circumstances, it was due to them that the farmers should consider to what extent they could reduce the number of horses, and keep other animals instead. He hoped to see the system of steam cultivation carried out all over the kingdom.

Mr. BRADSHAW (Knole, Kent) having had some experience in steam cultivation, he had no hesitation in saying that where buildings were conveniently situated, and where the four-course system was adopted, a very considerable saving might be effected in horse-power. He had a fixed steam engine, which he employed half the day in thrashing and the other half in cutting chaff, grinding food for pigs or bullocks, pulping turnips, and other operations of that kind. As regarded the wear and tear of steam engines and other implements, a great deal of course depended on the manner in which they were put up. Considerable loss might be incurred for want of proper care.

Mr. FISHER HOBBS (Boxted) said the paper read by Mr. Wells displayed very great research, and conveyed a large amount of valuable information; but if in his anxiety to advance the cultivation of the soil he put forth any calculations which were founded on incorrect data, he did what was calculated to mislead others. For example, he said that a pair of agricultural horses could ordinarily plough an acre and a half of land per day; whereas in the course of his (Mr. Hobbs's) 30 years' practice, he had found the greatest difficulty in getting two horses to plough, upon the average, an acre per day. He felt particularly obliged to Mr. Wells for his lecture, considering that no paper had been placed before the agricultural world which entered into the matter so fully and clearly. There were one or two instances, which appeared to him to demand special attention. One was, whether or not the common steam-engines which were generally used for threshing purposes were sufficiently powerful to be applied to steam-cultivation. His own opinion was that they were generally too weak for that purpose; while, on the other hand, he feared that the farmers of the present day had not sufficient capital to cultivate their farms properly, even without steam-cultivation. He could not agree with his friend Mr. Howard, that farmers ought to buy steam-cultivators themselves; he was rather inclined to the opinion of Mr. Wells, that if they were to be generally used, the object must be effected by means of companies. There had, he thought, always been a deficiency of power in the steam-engines applied to cultivators, and he also thought that the engines and implements were not suffi-

ciently good in themselves to enable farmers to adopt them universally. He hoped that both engines and implements would be made more efficient, and that the day would soon arrive when steam-cultivation might be practically carried out.

The CHAIRMAN, in closing the discussion, said he thought the real question to be determined was, not whether steam or horses were the most economical, but which did the work best. He should say that steam, although it might be rather more expensive, was better on clay lands than horses. It broke the soil up deeper; it obviated the evil of treading, which was an immense advantage on clay lands; and it enabled them to break up thoroughly in the autumn a much larger quantity of land than they could possibly do with any amount of horse-power. He was sure they all felt much obliged to Mr. Wells for his admirable paper, containing so much valuable information; and he could not help adding that the deputation, of which he was a member, felt much indebted to Mr. Smith for inviting them to visit his farm, and for the hospitality which he had extended to them.

Mr. WELLS, in reply, observed that he regretted—if he might judge from some of the remarks made by the gentlemen present on the reading of his paper—that the views he had endeavoured to enunciate had from some cause been misunderstood. He would, therefore, as regarded the observations of Mr. Smith and Mr. Fisher Hobbs, refer again to that portion which had reference to steam cultivation, and from which it would be found that, so far from condemning the use of that power on strong and tenacious soils, he had distinctly stated it was not a question of an additional few shillings per acre in the expense of carrying out that system, as the work performed, from various causes, would more than amply repay the additional cost; but the experience Mr. Smith had just detailed on his 111 acres of land by the steam cultivating process had, to his mind, settled the question as to its profitable introduction on small occupations, except on the principle of hire. All parties who had favoured the public with their opinions on the benefits to be derived from steam cultivation, had invariably claimed a considerable source of profit from the reduction of horse-power by its use, and which, according to the calculations he had that evening laid before them, averaged eight horses per holding. He had no doubt that the little farm Mr. Smith alluded to was a perfect model of the system; but when he was told not a single horse was displaced, he must remind them that even the precious metals might be obtained at too high a rate; and, on reference to his paper, they would find it laid down as a rule, that the question of capital applied to the cultivation of the soil for increasing its produce did not admit of an argument, provided such capital proved a profitable investment. Mr. Hobbs had requested an explanation relative to the quantity of land capable of being ploughed in a day, and on which the basis of his calculations had been made. He was afraid that gentleman had not remarked the distinction he had set out with, on strong land and light soils. On the former, he had allowed Mr. Smith's calculations to pass. But that gentleman having, in his published letter to Mr. Disraeli, challenged any practical farmer to test those calculations, he was forced to join issue with him on his light land estimates, for his experience told him that he had no difficulty whatever in having one and a-half acres of land ploughed per day on gentle warp, light sand, and wold land. So that, far from retracting what he had stated, he was glad of the opportunity of being enabled to reassert its correctness, and to thank Mr. Parkinson, who had some knowledge of his district, for having expressed the opinion he had on this occasion. At the same time it was only right to observe that the horses employed were cleanly half-bred horses, that could walk rapidly away; and that the farms were in ring fences, with home steadings conveniently situated. If a pair of horses had to go a mile to their work, and made two yokes, that would be equal to four miles, or three miles of furrow ploughing; and they must also remember that the advocates of steam cultivation fixed the basis of their calculations at two hundred working days per annum; and therefore he had calculated at the same rate for horse power, which would give nine and a-half to ten working hours per day. Of course, if it was considered desirable to place horse power at the actual working days, three hundred and ten per annum, it would certainly reduce the average amount ploughed per day; but, at the same time, it would lower the cost-price of 8s.

1d. to 5s. 6d., so that the actual cost of the work performed would be precisely the same as he had fixed it at on his light-land estimates. They must also bear in mind the treading of the soil, which was so injurious to strong land cultivation, was in many instances of essential service on light soils.

Mr. J. THOMAS: What depth do you go to?

Mr. WELLS: On the gentle warp, to a depth of six inches on the first ploughing, and up to nine inches on the cross ploughing; on the wold land, from four to six inches. It depended upon the depth of the soil, whether intended for turnip fallow or seed corn. There was nothing he believed, in his paper in opposition to steam cultivation, on strong land; but he did consider on light lands it would not pay. He was also glad to find that some gentlemen agreed with him on cultivation by steam power on the principle of hire; but he must warn them that it could never be satisfactorily arrived at by farmers joining together, as every farmer would think he had an equal right to its use, when the season for its requirement was at hand. His opinion was that the parties who at present let out thrashing machines should add two or three more hands to their staff, and undertake the whole process at so much per acre, as the farmers themselves who require stubbles early breaking up had not even hands to keep their horses in full employment from the commencement of cutting corn until the conclusion of the securing of the cereal produce, and in his district the lifting of potatoes followed almost immediately after the securing of the harvest; it must also be borne in mind that the engines at present generally in use were short of power for steam cultivation, and would be no worse for thrashing purposes if increased. With respect to Mr. Williams' remarks, that evening's discussion, in his opinion, had nothing to do with any supposed advantage the country would gain by the increased growth of wheat in lieu of horse corn. It was well known that of late years both barley and oats had in many instances realized as much net profit per acre as wheat, more especially the former. It was true he had made no deduction for the value of the manure arising from the horses; but, on the other hand, he had made no calculation of the value of the straw; and if there was any balance arising from the manure in favour of the reduction of cost of horse power, it would militate so much the more against the profits of steam cultivation. One gentleman had said the calculation should have been made against spade husbandry, and not horse power. He supposed that, notwithstanding the good results arising from spade husbandry, horse power would never have been so universally substituted for it, had not the latter, in its general results, being the more profitable, and as such that would be the proper power to raise the argument upon, if even his paper had not limited him to that course. Mr. Howard had told them that the wear of the rope depended much on the care of the men: no doubt not only the rope, but every implement used on a farm was more or less in the same position. He would only say that one of his principles was to have a place for everything, but, unfortunately, he seldom found everything in its place; and the rope was a most serious item of expense, rapidly deteriorating whether in work or not. He held a letter in his hand from a farmer in his neighbourhood who had purchased Mr. Smith's cultivating apparatus, and who stated he had not worked more, during the three years he had it, than fifty acres per annum, and yet the same person told him it wanted renewing. Before concluding, he would cite an instance of the benefit derived from the cultivating or breaking up process of the stubble, in preference to the turn-over principle. The land he farmed, though perfectly clear of twitch, was very subject to annual weeds, and it had long been his custom to thin-furrow the stubble the earliest opportunity after harvest. A few years ago he tried the experiment, in a sixteen-acre field of wheat stubble, by thin furrowing one-half, and dragging or cultivating the remainder. In November, both were ploughed full depth. The following year the whole field was sown with line; the half that had been thin-furrowed came up, as usual, full of annual weeds—the other half comparatively clear. Since that time he had always broken up his stubbles previously to the winter ploughing with Ducie's and, latterly, with Bentall's broadshare, or Clay's and Coleman's drags. If there was any other remark he had not replied to, he should be happy so to do. He could assure the gentlemen who had so patiently listened to his long array of figures that

he had endeavoured to treat the subject impartially, his only aim being to see the soil of his native country cultivated in such a manner that the greatest possible return should be arrived at that the land could *profitably produce*.

The proceedings terminated with the customary vote of thanks to the Chairman, and the introducer of the subject.

CENTRAL FARMERS' CLUB.

A Meeting of the Committee was held at the Club House, New Bridge-street, Blackfriars, on Monday, June 4; L. A. COUSSEMAKER, Esq., in the chair. There were also present Messrs. J. Bradshaw, C. J. Brickwell, W. Cheffins, T. Congreve, J. Cressingham, W. Fisher Hobbs, E. Little, W. Shaw, B. P. Shearer, S. Skelton, J. B. Spearing, James Thomas, John Thomas, H. Trethewey, Owen Wallis, J. A. Williams, and James Wood.

The minutes of the last meeting were read, and the usual monthly statement of accounts was received.

The following members were elected:—

H. Hall Dare, Hanover-square, London.
C. Davison, Pier-pont, Farnham.
W. Guerrier, The Crescent, Camden Road Villas.
Major Onslow, Dunsboro' House, Kipley.
Captain Phelps, Woodland Spa, Horncastle.
H. Reed, Brent Villas, Hendon.
J. Shaw, Hunsbury Hill, Northampton.
J. Turner, Fen Place, Crawley, Sussex.
G. Young, Apley Towers, Ryde, Isle of Wight.
Nine other names were read for the first time.

The following bye-laws for the due regulation of the discussion meetings of the Club were proposed and passed:—

1. That a Chairman shall be elected for twelve months, from the first of January in each year.
2. That at each meeting the authority of the Chairman on all disputed matters shall be final.
3. That in the absence of the Chairman, the Committee appoint a President for the evening.
4. That the Chairman be at liberty to introduce visitors, and Members one friend each at a meeting.
5. That none but members of the Club address the meeting, except on the invitation of the Chairman.
6. That the introducer of the subject have the right of reply at the close of the discussion, but that no other member address the meeting more than once during the evening, except in explanation, and then only with the consent of the Chairman.
7. That all persons address the chair standing, and that no one except the introducer of the subject be allowed to occupy the time of the meeting for more than a quarter of an hour.
8. That the subjects for discussion during the year be selected at the January meeting of the Committee, and that the time for holding these meetings be the first Monday in the months of February, March, April, May, June, and November, and in December on the Monday in the week of the Smithfield Club Show, at half-past five o'clock, p.m.
9. That members be requested to send in subjects to the Secretary, from which the selection will be taken; and that those unable to attend the meetings be invited to forward practical information upon them; such communications to be handed to the introducer of the subject to which reference is made.

It was arranged to have the anniversary dinner of the Club at "The Ship," Greenwich, on Monday, July 2, at five o'clock.

AGRICULTURAL PROSPECTS IN THE CAPE COLONY.

The advices lately received from the Cape of Good Hope prove that this British colony in the southern hemisphere is making a very steady and respectable progress in its pastoral and agricultural operations. These important interests are indeed the thews and sinews of the colony, and with a country capable of any extent of production, full of natural resources, with a fine soil, and, for the most part, well watered, no limit need be placed upon their prosperity.

Our colonial files to hand are filled with detailed reports of the meetings of district agricultural societies at Graham's Town, Fort Pedder, Graaf Rennet, Queen's Town, and other localities, an impetus having been given to competitive shows by the Legislative grant of £750 among them, which sum had been largely increased by local collections.

Although there are many topics and subjects rather puzzling to the English reader from the common adoption of Dutch names, and the British farmer may not have much interest in trekking (flitting), in the sale of erven (land plots), in commandos (expeditions against the natives), mealies (maize), and Kafir corn (millet), yet there are certainly several matters in which an interest will be felt at home as well as in the colony. One subject we may preliminarily mention, and that is, that a new Bill for the Sale of the Crown Lands was being introduced, which repeals all former regulations. Lands are in future to be sold subject to an annual quit rent, and at a reserved price sufficient to defray the costs of survey, title deeds, and other government charges. The quit rent may be, however, redeemed at any time on the payment of fifteen years' purchase.

The Cape colonists have at least proved the truth of old Fitzherbert's remark, that "sheepe is the most profitablest cattell a man can have." The number of sheep five years ago in the colony was 5,000,000

woolled sheep, and 1,700,000 African sheep; but as the production of wool was then only 8,250,000lbs, and it is now double that quantity, the number must have largely increased, and the clip is also heavier. The free Dutch Republic beyond the boundaries of the colony contains now more than a million of fine-woolled sheep. Much has already been done in preparing the wool in a better condition for market; but there is yet a wide margin for improvement. It is only by a constant infusion of new blood, by careful washing, by "kraaling," or penning, and the erection of sheds—in short, by paying some attention to the comfort of the sheep, that success will attend the labours of the breeders. The supplies of Cape wool imported last year, although equal to the imports of 1857, were 2,250,000lbs. below the quantity received in 1858. However, if from any cause the shipments were held back, they are coming forward very freely this year, nearly 4,240,000lbs. having been received in the first four months of the present year, against only 2,372,000lbs. in the corresponding period of the previous year. France and other countries must have received large direct supplies, for the Lieutenant Governor, in his opening speech to the Assembly in April, stated the export of wool in 1859 to have been 19,500,000 lbs., against about 17,000,000 in 1858.

In a colony where draught cattle are so much used, the preservation of the health of the animals, and the cure or prevention of epidemics, are of great moment. The "lung sickness," as it is locally termed, which commenced some five years ago in the colony, still commits great ravages; and, although we have already drawn attention to it, a passing notice is still requisite. We have no late returns of the present actual number of stock, but there were in the Cape in 1855 about 160,000 oxen and 300,000 cows

and calves. The benefits of inoculation, as practised in Holland, were occupying attention; and some of the Cape farmers, about to visit Europe, intended to visit the Veterinary Colleges in Holland, to observe the mode of operation, and learn its results. One farmer asserted, at the Albany Agricultural Society's meeting, that his mode of treating calves was an effectual preventive: "As soon as a calf died he gave a dose (a quarter of a pint or nearly a pint, according to age) of the diseased lung, in a half fluid state (it was no matter if there were bits of diseased lung in it the size of a bee), to the healthy calves. They grew sick, and the hair turned up. Still they fed; and in about eight days they were well."

The lung-sickness still rages also to the north of the colony, in the Free State and other settlements; and the Natal papers assert that the destruction of cattle in the Zulu country has been immense, for the natives have no idea of precautionary measures, or mode of arresting the disease. All this was telling upon the colony in the shape of high prices of meat and high prices of carriage. When we consider the long distance of transport for wool, ivory, and other heavy goods, and of the return supplies to and from the farms and chief towns and seaports, all by bullock-waggons, the health and increase of cattle is of paramount importance. Every waggon is drawn by six or seven span of oxen; and an instance of the great demand for transport is afforded in the fact that at the quarterly "nachtmaal," or religious gathering, of the Dutch at Graham's Town, just held, there were more than 300 waggons present, each bringing its freight of seven or eight persons, for the most part from long distances.

The great mortality which had lately taken place in imported bulls and cows, threatens to check for a time the importation itself. The subject is thus referred to by one of the Cape journals: "We believe the greater part of these importations are of the Shorthorned or Durban breed; a breed that owes its existence, in its present form, to the Brothers Collings, who, by a most patient and persevering and skilful course of breeding for years, succeeded in obtaining characters of the most valuable description permanently fixed in their flock. Their beasts came to maturity very quickly, while the bony skeleton and offal were reduced to the smallest quantity. But in order to effect this, a certain mode of breeding was at least allowed, that is usually known technically as 'breeding in.' The consequence has been, that all these highly-bred animals have a most tender and delicate constitution; which, together with their small bone and heavy load of fat and flesh, utterly unfits them for travelling, and renders them the least likely of any to support the changes of food, temperature, and other conditions, treatment included, which transportation to a different climate involves. Hence it is that so much loss and disappointment has befallen most of the importers of large stock into the colony. The treatment and feeding on the voyage, in all probability, at first lays the foundation of the disease in the complicated digestive organs of the animals; which disease, on arrival here, is further aggravated by a treatment and feeding to which the animals have been altogether unaccustomed. There are other valuable breeds not so delicate however, that would be as valuable, if not more so, than this. There is, for instance, the little Alderney breed, the finest milkers of any, yielding from 12 to 18 quarts of milk per diem, that inhabit the warmest counties of England, and came originally from the still warmer Channel Islands. Why not try some of these that we know, from experience, to be not by any means over delicate? and which, if established

here, would make South Africa notorious for rich dairy produce."

Horse-sickness is also giving some trouble to the farmers, which cannot be wondered at, when it is remembered that upwards of 70,000 horses are reported to have died from the horse-sickness in South Africa four years ago. This, and the demand for India—to which country 5,500 have been sent since the mutiny—is telling upon the numbers in the colony. In 1855 there were only 54,000 horses for husbandry, and 85,000 breeding horses, colts, and foals in the colony. The breeders must now put their shoulders to the wheel to increase the supply, and to keep in health those they have left. Horse-sickness can be avoided by erecting proper sheds for the mares and foals, and growing some forage to feed them on during the prevalence of the disease. If the farmers do not think their horses worth this little expense and trouble, they deserve to suffer; and the Australians will deprive them of the Indian market. The only complaint against the Cape horses is their want of size, caused by starving the mares and foals, and taking no care of them.

Much has been done by the old Dutch inhabitants towards the improvement of wine; but the quality might be greatly amended, for no country can produce better grapes. For agriculture much has also been done; but there is still much more to accomplish. The colony is well watered; and yet nothing, comparatively speaking, has been done towards husbanding the supplies which fall from the clouds. The colonists have recently suffered heavily from the drought, in sheep losses and in crops; and this ought to stimulate them to do something in the way of dam-making and tree planting. The formation of the country is favourable for the former; and in all countries where an adequate supply of rain falls it will be found that vegetation and tree planting are primarily attended to. With respect to wines for export, the Cape will have great difficulty in holding its own in competition in the British market with the nearer produce of the continent; but, doubtless, some other market may be found. The imports already this year of Cape wine are large, and double the quantity which came to hand in the first four months of 1859. In the local agricultural shows we find Cape madeira, sweet and rough pontac, Cape hock, and Cape brandy most favourably spoken of.

We have touched upon some few of the leading Cape products, and the topics principally occupying public attention in the colony. The capabilities of the Cape are unmistakable; these only require steady development and proper vigilance and attention. The value of its exports is already nearly £2,000,000 per annum, and in a few more years they will certainly be doubled.

WOOL.—The history of the growth of wool is very curious. Fifty years ago not a pound of fine wool was raised in the United States, in Great Britain, or in any other country except Spain. In the latter country, the flocks were owned entirely by the nobility or by the crown. In 1794, a small flock was sent, to the Elector of Saxony as a present from the King of Spain, whence the entire product of Saxony wool, now of such immense value. In 1809, during the invasion of Spain by the French, some of the valuable crown flocks were sold to raise money. The American Consul at Lisbon, Mr. Jarvis, purchased fourteen head, and sent them to America. A portion of the pure unmixed Merino blood of these flocks is to be found in Vermont at this time. Such was the origin of the immense flocks of fine-woolled Sheep in the United States.—*Cornplanter and Mechanic.*

ROOTS; THEIR EFFECTS ON SOILS.

Most plants throw their roots over a great depth in disintegrated subsoils; indeed, where soils are under-drained, and subsoil-ploughed, after their removal they leave in the soil an amount of roots nearly or quite equal to the crop removed, and the portion percolating the subsoil and decaying in place furnishes new conditions capable of liberating from the subsoil many elements which have been before inert.

The joint action of atmosphere and moisture, together with carbonic acid and other fertilizing gases, all circulating the more freely through passages where roots have decayed, and which by their decay have furnished the necessary ingredients, requires but the action consequent upon the presence of these constituents, assisted by the roots of a living organism, *i. e.*, the next crop, to insure the solution of new quantities of mineral matter from the subsoil. Portions of the mineral matter so liberated are elevated into the surface-soil, and there deposited as excrementitious matter thrown off by vegetables, and with the decay of roots thus enrich the surface-soil; and this is also assisted in degree by capillary attraction.

Some have argued that this continual uprising of matter towards the surface-soil, consequent upon the continuous decomposition in the subsoil, must eventually denude the subsoil of its more valuable portions; but it must be remembered that the new conditions produced are such as continually to cause the liberation of new quantities, and that the entire soil being deepened, presents a greater area of surfaces of particles to be acted upon by atmospheric and other influences. To avoid using the material is like husbanding perishable articles until they become worthless.

The roots of a current crop often extend four or five feet in length. Even the common onion has roots eighteen inches long, the lucern and other clovers by the decay of their roots, percolating deeply into the soil, deposit carbon in place of mineral matter which they take up; part to be returned to the soil by the decay of roots, and part elevated into the upper soil, while the portion of the crop removed is more nearly renewed by liberating new quantities over greater depths, than if the soil were cultivated on the shallow system.

Every fact, empirical and scientific, goes to prove that deep tillage renders the addition of less quantities of mineral fertilizers adequate to produce crops.—The Working Farmer.

PRACTICAL DISCUSSION ON THE FARMERS' ENEMIES.

At the Maidstone Farmers' Club, the other day, the subject for discussion was "Insect Life," with reference particularly to those species affecting the operations of the farmer, which was ably introduced by Mr. Punnett, of Chard Sutton, his remarks possessing the greatest practical value, from the circumstances that many of them were the result of his own personal observation. He first noticed that bitter enemy to the farmer, the wire-worm, explaining its habits, mode of attacking the plant, &c. The most effective remedy he had found was to lay the ground fallow, and completely starve

them to death. They were also destroyed by white mustard, and if slices of potato and turnip were allowed to remain in the infested ground for a short time, when taken up they will be found full of these destructive insects; the latter plan, however, was expensive, and not thoroughly effectual. Another very troublesome pest was the larvæ of the tipulæ, an insect of the "daddy longlegs" species. In reference to these, Mr. Punnett mentioned that in a field of wheat belonging to him the plant in one part had been much injured by these grubs, while in the other portion not one was to be found. The only difference in the treatment of the two pieces was that the infested part had been ploughed in December and the other some time earlier. Although the farmers were loath to believe it, rooks, pheasants, and partridges were the greatest enemies to these insects; the birds might sometimes pull up the corn, but it was in search of the grub which was silently destroying the plant just beneath the surface of the ground. It was singular that in both these cases, while the insects were so destructive in their larvæ state, when perfectly developed, and arrived at the final stage of their existence, either as beetles or anything else, they appeared to be comparatively harmless. Mr. Punnett next noticed a peculiar kind of beetle which seems to infest all pod-bearing plants. These insects suddenly make their appearance just at the time when the plant has progressed sufficiently to afford them the sustenance they require. On one occasion he sowed some peas on what had formerly been hop-land, where no beetle of this kind had ever been seen before, and yet at the proper season large numbers were to be found upon the plants. This could only be accounted for by the supposition that the egg which was to produce the beetle was contained in seed, having been deposited there the previous year, while not yet fully developed. The only effectual remedy with which he was acquainted was to obtain old seed, for the embryo beetle appears to die if kept in its prison more than a year. The peculiarities of some other insect tribes were also briefly touched upon, Mr. Punnett incidentally mentioning a fact which seemed to create surprise—namely, that some species of the humble bee destroy the blossom of plants by perforating the cup with their trunk when in search of honey. An interesting conversation followed, in the course of which Mr. Barnes recommended cleanliness of cultivation as the best preventive of insect visitations. Supposing that they were troubled with wireworm or other species of grub, he advised them to well roll their land, and make it as close as possible. He had done so till it was almost as hard as a road. This prevented the insects burrowing from plant to plant, and thus stayed their ravages. Referring to turnip-fly, he said he always sowed a treble quantity of seed, and had never lost a crop. Mr. Punnett also recommended this plan.—*Doncaster Gazette.*

YEARLING HEIFER PRODUCING A CALF.—Mr. Thomas W. Willan, of Hansfield, Clonsilla, writes as follows to the *Irish Farmers' Gazette*: "My thorough-bred yearling heifer, 'Nancy Dawson,' which I have entered to compete at the Royal Dublin Society's show, has, at the early age of one year and eleven days, given birth to a fine heifer calf. Nancy was calved March 25, 1859. She was in a paddock with my bull Starlight from the 7th of May to the 4th of June, when my heifers were put by themselves. Nancy got milk up to November, when she was housed, and fed for the show. She never showed the least symptoms of being in-calf till Sunday, the 11th ult., and calved on Tuesday, the 13th, with great ease. Herself and calf are doing well. I entered her for the show the Thursday before. I should also remark within two hours before calving I and a great many more could not know for certain what ailed her."

FILMS ON THE EYES OF CATTLE.—I have seen inquiries about films on the eyes of cattle. I have never had a trial on cattle, but have cured or taken off films twice or three times from the eyes of a young mare, by applying new milk from the cow two or three times a day for three or four days. Take a little in the mouth, and it is easily deposited in the eye. It is mild, easily tried, and not expensive.—W. P.—*Country Gentleman and Cultivator.*

CALENDAR OF AGRICULTURE.

The sowing of turnips must be finished without delay in the eastern counties of England. The season of sowing is early in July, as the fly is not so strong as in June, and the mildew is not so frequent. Horse and hand-hoe potatoes, beet, and the earliest sown Swedish turnips, and repeat the processes that no weeds appear. The young plants derive much benefit from the frequent stirring of the intervals after drills, and most in dry weather. It causes an evaporation of moisture which is imbibed by the leaves. Prepare clay fallows by ploughing, harrowing, and rolling; pick off by hand all weeds and stones, and bring forward the lime if any to be applied.

Proceed with draining on grass lands and on fallow ground; the former condition of the ground affords the cleanest work, and the neatest performance. On fallow, the work is hurried, not to stop the cultivation. The proper course of all drains should be marked in winter, when every wetness shows itself. Drains may be half dug at any time, and the bottom-half excavated when the stones or tiles are ready, and the whole process finished at one time.

Wean the latest lambs, and give them the best encouragement. Put mares to the stallions regularly.

Attend that the pasture fields have a supply of water, and that no gaps are continued in the fences.

Apply the contents of the dredging box to the sheep, to prevent the maggot fly depositing the

larvæ. Dress clean the posterior parts of the animal from the adhesion of excrements.

The hay season will be finished this month: make hay, and carry the grass quickly; build in to long ricks; lay it lightly together, and allow it to sink into form by its own weight; it is a mistake to tread it firmly together. Pull nothing from the sides of the ricks till well settled; then dress in to any form, and thatch without delay. To get hay placed on a high rick when being built, use a scaffold raised on four upright posts, resting below on a four wheeled platform; and elevate or depress the scaffolding by means of pulleys to any height that may be required: lay some loose straw on the extreme top of the rick till it be thatched. When the hay is damaged by rains, mix salt in the ricks as has been directed. When the building of the ricks is interrupted by the intervention of one or more nights, spread over the rick a waterproof cloth, which will defend it from the rain: remove it in the early morning, to let the sweating of the grass escape. To defend the rick from early showers, suspend over it a light cloth by means of a rope passing the length of the rick, and attached at each end to an upright pole.

Harvest will commence this month in early localities. Early peas, barley, and rye will be first cut: tie the barley and rye in sheaves, and set them in shocks of twelve sheaves each; lay the peas in small heaps, and turn them frequently, and carry when dry to the barns or rick stands, which are all had ready.

CALENDAR OF GARDENING.

KITCHEN GARDEN.

Transplant broccoli at various periods, for early and late spring supply, choosing, if possible, a moist state of soil; otherwise if the weather be dry, every hole must be filled with water. The ground ought to be rich in nitrogenous manure; and therefore some soot, mixed up with spit dung would be useful, as it contains salts of ammonia. May-sown cauliflower may be treated in the same manner. Endive is to be sown twice in the month. Sow early the last crop of scarlet runners and French beans, as one or two of cos and Silesian lettuce, radish, white and red turnip varieties, a sprinkling of carrots, onions, and salading as required. Celery is to be carefully earthed; and for the first and second times place fine earth compactly round the lower leaves, but not so high as the growing heart. Give water copiously along the trenches if the weather be dry, for the first good start is most important. Sow a full crop of turnips, early Dutch, white and yellow, to come in late in the year and through winter.

After the second week sow cabbages for cole-worts called greens, one of the sweetest of spring vegetables.

Transplant leeks: dig and manure richly a plot for a row or two, and try with the dung 2 ounces of sulphate of ammonia to the small barrow. Very

pure guano, to the extent of a pint to the same bulk, would confer phosphate of ammonia and of lime, several ammoniacal and nitrogenous compounds, common salts and neutral sulphate to the soil. It is the comprehensiveness of pure guano which stamps its value, and therefore would always add to our exhausted manures, as a restorative. In planting leeks, make deep, case-like holes, and drop them in, supplying water in a stream so as to fix the roots of each.

Transplant vegetable marrows and cucumber plants, already raised in heat. Dig a hole for each in a warm, open spot of ground: put in a barrow or more of leafy rich manure, and cover it with some light rich soil, and cover with hand glasses, till growth be established, and then gradually train out the runners: stop the plants occasionally, to obtain laterals.

FLOWER GARDEN.

Take up bulbs, dry them, and pipe and layer pinks and carnations. Propagate geraniums by cuttings, in sand and leaf mould, plunging the pots into a gentle hotbed: they soon root, and may be transferred to larger pots in a richer soil, as loam land and decayed cowdung. Guano is extolled as a highly valuable stimulant, but if pure it may be misapplied to flowery plants, and if spurious the effect may be none.

AGRICULTURAL REPORTS.

GENERAL AGRICULTURAL REPORT FOR
JUNE.

During the greater portion of the month, the weather in nearly all parts of the United Kingdom has been otherwise than propitious for the growing crops; and the accounts which have from time to time reached us in reference to the wheat have been unsatisfactory. It is possible that some of the advices are too highly coloured; but, at the same time, we glean from them that not only are the crops very backward, but that, in numerous instances, they are very thin upon the ground. It seems to follow, therefore, that this year's yield of wheat is likely to show a deficiency when compared with some former seasons. At the same time, however, we would remark that we ourselves are not prepared to endorse the opinion so freely offered by some persons that that deficiency will be so extensive or so general as to create alarm on the part of consumers, or to enhance the quotations considerably above their present level. The heavy-land wheats, we freely admit, show at present a very middling return; but the crops we have seen in ear on many light lands are looking more promising than was the case in 1859, in which year, it will be recollected, the growth was a deficient one. Of one thing, however, we feel justified in saying that the entire yield for the country cannot possibly exceed an average, even though we may be favoured with a continuance of fine weather between this and the close of harvest operations.

We have now reached a most critical period for the crop. Within a short period it will be in bloom, and, in the event of high winds and heavy showers of rain continuing, our hopes of even a moderate return may be destroyed. Without speculating further upon this point, we may turn our attention to the present state of our rick-yards, and the condition of our warehouses in which are deposited foreign and colonial produce. In the first place, we may state without hesitation that a very moderate quantity of last year's crop of wheat is now in the hands of home-growers, and, further, that very little of the crop of 1858 is to be met with. In the second place, we may fairly estimate the supplies of foreign grain and flour in warehouse and at the outports at fully one-half the quantity in hand at the corresponding period last year. Here, then, is exhibited a serious—perhaps some may term it an alarming—deficiency. No doubt, it has had its influence upon prices, which, since January last, have advanced from 20s. to 24s. per qr.; and that influence will be more generally felt in the event of the crop proving seriously deficient.

The great falling off in our warehoused stocks has arisen from the miserably low prices which prevailed during the last six months of 1859, and which, of course, tended to check operations in produce abroad for shipment to England in the spring. The want of orders from this side was severely felt by the Continental farmers in the period here alluded to, and the result has been that hitherto, this season, we have failed to draw our usual supplies from usual sources. Now, however, great activity is everywhere apparent. Enormous quantities of produce, drawn, be it observed, from imminent stocks, are still in progress of shipment, not only from the Baltic, but likewise the Mediterranean and Black Sea ports. America, too, is now shipping increased quantities of wheat and flour, at rates which leave a fair margin of profit to the operators. Much, however, yet remains to be accomplished, since a very moderate calculation shows that it will be necessary for us to import at least three million quarters of wheat, exclusive of our usual supplies of spring corn, maize, and flour, to meet national wants. That enormous quantity may be imported; but in order to secure so large an amount of food, great efforts must be made on the part of the importers.

The continuance of wet weather has delayed the commencement of the hay harvest. As far as can be ascer-

tained, the crop of grass this season is by no means large, arising from the want of forcing weather to bring it to maturity. Great mroads have been made upon last year's stocks of hay, and the want of new qualities has resulted in arising prices, both in London and the provinces. At present meadow hay is worth £3 3s. to £5 5s., clover ditto £4 4s. to £6, and straw £1 7s. to £1 14s. per load. The quantity of the latter on offer is still very large for the time of year.

The cattle markets, though less active than in the previous month, have continued somewhat excited, arising from the very moderate nature of the supplies of fat stock on offer. The value of beasts has further advanced; but other descriptions of stock, arising, no doubt, from a considerable falling-off in the consumption, have ruled lower in price. That the numbers, generally, in England have diminished during the last two or three years, notwithstanding that we have imported liberally from the Continent, is very evident from the state of our markets. It is, however, gratifying to find that Scotland is now well supplied with store animals. One account from thence states that not only is store stock abundant, but that, in proof of the assertion, most of the grass lands have been let for the season at from twenty to twenty-five per cent. above last year's rents.

Very few unfavourable reports have come to hand in reference to the potato crop, but, of course, it would be premature to offer any decided opinion upon it thus early; but we may remark, in support of views which we ourselves have long considered correct ones, that much larger quantities of old potatoes, in good saleable condition, have been disposed of in London during the month just concluded than in many previous corresponding periods. The result is that prices have given way considerably, and that really fine Scotch potatoes have sold as low as 110s. to 140s. per ton, against 200s. per ton in June, 1859. The growers have naturally expressed themselves much disappointed at these currencies, which, by the way, prove that many reports of absolute scarcity should be received with much caution. The importation of new potatoes from the Continent has commenced; but, as yet, the quantity received into London has not exceeded five hundred tons. The quotations range from 7s. to 10s. per cwt.

Notwithstanding that the hop-bine has not progressed satisfactorily, there has been no movement in the demand for any kind of hops, nevertheless, prices have been mostly supported. The duty has been called £180,000, and £170,000 to £175,000.

The limited stocks held in the manufacturing districts, and the steadiness in the demand on Continental account, have produced considerable firmness in the value of all kinds of wool. Nearly the whole of last year's clip has been disposed of, and, as yet, very little of the new clip has changed hands. Foreign and Colonial qualities have sold slowly at the recent decline. The stocks of the latter in London are now nearly 80,000 bales, against 90,000 bales last year. The next auctions, which will be shortly announced, will, therefore, be somewhat large.

In Ireland and Scotland the grain trade has shown less activity. Prices, however, have been fairly supported; and the shipments of produce to England have continued on a very moderate scale. The stocks, almost generally, appear to be much reduced.

REVIEW OF THE CATTLE TRADE DURING
THE PAST MONTH.

Notwithstanding that unusually large numbers of foreign stock have been imported into London since we last wrote—the total being 34,921 head—and that increased supplies of home-fed sheep have come forward, prices generally, though they have exhibited some decline from the extreme point, have continued very high. The butchers and consumers have, of course, naturally taken exception to this state of things, and

the result is that consumption has rapidly fallen off. As has been the case for some months past, both beasts and sheep have continued to arrive in very middling condition; hence, the quantity of meat actually disposed of has, in a comparative sense, been very moderate. We have already enlarged upon the causes which have, in our opinion, produced the present unusually high rates; consequently it may be unnecessary for us at the present time to refer to the past. We may, however, direct attention to the future, which, we need scarcely say, is looked forward to with considerable anxiety by all classes. The Norfolk season for beasts is now drawing to a close, and it must be admitted on all hands that it has produced a more inferior stock, as to weight and condition, than during the last ten years. But the question now to solve is—what are our prospects as regards Lincolnshire, Scotland, and Ireland, from whence we shall draw the bulk of our supplies during the next six months? The long continuance of damp weather, though by no means favourable to the grain crops, has produced a great abundance of grass in Lincolnshire: that abundance has rapidly increased the weight of the stock, without an extensive use of oil-cake; but we learn that in some quarters, owing to the want of adequate numbers of beasts, much difficulty has been experienced in keeping down the grass in the pastures. The health of the stock having been good, and as no losses of importance have been reported to us, we arrive at the conclusion that we shall receive additional supplies of beasts from the county here referred to during the remainder of the year; but any large excess in the usual numbers cannot reasonably be anticipated. As regards Scotland, from whence during the present year we have derived limited numbers, we may observe that lean stock is abundant—that the grass lands have been let at enhanced rates, but that the supplies fit for transmission to England are still limited. For some time, therefore, we shall be chiefly dependent upon home and foreign arrivals to meet consumption. From Ireland our advices are by no means satisfactory. Both beasts and sheep are represented as very scarce and dear; whilst it is a pretty general impression that larger numbers were shipped to England last year than the country could well afford to lose. From these remarks, it may be gathered that most kinds of meat have seen their highest range; but, at the same time, when we consider the enormous consumption going on in the United Kingdom, we are not prepared to say that any important decline is likely to take place in the quotations at any period during the present year.

The imports of foreign stock into London have been on a very extensive scale as to numbers, but they have mostly come to hand in very poor condition; and it is remarked that fewer beasts have, as yet, arrived from Denmark than usual. We are aware that the prices realized for them last year were very low, and possibly the graziers have this season refused to send to a market, from which hitherto the returns have been very poor. The stringent regulations at the Custom House as regards diseased cattle, may, perhaps, have kept out large numbers, which otherwise would have found their way to this country.

Annexed are the particulars of imports into the metropolis during the past month:—

	HEAD.			
Beasts	2,469
Sheep	27,154
Lambs	2,459
Calves	1,913
Pigs	926
Total	34,921

Same time in 1859 .. .. .	..	..	..	18,875
„ 1858 .. .. .	..	..	..	17,720
„ 1857 .. .. .	..	..	..	13,551
„ 1856 .. .. .	..	..	..	10,136

The total supplies exhibited in the Metropolitan Cattle Market, derived from all sources, were as under:—

	HEAD.			
Beasts	18,740
Cows	520
Sheep and lambs	149,630
Calves	2,703
Pigs	2,820

COMPARISON OF SUPPLIES.				
June.	Beasts.	Sheep & Lambs.	Calves.	Pigs.
1859.	18,593	159,650	2,967	2,152
1858.	18,492	144,280	2,972	3,115
1857.	20,063	103,480	2,404	2,125
1856.	17,896	112,110	1,839	2,740

Last week about 11,000 beasts came to hand from Norfolk, Suffolk, Essex, and Cambridgeshire; 3,800 from other parts of England, and only 79 from Scotland.

Beef has sold at from 4s. 2d. to 5s. 10d.; mutton, 4s. to 5s. 8d.; lamb, 5s. to 7s.; veal, 4s. 6d. to 5s. 8d.; and pork, 4s. to 5s. 2d. per 8 lbs. to sink the offal. These quotations show an advance of from 6d. to, in some instances, 1s. per stone compared with last year.

Newgate and Leadenhall markets have continued to be scantily supplied with meat, which has realized quotations corresponding to those of live stock.

THE ISLE OF ELY.

Believing that in an exceptional season, such as we have passed through for the last nine months, a description of the present state and future prospects of this district of the country will be acceptable, I propose to give you a short statement of facts, and to offer a few remarks in reference to the future. The neighbourhood from which I write is a low flat level country, mostly below the level of spring tides; but the main outfalls, as well as the interval drainage, have been within the last few years so much improved, that, notwithstanding the incessant fall of rain, the land has generally been saved from inundation. The lands, composed chiefly of vegetable matter (and they comprise a large area), have suffered much from the inclemency of the season. The wheat crop—the staple one of the district—on such lands is generally thin of plant, and two to three weeks later than usual; and must be far below the average of years. The oats are also backward, and very much injured by the high winds and frost, and greatly thinned by wireworm. Mangolds are well planted, but the fallows for coleseed are in a very backward state, and if the rains continue a few days longer, cannot possibly be got clean this season. Potatoes are generally well planted. On the heavier descriptions of soils the wheat plant is much more promising. At the beginning of the rainy season there was great fear that the plant would grow too fast, weak, and flabby, but the incessant rain, accompanied with a cold temperature, has had the contrary effect, and the plant has stiffened and lightened both in colour and flag, and but for the extreme lateness in coming into ear, on the whole must be said to promise well. The early kinds are now mostly showing the ear. The oats, too, on this description of soil, promise well upon the whole. Potatoes, as on the fen lands, are well planted; so are the mangolds, of which there is a large breadth. Grass is abundant, both on pasture and old meadow lands; but the clover crops generally are not good. The fallows are in a woeful plight. I have scarcely been able to move a horse upon them for the last month. Every one knows how dear meat is, and no one seems to know when it is to be cheaper. Neither beasts nor sheep do well, the weather is too cold and wet for them. During the past winter, there was unquestionably a great mortality amongst the flocks, coupled at the same time with an unusual consumption of butchers' meat of all kinds. Being a late spring, the grass beams are generally a month more backward than they commonly are. Wool is selling well at from 47s. to 51s. per ton, and more large clips sold than ever I knew so early in the season. The farmers in this part hold less of both wheat and oats than has been the case for the last ten years. I forget to say the beans are generally bad. After the description I have given, you will readily conclude we are quite ready for another harvest. The year 1859 will long, I hope, rank as the worst harvest ever experienced in the fens. As the time for judging of the prospects of the coming harvest advances, the crops may be spoken of with more certainty.—June 25.

SUFFOLK.

Never do we remember a more unpropitious appearance, A dry, hot June is the prelude to abundance. We have had

the opposite—a continuance of rains and low temperature. Every crop on every description of soil looks cold, weak, and cheerless. The wheats have no promise; the barleys are completely set, and saturated with wet; and the heaus will not be an average. We believe it is impossible for the more propitious weather to rectify the past. The harvest of 1860 must be a deficient one. Our remarks apply with especial force to clay lands and light sands, but even the mixed soils have but a sorry show: withal, the corns are foul, and cannot be cleaned. The same applies to the mangold wurtzel land; and the continued and continuous rains have retarded the fallowing and preparations for root-seeding. Clover will be a good crop; but many of our low pastures have been flooded by excessive rains, and the grass is completely spoiled.

AGRICULTURAL INTELLIGENCE, FAIRS, &c.

ALBOROUGH FAIR.—There was a large supply of stock; high prices were asked, but very few purchasers.

APPLEBY FAIR.—There was the largest show of stock of every description upon the Fair Hill ever before exhibited, notwithstanding the broken state of the weather. The fair was considered to be a very equal one; some lost heart and sold at low prices, others obtained what was considered extravagant prices. Upon the whole it was a slow, dull fair, and the supply seemed to be greater than the demand, and the class of stock shown was observably short in condition of former years; accounted for by the scarcity of fodder and the protracted winter. Dealers who had purchased at the late Dumfries Fair, on Wednesday, found it difficult to retain their hold, and in many instances lots were sold at a sacrifice. One dealer, who had paid 5s. for a lot of 200 hogs at Dumfries, did not reach the same sum, and was glad to dispose of them at a discount. Stock forward in condition sold well, and at good prices. Irish were in great numbers; but on account of their low condition were almost unsaleable, and a great number left unsold. Horses were plentiful, and good animals brought fair prices.

BANBURY FAIR.—The supply both of beasts and sheep was about as usual, but the high prices demanded to some extent checked sales. As much as 6s. the stone of 8lbs. was in most instances asked for the best qualities of beef and mutton; but some reduction upon these rates had to be submitted to, and the prices actually realized may be fairly quoted at from 5s. to 5s. 6d. upon the average.

BISHOPSTOKE MONTHLY MARKET was well attended by both sellers and buyers. There was a brisk demand for all kinds of cheese, at high rates; nearly the whole changed hands, at about the following prices: half cowards 56s. to 62s., doubles 62s. to 66s., Somersets 55s. to 72s., Cheddars 74s. to 80s., fine old ditto 82s. to 86s.

BRECHIN FAIR.—Dealing was dull, except for sheep in good condition, which were not numerous. Best sheep in the wool from 8d. to 9d. per lb. A great number of inferior sheep remained unsold, and the sellers were complaining that there was nothing left for grass in the shape of rent. The number of cattle was large, but there were very few lots of very fine fat. The best quality of oxen were worth from 11s. 6d. to 12s. 6d. per Dutch stone, down to 10s. for inferior. Mr. Robertson, Mains of Edzell, sold a lot of fine bullocks at 29l., and another at 27l. per head. Mr. Cowie, Dysart, sold a lot of good stots at 26l. 5s., and another at 22l. per head; and Mr. Thomson, Findowie, a lot at 25l. Milch cows in good order sold freely at full prices. The drove cattle were a very dull sale, and a great number of small stirks could not be turned into money. The market on the whole was stiff, and it was only the best sorts of beeva that were paying anything for grass. No man on the Muir ever saw the fat cattle at so high a price, and so many poor small beasts, which were not wanted on any terms.

BRIDPORT MONTHLY MARKET.—A prime lot of fat bullocks were sold from 12s. 6d. to 14s. per acre. Several pens of fat sheep and lamba averaged, the former 9d., and the latter 8½d. per lb. At the horse repository, good cart horses fetched from 25l. to 30l. each. Some useful animals fetched also good prices.

GIFFORD FAIR.—The stock somewhat similar in point of number and variety to that exhibited last year at this time,

blackfaced widders, half-bred hogs (clipt and rough), and a few lots of Cheviot ewes. The trade in the morning was very dull, in consequence of the high prices asked by the dealers, and continued so up to twelve o'clock, when, the holders having given away a little, a few sales were made among the general stock. Shortly after the above hour, many of the different lots were turned off unsold. At the close of the market (about three o'clock) about one half of the general stock remained unsold. This unprecedentedly short demand arises from the grass still continuing to be in short supply upon many farms that are already fully stocked. Mr. Chrichton, salesman, Haddington, bought a large lot of sheep at 38s. 6d., and another lot at 29s. 6d., this kind of sheep was allowed to be from 2s. to 3s. higher than what was got last year at this time. The show of country stock was rather limited, but there were some of them in fair condition. This market was, upon the whole, dull, but what was in condition for fleshing purposes met a ready sale, as there are few really fat beasts in the country. It was allowed, according to quality, that this kind of stock would be from £2 to £2 10s. a head above last year's prices. There were a few lots of this kind left unsold. The Irish cattle were in short supply, and principally composed of stirks. They were in rather inferior condition, and met with little encouragement. The best lot of stirks, where bulk was broke, would be about 5 per cent. below recent markets, and other inferior kinds were unsaleable. The show of milch cows was one of the best that has been seen here for many years, but unfortunately the demand was not adequate to the supply. The first-class cows brought from £14 to £16, second-class from £11 to £12, and the third kind about £10. There was a fair show of Ayrshire queys, for which there was a fair demand. The first kind sold at £14, second about £12, and the inferior descriptions from £10 to £14. There were a few of all kinds unsold. The show of draught horses was rather heavy, but the demand was somewhat limited. This arose from the greater part of the agricultural labour among the farmers having drawn to a close. Trade in consequence was dull, and beasts of this kind would be from 5 to 10 per cent. below the prices of recent markets. The saddle, harness, and other horses, which are run upon at this season of the year, met with rather a better fair; and what was in anything like condition were readily picked up at prices fully equal to those obtained at recent markets. Few of the better class remained unsold.

GLOUCESTER MONTHLY MARKET.—There was an average supply of beasts and sheep, but purchasers were very cautious in their transactions, owing to the extreme prices asked. The quantity returned unsold was considerable. The quotations were: Beef from 7d. to 8d. per lb., mutton 8d. to 8½d., lamb 8½d. to 9d., pigs 11s. to 11s. 3d. per score.

LINCOLN FORTNIGHTLY MARKET.—An average supply of sheep, and a slow trade; prices were barely the same as at the previous fat stock market—7½d. to 8d. A fair show of good beasts, at 8s. 6d. to 9s. per stone.

LLANGENNECH FAIR.—A large supply of cattle realized high prices. Some superior horses reached excellent prices. Pigs sold at very good prices.

MINSTERLEY FAIR.—Good-meated sheep and lambs were eagerly bought up at high prices. Pigs were in demand, and the fair was soon cleared of them at an advanced rate. The stock of cattle was not so numerous as usual, and in consequence of the scarcity of keep many of them remained unsold. Cows and calves were sought after, and found purchasers at good prices.

MONTGOMERY FAIR was well supplied with stock, and a very great number of buyers were in attendance. Cattle of all descriptions were readily sold at much higher rates than at the previous fair. Beef was very scarce. One splendid cow, belonging to Mr. Morris, of Gwernygog, was sold to Mr. Jones, butcher, of Newtown, for 9d. per lb. The animal was supposed to weigh 13 score per quarter. Mutton and lamb from 7½d. to 8d. per lb.; store sheep not in request; pigs very dear; cows with calves commanded high prices.

MORETON FAIR.—The supply of sheep exceeded expectation, whilst that of beef was small. Mutton was not a ready sale at from 7½d. to 8d. per lb.; beef made 7½d. per lb. Store cattle were in good supply, and dear. The pig market was well attended, and stores realized high prices. There was a much larger number of horses exhibited than for some months past, and several changed hands.

MUIR OF ORD.—There were many small lots of sheep

exhibited, and the prices obtained were less than might have been expected, considering the scarcity of stock. The lots were, however, rather inferior in quality generally. There were no south country dealers on the ground, and the market may be termed an unusually dull one. Among the sales were the following: Mr. Robertson, Comer, bought a lot of Cheviot wether hogs at 23s., and a lot of blackfaced hogs at 13. Mr. Maclean, Nairnsdale, sold a lot of Cheviot wether hogs at 16s. Mr. Frazer, Fanblair, sold a lot of blackfaced ewes, with lambs, at 23s. Mr. William Laidlaw, Rogie, bought a lot of blackfaced wethers at 16s. Mr. Colin Munro, Isle Ewe, sold a very superior lot of half-bred hogs at 50s. Mr. Cameron, Dreim, offered old ewes at 30s. Mr. Smith, Glen Urquhart, offered blackfaced ewes and lambs at 22s, Mr. Frazer, Shewglie, offered Cheviot ewes at 30s., and blackfaced at 20s., but they remained unsold. Mr. Robertson, Aigas, sold two-year-old cross heifers at £11 5s. Mr. Williamson, Tain, bought a lot of year-old queys at £7 7s. 6d. Mr. Middleton, Balmuchy, bought a lot of two and three-year-old fat stots at £18 12s. 6d. Mr. Alison, Redcastle, bought two-year-old crosses at £9 10s. Mr. Matheson, Cathness, sold a lot of two and three-year-old crosses at £10, and a lot at £5 5s., and also a lot of Highland queys at £4 10s. The number of sheep and cattle were much in excess of last year.

NORTHAMPTON FAIR was well supplied with store beasts. There was also a large supply of Welsh cattle. Of fat beasts there were scarcely any on show, and prices generally had an upward tendency. There was a moderate show of sheep and lambs, but in consequence of the high prices asked, holders found great difficulty in effecting sales. A moderate attendance of buyers, with trade dull.

SHEPTON MALLET MONTHLY MARKET.—There was a very large number of animals, but as the farmers are disinclined to add to their present stock owing to the weather and the scarcity of "keep," the sale was dull, at a slight decline in prices. The few specimens of fat stock exhibited were, however, quickly disposed of at high rates.

TEWKESBURY FAIR was unusually well supplied with stock for the season, and the attendance of butchers and dealers was larger than for some time past. There was a great demand for fat stock, and ready sales at good prices were easily effected. Fat sheep sold at from 46s. to 59s.; fat lambs, 26s. to 30s.; fat oxen, £28 to £31; fat cows, £17 to £28; barren heifers, £10 to £18. Mutton sold at 7d. to 8½d.; beef, 7d. to 9d. per lb.

WREXHAM FAIR.—An unusually large quantity of sheep and lambs was brought to market, consequently prices were on the decline. Horses and cattle realized fair average prices. The supply of pigs was hardly up to the demand.

THORNE FAIR.—Stock was shown pretty freely, but the demand was not so large. Good milk-cows and steers were soon disposed of at remunerative prices. Of lean stock there was a far greater supply than the demand warranted, and this led to a slackness of business. Fat cattle were readily sold, at 9s. 6d. to 10s. per stone.

IRISH FAIRS.—**AUGHIRM:** There was a very large supply of calves, which sold generally at from £3 10s. to £6, and were in much request. The sheep market was rather thinly supplied. Sellers were looking out for very high prices, but were much disappointed. **DUNGARVAN:** There was a large show of dry stock. There was scarcely any fat beef, but inferior quality rated at from 52s. to 56s. per cwt. in sink. Mutton sold at the average of 6½d. per lb. Hoggets 45s. to 53s. each, lambs 20s. to 26s. each. **LONDONDERRY** (long celebrated for the sale of horses): Some of the best shown sold at prices varying from £50 to £35; next best, from £30 to £20, and middling and inferior from £15 down to £10. In cattle there was a large supply. Good milk cows brought from £16 to £13, middling from £12 to £10. Beef extremely dear, realizing close upon 7d. per lb., sinking the offal. There was a good number of sheep, chiefly of an inferior quality, but for which, except such as were fat, there was but little demand. Young pigs, of which the supply was large, found ready purchasers and sold well; runners dull, and scarce. **MULLAGH-CREW** was very largely supplied with all descriptions of cattle. Beef rated at from 50s. to 36s. per cwt., lambs 20s. to 39s. each, sheep 6½d. per lb. Pigs scarce, and rated high, at 57s. 6d. per cwt. **CARLOW:** Fat cattle and sheep were easily disposed of at high prices; prime beef averaging from 70s. to 80s. per cwt., and mutton 7½d. to 9d. per lb. Much cows were in good demand

at £10 to £17; good springer £15 to £18; three-year-old heifers averaged £10 10s. to £13; two-year-olds £8 to £10; yearling bullocks averaged £5 10s.; half-year old calves 50s. to 55s. Sheep; wethers 15s. to 60s. each, and hoggets 35s. to 15s. each. Pork brought as much as 63s. per cwt. Store pigs 45s. to 60s.; bonhams, a very large supply, from 15s. to 30s.

CARMARTHEN BUTTER MARKET, (Saturday last.)—Our Butter market remains without change from 100s. to 107s. per cwt., according to quality. In consequence of the high price of butchers' meat it is not expected that either Butter or Cheese will range lower this season. The weather still continues most unpropitious—tremendous storms, and last day or two very heavy falls of rain, and low lands flooded. Prayers for fine weather are offered up in French churches; if of any avail as affecting the profound laws of nature, such prayers will soon be called for in this country; and truly the prospect is becoming very serious.

CORK BUTTER EXCHANGE, (Saturday last.)—There were 12,716 firkins received this week compared with 13,746 the corresponding week last year. The entire decrease this year compared with the same period last year is 9,500 firkins. The demand is steady, the daily arrivals being bought up, although prices rule high, and are likely to continue so. During the week first rose from 106s. to 107s.; seconds fell from 106s. to 105s.; thirds rose from 95s. to 96s., and fourths fell from 93s. to 92s. To-day prices range from 64s. to 107s.

GLOUCESTER CHEESE MARKET.—Only a moderate quantity of cheese—about 50 tons. Prices were as follows: Best singles from 63s. to 64s.; seconds, 58s. to 60s.; and skim, 40s. to 50s. per cwt. An entire and early clearance was effected.

GLASGOW CHEESE MARKET.—A fair supply and mostly new, which sold at higher prices. There were five tons passed the weigh-house scales, and four carts in the bazaar. Old cheese, 68s. to 72s.; new, 51s. to 54s.; skim, 28s. per cwt.

POTATO MARKETS.

SOUTHWARK WATERSIDE.

LONDON, MONDAY, June 25.—During the past week the arrivals coastwise have been small, and a rise in price was the consequence. As the old potatoes are nearly finished, this will be the last report for the season. The following are this day's quotations:

Yorkshire flukes	.. .. .	130s. to 170s.	per ton.
Perth, Forfar, & Fife Reds	.. .. .	120s. to 140s.	„
Irish whites	.. .. .	100s. to 120s.	„

BOROUGH AND SPITALFIELDS.

LONDON, MONDAY, June 25.—Only a small supply of Potatoes are on offer, and the demand for them is steady, at from 80s. to 140s. per ton. New qualities move off steadily, at from 8s. to 10s. per cwt. Last week's imports were 1,332 baskets from Rotterdam, and 263 baskets from Dunkirk.

COUNTRY POTATO MARKETS.—YORK, June 16:

Potatoes 9d. to 11d. per peck, and 2s. 6d. to 3s. per bush. **MALTON,** June 16: Potatoes were plentiful; eating sorts 3s. to 3s. 9d. per bush., new ones 1s. 3d. per quart. **SELBY,** June 18: New Potatoes 4s. 6d. to 5s. per 21 lbs., old 7d. to 9d. per stone. **LEEDS,** June 19: Potatoes 11d. to 12d. wholesale, and 12d. to 1s. 4d. per 21 lbs. retail, new ditto 1½d. to 3d. per lb. **KNARESBRO',** June 20: Potatoes 13d. to 14d. per 21 lbs. **RICHMOND,** June 16: Potatoes 4s. per bush. **SHEFFIELD,** June 19: Potatoes sell at from 9s. 6d. to 14s. 6d. per load of 18 stones. **MANCHESTER,** June 19: Potatoes 9s. to 15s. 6d., new ditto 34s. to 42s. per 252 lbs.

HOP MARKET.

LONDON, MONDAY, June 25.—We have but little change to report in our market, which remains firm at a slight advance for fine and colour samples on last week's currency. The prevalence of unpropitious weather retards the growth of the bine, and has increased its unhealthy character. The present prospect is much against the duty, 175,000 being realized.

MEASE & WILD.

REVIEW OF THE CORN TRADE DURING THE PAST MONTH.

The month of June has passed away with very little summer weather: the temperature has been low, and the fall of rain unusually heavy and frequent. All this is seriously against a fair yield of corn, and the hay crop is brought into a critical position. Many mowers, who came from the north into Middlesex in the hope of full and remunerative employment, after waiting in vain for fine weather, have returned home exhausted and impoverished. So, with the Irish away this season, should the weather take up, farmers will be in great difficulty to obtain sufficient hands to clear their meadows; and the consequences may be truly disastrous, as the crop at best is now only expected to be light. As regards wheat, very little is yet in ear: only a small portion on light and well-drained land looks well, while the cold clays must be very short, however favourable may be a change. Spring corn, which till lately looked more promising, is turning yellow and sickly, more especially the barley; and though a larger breadth of this grain has been sown than usual, it is doubtful whether much can be fit for malting. Few indeed recollect so unpropitious a season, and we are referred back to 1816, as the nearest parallel. Then the wheat was so sprouted that the dough could not rise, and the bread was unpalatable and innutritious. Some large potato-growers say the roots are rotting, and unless a kind Providence interposes for the national good there is no calculating upon the public pressure. Let us, however, hope that He "who holds the winds in his fists, and the waters in the hollow of his hand," will be again propitious, and avert the calamities which otherwise must overtake us. The fact that we have all along maintained respecting the deficiency of the last harvest has now become plain, and the surplus of the two previously bountiful years appears to have been pretty well used up in the country; while foreign stocks, notwithstanding more liberal imports lately are but small, there being in London less perhaps than one hundred and fifty thousand quarters. This shows the enormous consumption going on, and the necessity of continuous foreign arrivals to meet the wants of the increasing population. The trade, used for years to low prices, has been very sluggish in accepting higher rates for wheat, and the past month, after gaining 3s. per qr. during the first fortnight, lost about half the amount at the close, making the difference in favour of prices little more than 1s. 6d. per qr. The weather henceforth must settle the value till the completion of harvest, but as there appears no prospect of an abundance, even should a dry and sunny time set in, the chances seem much more in favour of a farther rise than fall. Independently of the state of our own crop, that of France is next in importance, and its similarity to our own seems to

settle at least the present range of prices. In other near countries also indications are unfavourable, so reports say from Belgium and Holland; but Germany, though backward, may yet have abundance. Spain and Italy are pretty well assured. Southern Russia is very promising. The province of Algiers has yielded satisfactorily, as well as Egypt. The weather has been suitable in America, and should a failure be the lot of Britain, foreign stores, as in times past, may yet bring us plenty of corn. It will be seen by the following recent accounts of prices in foreign parts that a great rise in several places is noted since last month, more especially in France. Flour at Paris has reached 45s. per sack for the best marks, and the finest wheat about 60s. Red wheat at Louvain of first quality has been fetching 58s. to 60s. per qr. Antwerp has been quoting 60s. 6d. as a top price; Amsterdam, 61s. per qr.; at Groningen red wheat was 57s. per qr.; Hambro' has realized 59s. to 60s. per qr. for 62 lbs. Mecklenburg red wheat, the same price being obtained for Wahren red for July shipment. Soft wheat at Galatz has been selling at 36s. to 37s. per qr. for England. Wheat at Algiers brought about 45s. to 46s., but shipments were not expected to be made before August. Leghorn was firmer through English advices. Genoa quoted 57s. per qr. At Odessa, with large supplies from the interior, and good prospects, especially in Taurida, prices were declining, but English orders and extensive sales of Ghirka quality freight included at 54s. to 54s. 6d. revived the market. New York, although several shipments have been made for this country, was finally rather easier for breadstuffs, flour ranging from about 21s. to 31s. per brl. of 196lbs., and wheat 41s. 8d. to 55s. from red spring to fine southern white per 480lbs.

The first wheat market in London opened on the back of fair supplies principally from the Baltic. But little was sent up in the course of the morning from Kent and Essex. About 2s. advance was generally demanded early in the morning, but eventually 1s. was accepted on the sales made of white, though occasionally 2s. was paid on red, but the good foreign supply made millers careless buyers, and a portion was unsold. Danzig and Russian sorts sold at a similar improvement, but there was very little increase in the value of lower Baltic red. Hull, Leeds, Birmingham, Spalding, Gloucester, and many other places were up 1s. to 2s.; Boston, Bristol, and Wakefield 2s.; and Norwich 3s.; but several places as Gainsborough, Newark, and Stockton-on-Tees only noted an improvement of 1s. per qr. Liverpool on Tuesday was 2d. per cental higher for Danzig and French red qualities, and on Friday there was a further advance of 2d. to 3d. per cental. Both Edinburgh

and Glasgow also quoted higher prices for wheat. Friday being rough in London, the trade was again moving upwards.

On the second Monday there was less wheat noted in the returns, and very little fresh up from Kent and Essex. The weather having, however, taken up, there was less buoyancy than on the previous Friday, though factors realized 2s. more than on the previous Monday. Holders of foreign were higher in their claims, and this checked business. There was some excitement this week in the country, and where short supplies were connected with bad weather as much as 5s. advance in some instances was asked, but this was nowhere paid, very few realizing more than 3s., as was done at Gloucester and Bristol. Leeds and Birmingham made the rise 2s. as in London, but more generally it was 1s. to 2s. per qr., as at Hull, Manchester, and Spalding. Liverpool on Tuesday found a very lively trade at 4d. to 6d. per cental advance, but business slackened on Friday; and so it did in London, the day being fine. Dublin this week was 6d. to 1s. per bbl. dearer, Edinburgh and Glasgow noting a further rise in wheat of 1s. to 2s. per qr.

The third Monday had a liberal foreign supply, but the show during the morning from the near counties was small. The pouring rain of Sunday being, however, followed by fine weather on this day, prices were with difficulty kept at the former range, inferior descriptions at the Kentish stands being sold for less money. Foreign factors found no enquiry, and were quite indisposed to force sales, preferring to land their cargoes. This week was also a dull one throughout the country, but Hull, with fair supplies, obtained previous prices, and this was the case at Leeds and most places.

The fourth Monday had the smallest English and largest foreign supply. There were very few additional samples from Kent and Essex, but some over-left samples made the quantity appear fair. The quality, however, was generally inferior as well as the condition; and though there had been heavy showers early in the morning, it took up fine, and this quite brought business to a stand. Some of the Kentish factors would have accepted 1s. to 2s. lower terms, but millers appeared determined to make no increase of their stocks, being lately well provided. The rates of the previous Monday for both English and foreign were only nominal. The effect of these advices from London produced a general discouragement throughout the country, and prices gave way.

The imports into London for the four weeks in June were 20,310 qrs. English, 84,326 qrs. foreign wheat; against 16,192 qrs. English, 125,838 qrs. foreign last year. The total imports into the kingdom for the month of May were 420,467 qrs. wheat, 408,805 cwts. flour.

The general averages show a gain of 2s. 5d. in the four weeks, commencing with 52s. 6d., and ending with 54s. 11d., the London averages in the same time making a rise of 3s. 6d., commencing with 54s. 11d., and closing at 58s. 5d. The only exports were 25 qrs. wheat and 484 cwts. flour.

The flour trade commenced with a start in the

price of town-made qualities of 4s. per sack, which has been maintained, the top price standing at 54s. Norfolks at the same time were only 1s. per sack dearer, the quotations being then 3s.: it subsequently rose to 42s., but finally closed at 40s. to 41s. per sack. All through the month, foreign supplies have been moderate, including some sacks from Bremen, and there have been fair qualities received from America, and more on their way with some chance of remuneration since the town advance. The receipts into London for the four weeks, have been 80,322 sacks English, 11,637 sacks 10,510 barrels foreign, against 52,845 sacks English, 43,732 sacks 736 barrels foreign, showing a considerable decrease in the French arrivals, and increase in the American.

The barley trade had been very quiet, since the close of the malting season, very little English appearing at market, and only moderate arrivals from abroad. On the second week there was a decline in grinding qualities, the barley crop being up to that time well reported; but since then there has been more firmness in the trade, the unhealthy appearance of the crop generally giving but poor promise of a liberal supply of good malting quality after harvest. The consumption for pig food has lately increased, it being relatively cheaper than peas or beans. Large imports from the Principalities are expected, a great deal being bought there some little while back. The arrivals into London for the four weeks were only 774 qrs. of British growth, with 39,229 qrs. from abroad, against 687 qrs. English and 29,697 foreign in 1859. The imports into the kingdom for May, were 175,167 qrs.

The malt trade throughout the month has been quiet, with prices much the same.

The supply of foreign oats, which had greatly fallen off since last September when much was landed, has during the month and especially in the last week of it, been greatly increased from all parts of the Baltic and Holland, the fourth Monday bringing 40,000 qrs. from Russia alone. Dealers have therefore been getting into stock on favourable terms. The decline however, did not commence until the third Monday, when good qualities gave way 6d. to 1s. per qr., and subsequently another 1s. reduction was submitted to on the best sweet sorts, making the total decline for the month about 2s. per qr.; but it was more on inferior sorts, and there being many Dutch and Baltic cargoes sadly out of condition, these sold at irregular rates. As our own harvest must however be late, and English, Scotch, and Irish stocks appear exhausted, we shall want a considerable quantity for some time and should not be surprised at some rally on the prices. The receipts for the four weeks into London have been 1,844 qrs. English, only 10 qrs. Scotch, 13,453 qrs. Irish, and 203,716 qrs. foreign, nearly half these being received in the fourth week. For the same time last year, the receipts were 340 qrs. English, 5,058 qrs. Scotch, 6,372 qrs. Irish, and 104,437 qrs. foreign. The foreign arrivals for May throughout the kingdom were 191,335 qrs.

Beans throughout the month have been very steady, the shortness of the English supply giving tone occasionally to the market; but with a reduc-

tion in the price of oats, it cannot be expected there will be much advance at this time of year. Some of the recent arrivals of Alexandrian have been placed at about equal to 35s. per qr. in granary. The arrivals for the four weeks into London have been 1,810 qrs. English, 2,910 qrs. foreign, against 1,390 qrs. English, 527 qrs. foreign in 1859. The imports into the kingdom during May were 38,432 qrs.

Peas have likewise been without variation in value, the receipts of home grown being quite insignificant, but made up by foreign supplies. Many of these were low white and green sorts, only fit for horse or pig food. Barley being lower has been against a ready sale, but prices have been firm, there being very little, if any sort in granary, so that any contract for the navy would be sure to send up the price of boilers. The receipts into London for four weeks have been 188 qrs. English, 5,207 qrs. foreign, against 259 qrs. English, 1,978 qrs. foreign in 1859. The foreign imports for the kingdom in May were 26,007 qrs.

The supply of linseed in four weeks was 37,447 qrs., of which there were 11,216 qrs. taken off on export. Prices have rather tended upward, say 6d. to 1s. per qr. in the course of the month. But cakes since the abundant rains have not found so large a demand or quite so good a price.

The seed season being over, there has, since the bad weather, been more enquiry for cloverseed. But little appears to be held over, and still less for sale of red qualities, the holders being more disposed to wait the chances of the crop, which does not promise well. Even white seed has been firm. But though trefoil might be expected to advance, it has only been calm. Canaryseed, after long being dull, has risen in value from 54s. to 60s., with some prospect of a further advance without a favourable change. Mustard seed also of fine quality is held at a high price, and the value of all seeds under the possible damage to the crops has been tending upwards.

CURRENCY PER IMPERIAL MEASURE.

	Shillings per Quarter.	
WHEAT, Essex and Kent, white.....	50	62
red.....	50	59
Norfolk, Linc., and Yorks., red.....	48	58
BARLEY, malting ... 30 to 36 ..Chevalier, new... —	—	—
Grinding 28 30 ..Distilling	30	31
MALT, Essex, Norfolk, and Suffolk .. 49 to 57 .. fine	60	70
Kingston, Ware, and town made .. 49 57 .. "	60	70
Brown	48	49
RYE	—	—
new.....	30	31
OATS, English, feed., .. 21 to 25 .. Potato	27	29
Scotch, feed.....22 27	27	29
Irish, feed, white	22	24
Ditto, black.....	20	24
BEANS, Mazagan.....34 to 40 .. Ticks	37	39
Harrow.....36 45 .. Pigeon	46	50
PEAS, new, white, boilers 36 41 Maple 38 to 41 Grey 26 38	38	38
FLOUR, per sack of 280 lb., Town, Households.....	50	54
Country	41	42
Norfolk and Suffolk, ex-ship.....	40	41

IMPERIAL AVERAGES.

FOR THE LAST SIX WEEKS:	Wheat.		Barley.		Oats.		Rye.		Beans.		Peas.	
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
May 12, 1860	52	6	37	7	25	10	34	1	43	8	40	3
May 19, 1860	52	1	36	6	25	3	36	2	44	3	39	5
May 26, 1860	52	6	36	2	26	6	37	3	44	8	40	9
June 2, 1860	53	4	35	10	26	8	39	3	44	1	41	0
June 9, 1860	54	2	35	0	27	8	38	1	45	9	40	8
June 16, 1860	54	11	35	3	26	11	37	0	46	2	40	4
Aggregate average ..	53	3	36	1	26	6	37	0	44	9	40	5
Same time last year ..	52	6	32	9	25	9	36	5	46	3	42	1

PRICES OF SEEDS.

BRITISH SEEDS.

MUSTARD-SEED, per bush.....	14s. to 20s. ..	brown 12s. to 16s.
CORIANDER, per cwt.....	14s.	16s.
CANARY, per qr.....	56s.	50s.
TREFOIL	16s.	20s.
PARIS, winter, new, per bushel	6s. to 0s. 0d.	
LINSEED, per qr., sowing—s. to 61s. crushing ..	54s. to 58s.	
LINSEED CAKES, per ton.....	£9 10s. to £10 10s.	
RAPESEED, per qr.....	70s. to 76s.	
RAPE CAKE, per ton.....	£5 10s. to £6 0s.	

FOREIGN SEEDS, &c.

CLOVER-SEED, red 38s. to 48s.	white 66s. to 70s.
TREFOIL	17s. 19s.
HEMPSEED, small, — s. per qr.....	Dutch —s. 48s.
CORIANDER, per cwt.....	16s. 18s.

PRICES OF BUTTER, CHEESE, HAMS, &c.

BUTTER, per cwt.—	s.	s.	CHEESE, per cwt.—	s.	s.
Friesland	84	95	Cheshire.....	75	80
Kiel	—	—	Cheddar.....	76	82
Dorset	104	105	Double Gloucester.....	76	82
Carlow	104	112	HAMS, new	66	72
Waterford.....	100	108	York.....	86	92
Coek	100	112	Westmoreland.....	86	92
Limerick	98	102	Irish.....	78	84
Sligo	98	106	BACON: Wiltshire, dried, 74	78	84
FRKST, per doz. 10s. 0d. to 12s. 0d.			Irish, green	70	74

WOOL MARKETS.

ENGLISH WOOL MARKET.

Per sack of 240lbs.

Fleeces—Southdown Hogs.....	£19 10	to £20 0
Do. Half-bred Hogs.....	19 10	20 0
Do. Kent.....	19 0	20 0
Do. Southdown Ewes & Wethers	19 0	20 0
Do. Leicester do.....	17 10	18 0
Sorts—Clothing, picklock.....	20 0	21 0
Do. Prime and picklock.....	18 10	19 0
Do. Choice.....	17 0	18 0
Do. Super	15 0	16 0
Do. Combing—Wethermatching ..	20 10	21 0
Do. Picklock	18 0	18 0
Do. Common	16 0	16 10
Do. Hog-matching.....	23 10	24 0
Do. Picklock matchig.....	18 10	19 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	4 6
Saxon, { Prima	2 4	3 0
and { Secunda	2 0	2 4
Prussian, { Tertia	1 8	1 10
COLONIAL:—SYDNEY—Lams	1 6½	2 5½
Scoured do.....	1 5	3 1
Unwashed	1 0	1 3
Locks and Pieces.....	0 9	0 11
Slips and Skin	1 5	1 9½
PORT PHILIP—Lams.....	1 6	2 8½
Scoured do.....	1 5½	3 3½
Unwashed	0 11½	1 5
Locks and Pieces.....	0 7	2 0
S. AUSTRALIAN—Lams	1 0½	2 3
Scoured do.....	1 7	2 6½
Unwashed	0 9½	1 4
Locks and Pieces.....	0 5	1 8
V. D. LAND—Lams	1 6	2 10½
Scoured do.....	1 7	2 10½
Unwashed	1 0	1 5½
Locks and Pieces.....	1 0½	1 9
CAPE OF GOOD HOPE—Fleeces.....	0 10½	2 3½
Lams.....	1 3½	2 1
Scoured	1 1	2 0
Unwashed	0 5	1 4

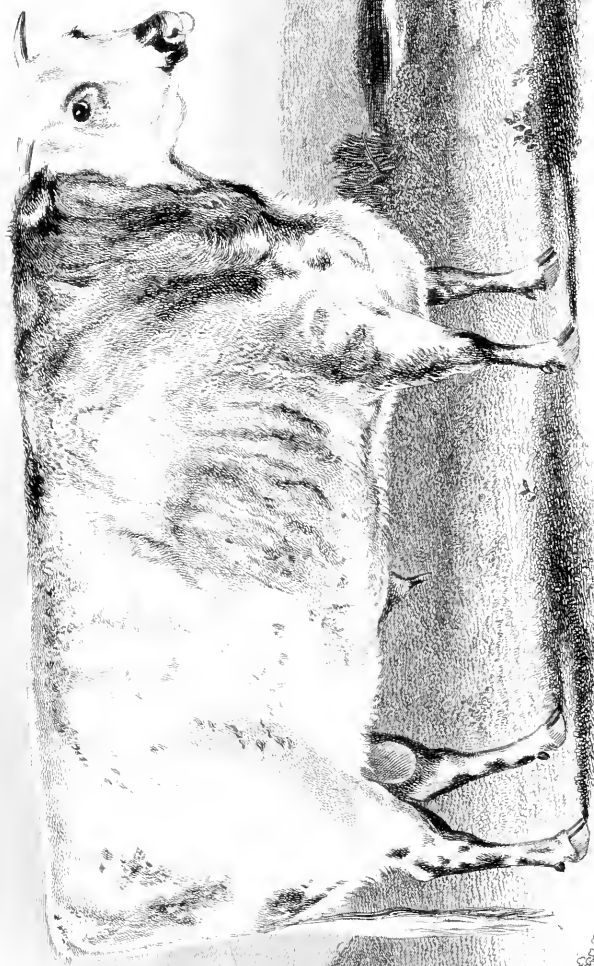
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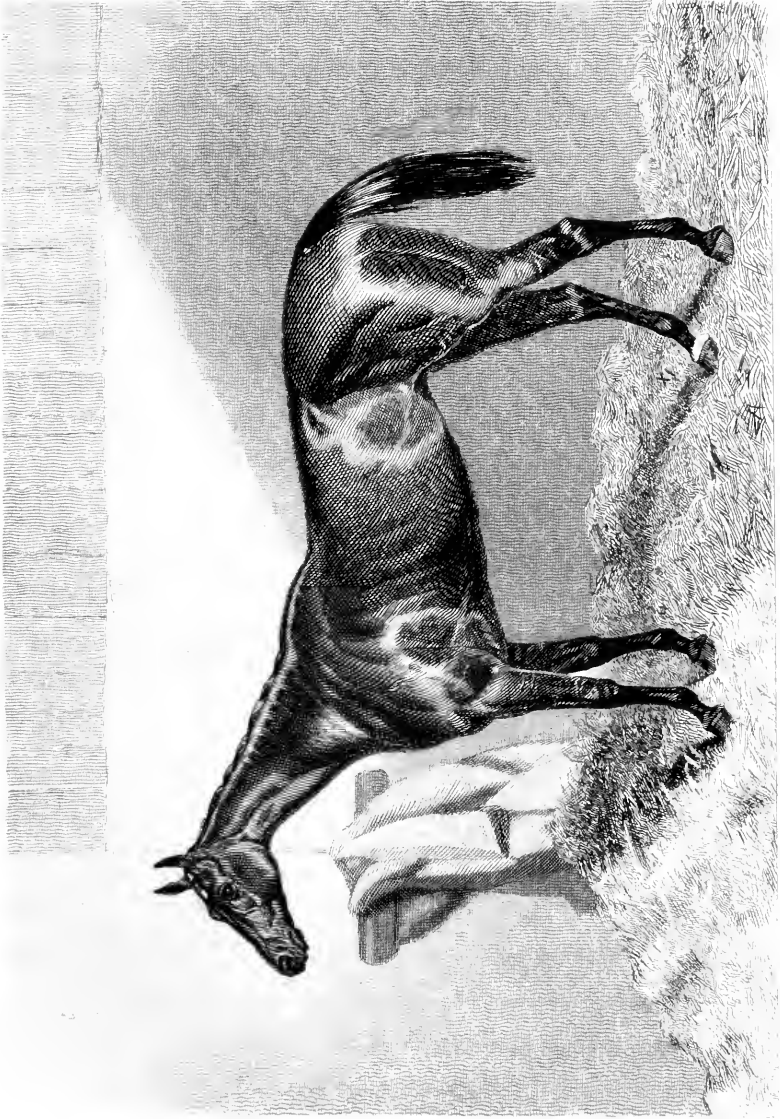
PRICES CURRENT OF GUANO, &c.

PERUVIAN GUANO (per ton, for 30 tons).....	£12 5 0	to £12 10 0
Do. (under 30 tons).....	12 0 0	13 0 0

ARTIFICIAL MANURES, &c.

Nitrate Soda } £14 10 0 to £15 0 0	Gypsum	£1 0 0	to £1 2 0		
per ton	Bone Ash, for } 4 12 6	5 0 0			
Sulphate of } 14 0 0	14 0 0	South America } 4 10 0	4 15 0		
Ammonia	16 0 0	20 0 0	London ditto, } 4 12 6	4 15 0	
Muriate of ditto	6 10 0	7 0 0	uncrushed ..	0 18 0	1 0 0
Corn Manure	5 0 0	6 0 0	Do. dust.....	1 0 0	1 1 0
Superphosph. } 5 0 0	6 0 0		Animal Charcoal } 4 5 0	4 10 0	
of Lime.....	1 0 0	1 5 0	Oil of Vitriol, } 6 0 1	0 0 0	
Salt.....	2 12 6	2 15 0	concentrat- } 6 0 1	0 0 0	
Coprolite (gr'd) ..	2 6 0	2 5 0	ed, per lh. } 6 0 1	0 0 0	
Ditto (whole) ..	2 6 0	2 5 0	Do. Brown	0 6 0	0 0 0
Estramadura } 4 10 0	5 0 0				
Phosph. of } 4 10 0	5 0 0				
Lime for 70 } p. ct. p. ton					





THE FARMER'S MAGAZINE.

AUGUST, 1860.

PLATE I.

ROYAL BUTTERFLY; A SHORTHORN BULL,

THE PROPERTY OF COLONEL TOWNELEY, OF TOWNELEY PARK, BURNLEY, LANCASHIRE.

Royal Butterfly, bred by Colonel Towneley, was calved on August 12th, 1857. He is by Frederick (11489), out of Butterfly, by Jeweller (10354), her dam Buttercup, by Garrick (3863)—Barmpton Bosc, by Expectation (1988)—by Belzoni (1709)—Comus (1861)—Denton (198)—by a son of Comet (155).

Frederick, also bred by Colonel Towneley, was calved February 6th, 1849. He is by Duke (9032), out of Bessy, by Thick Hock (6601), her dam Barmpton Rose, by Expectation (1988)—Belzoni (1709) &c., &c. Frederick was never exhibited in public, but has been well employed in the Colonel's herd, and on the stock of his tenantry. He is the sire of Master Butterfly, Roan Duchess the Second, Blanche the Sixth, Frederick the Second, Ringlet, and others. A portrait of Frederick appeared in the *Farmers' Magazine* for September, 1858.

Butterfly, bred by Colonel Towneley, and calved on the 1st of May, 1849, is also the dam of Master Butterfly, an own brother to Royal Butterfly, which was sold, to go to Australia, at the hitherto unprecedented price of 1,200 gs.; but we believe that a higher sum than this has been refused for his younger brother. Master Butterfly, the prize shorthorn bull of the Chelmsford show, where he changed hands and countries, died recently in the Colony. A portrait of him appeared in the *Farmers' Magazine* for April, 1856. The cow Butterfly was herself a famous prize animal, having taken all the premiums possible at the Royal Agricultural Society's meetings, as well as others of the Yorkshire and Lancashire Associations; while in Ireland she secured the Purcell Challenge Cup for Colonel Towneley, by winning it three years in succession. A portrait of Butterfly was given in the *Farmers' Magazine* for April, 1852; and of her dam again, Buttercup, earlier in the series, so that the tribe is well represented in this work.

In 1858, at the Chester meeting of the Royal Agricultural Society, Royal Butterfly was first

shown—amongst the bull calves above six and under twelve months old. Contrary to the general expectation he was, however, only highly commended; Mr. Fawkes's Bon Garçon taking the first prize, and Mr. Forrest's Comet the second. But Royal Butterfly was very ill at the time, and had to be removed from the ground.

At the Northallerton Meeting of the Yorkshire Society he took the first prize of £10 for bull calves, the late Lord Londesborough sending the second best, and Lord Feversham's Perambulator, and Mr. Booth's Lord of the Isles, being highly commended.

In 1859, at the Warwick Meeting of the Royal Agricultural Society, Royal Butterfly took the first prize of £25 as the best shorthorn bull more than one year old; Mr. Ambler's Prince Talleyrand being placed second to him, and Mr. Lynn's Great Comet third; while Mr. Armstrong was commended for Vatican, and Mr. Hall for Robin Hood.

In a week or two afterwards, at the Hull Meeting of the Yorkshire Agricultural Society, Royal Butterfly took the first prize of £20 for yearling bulls, with Prince Talleyrand again second to him, and Mr. Jolly's Hector commended.

At the Durham County Show at West Hartlepool, Royal Butterfly took the first prize of £15 as the best bull under two years old.

At the Blackburn Meeting of the Royal Lancashire Society, Royal Butterfly took the first prize of £10 as the best bull, with Mr. Dickenson's Prince of Prussia second best. Butterfly also received the silver medal as the best male animal in the Show.

In 1860, at the Canterbury Meeting of the Royal Agricultural Society of England, Royal Butterfly took the first prize of £30 for aged bulls; beating Mr. T. Dickenson's Prince of Prussia, second to him; Lord Feversham's Prince Imperial third; and in the highly commended, Mr. Bradbourne's Sir Colin, and Mr. Ambler's Prince Talleyrand. The simply commended bulls of the

class were Colonel Pennant's Sir Colin Campbell, Mr. Lynn's Great Comet, and Mr. Noakes' Prince Alfred the Second.

The portrait of Royal Butterfly was taken last year at Warwick, when he had not quite developed into the magnificent animal he is now become. Our report of the Canterbury Meeting, in another part of the present number, thus speaks of him:—"Royal Butterfly is still the pride of the entry. Never has so good a looking young bull to begin with, *continued* to improve so much and he is now very nearly perfection. With really a line of beauty

running along him, a splendid forehead, great girth and size, he unites in the highest degree the yet more innate advantages of quality and pedigree. He has, too, a grand, massive head, kindly in expression, but still with all the attributes of a male animal; while his condition was admirable. He certainly did not look over-pampered. The very fastidious might say he did not finish quite even over the quarter, but there has rarely been a bull over which the critic could find less legitimate cause of complaint than Royal Butterfly."

PLATE II.

SUMMERSIDE; A THOROUGH-BRED FILLY.

Summerside, bred by Admiral Harcourt in 1856, is by West Australian, out of Ellerdale by Lanercost, her dam by Tomboy—Tesané by Whisker.

West Australian, bred by Mr. Bowes in 1850, is by Melbourne, out of Mowerina, an own sister to Cotherstone. West Australian, a winner of both Derby and St. Leger, is commonly allowed to have been the best horse of this century. Lord Londesborough gave five thousand guineas for him, and the horse went to the stud the next season. His stock consequently first appeared in 1858, since when Adelaide, Summerside, Joskin, Mazzini, Penalty, St. Clarence, Ticket-of-Leave, Birdcage, Chirper, Edmund Kean, North Lancashire, Penalty, Slut, the Wizard, and others have been credited to his account. His produce won one of the three great races the very first year they had the opportunity. At the Grimston sale in June, following the decease of Lord Londesborough, West Australian was sold, to go to France, for three thousand guineas. Count de Morny was the purchaser.

Ellerdale, the dam of Summerside, bred by

Admiral Harcourt in 1844, is almost equally famous. In five foals out of her, we begin with that good mare Ellermire; next in succession comes Ellington, a winner of the Derby; then Wardermaske; Gildermere, who ran a dead heat for the Oaks in 1858, and Summerside who won the Oaks in 1859. She was barren in 1857. Ellerdale herself was a capital mare, a good third for the Oaks of her year, and a stout runner up to six years old. She, too, was sold at the Grimston sale for one thousand one hundred and twenty guineas—a great price for a brood mare—to Mr. Blenkiron.

Summerside is a brown filly, standing fifteen hands two inches high. She has rather a Melbourne frontispiece, with a star on the forehead. She has a good blood-like neck, a capital shoulder and rare back and loins. Her quarters, too, are very strong and muscular, and she is altogether a fine, low, and lengthy filly,—a long way the best-looking of this talented family. She was sold at Tattersall's in February last, for eight hundred guineas, to Mr. R. C. Naylor, in whose possession she still continues.

GUANO AND ITS SUBSTITUTES.

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

There have been one or two valuable series of experiments recently published, on the fertilizers the best adapted for grass and roots. One laborious investigation on the effect of different manures on natural pastures, has been, for some years, pursued at Rothamstead. Another—the trials at Eccles Newton, near Kelso, by a skilful Scotch farmer—was on the subject I have taken for this little essay: on the comparative value of other manures as substitutes for guano.

The high price of guano, the low value of corn, and the increasing demand for animal food at the present period, naturally enough lead the cultivator to pay more than ordinary attention to the best means of increasing the

produce of the food for stock, and, as guano is one of the most powerful, yet expensive agents he can well employ, to endeavour to discover if cheaper fertilizers can be employed. Then again, as there is every reason to believe that live stock will long continue to be the most remunerative portion of the farms of this country, it is pretty certain that we can hardly direct our attention to a more profitable section of agriculture than the best modes of increasing the number of our domestic animals, or, what is nearly the same thing, enlarging the supply of their food.

If, indeed, we refer to the prices obtained for meat during the last twenty years, we find how strong has been the tendency of the meat market during

that period to rise, and how the inclination of the corn market has been, in an equal degree, to decline. Let us put in opposite columns the prices obtained per stone of lbs. at the Metropolitan Market for prime Southdown mutton, and the price per quarter of wheat, during the last weeks in July, since the year 1840; they were as follows:—

	MUTTON.		WHEAT.	
	s.	d.	s.	d.
1840	4	4	69	5
1841	4	4	65	2
1842	4	2	65	4
1843	3	10	52	0
1844	4	0	52	9
1845	5	0	51	7
1846	4	2	49	11
1847	5	4	77	3
1848	5	0	47	11
1849	4	0	49	1
1850	4	2	43	1
1851	3	10	42	5
1852	4	0	40	0
1853	5	0	52	7
1854	5	0	69	8
1855	5	2	77	7
1856	5	4	77	5
1857	5	0	62	7
1858	4	8	45	8
1859	4	10	43	0

During these 20 years, be it also remembered that the population of our island has been increasing steadily, at the rate of about 300,000 per annum (each person annually consuming on an average, 75 lbs. of meat, and a qr., of wheat), and that during these years while the import of corn has been largely on the increase, the supply of foreign live-stock has

enlarged at a much slower rate. Let us put in parallel columns the number of sheep and lambs and the quarters of wheat imported during a few of the years since 1849; the little table will thus come out:

	SHEEP AND LAMBS.		WHEAT.
1847	136,527		2,650,058
1848	128,093		2,594,013
1855	156,646		2,667,702
1856	135,588		4,072,833
1858	177,207		3,437,957
1859	184,482		4,241,719

So that while the imports of foreign wheat have nearly doubled in amount since the years 1847 and 1848, the imports of sheep and lambs have, in the same period, enlarged only about 25 per cent.

The laborious researches of Mr. J. B. Lawes and Dr. Gilbert at Rothamsted in Hertfordshire were with the object of ascertaining the best dressings for the natural grasses, and moreover to test the effect of the *continued* application of the *same* manure to the same plot of ground for a series of years.

The following table will show to the reader the average result of three years' application of the same manure viz., in 1856, 1857, and 1858. The only part of this statement that needs explanation is, that the "mixed mineral manure" was composed of—

- 200 lbs. of bone ash,
- 150 lbs. of sulphuric acid,
- 300 lbs. of sulphate of potash,
- 200 lbs. of sulphate of soda,
- 100 lbs. of sulphate of magnesia.

In this table, which gives the experiments with different manures on permanent meadow land, the produce of hay per acre is given in tons, cwts., qrs., and lbs.

MANURES PER ACRE, PER ANNUM.
Series 1.—Without direct mineral manure.

AVERAGE OF 3 YEARS.

PLOT.	MANURES PER ACRE, PER ANNUM.	AVERAGE OF 3 YEARS.			
		Tons	cwts.	qrs.	lbs.
1.	Unmanured	1	3	1	10
2.	Unmanured (duplicate plot)	1	4	2	24
Mean or standard unmanured		1	4	0	3
3.	2000 lbs. sawdust	1	0	2	3
4.	200 lbs. each, sulphate and muriate ammonia	1	15	0	8
5.	200 lbs. each, sulphate and muriate ammonia, and 2000 lbs. sawdust	1	15	0	14
6.	275 lbs. nitrate of soda	1	6	1	12
7.	550 lbs. nitrate of soda	1	11	3	8
<i>Series 2.—With direct mineral manure.</i>					
8.	"Mixed mineral manure"	1	13	1	2
9.	"Mixed mineral manure," and 2000 lbs. sawdust	1	15	3	23
10.	"Mixed mineral manure," and 200 lbs. each, sulphate and muriate ammonia	2	19	1	16
11.	"Mixed mineral manure," 200 lbs. each, sulphate and muriate ammonia, and 2000 lbs. sawdust	2	18	2	11
12.	"Mixed mineral manure," 200 lbs. each, sulphate and muriate ammonia, and 2000 lbs. cut wheat straw	2	14	0	23
13.	"Mixed mineral manure," and 400 lbs. each, sulphate and muriate ammonia	3	3	2	27
14.	"Mixed mineral manure," and 275 lbs. of nitrate of soda	1	17	3	8
15.	"Mixed mineral manure," and 550 lbs. of nitrate of soda	2	10	1	8
<i>Series 3.—With farm-yard manure.</i>					
16.	14 tons farmyard manure	2	0	0	27
17.	14 tons farmyard manure, and 100 lbs. each, sulphate and muriate ammonia	2	8	2	14

The practical conclusions to which these scientific and valuable explorations upon the improve-

ments of grass land tend, is thus given by their authors:—

“In order that the more temporary, or more rapidly acting means of increasing the produce of meadow land, may have their full effect, the more permanent means of amelioration that may be required—such as draining, marling, liming, and the like—must not be neglected. The application of bones is not recommended for general adoption. They appear to be chiefly adapted to the exhausted pastures of certain localities, and not to be generally applicable to meadow land which is mown for hay. The hay crop is a great exhauster of the mineral constituents of the soil; and these, owing to the high price of salts of potash, cannot, with profit, be fully restored in artificial manures. The return of the mineral constituents is better accomplished by means of farmyard manure, stable dung, night soil, and the like; which, at the same time, bring on to the land a more or less considerable quantity of available nitrogen. The best ‘artificial’ manures for grass land are—Peruvian guano, which is rich in phosphates as well as nitrogen; and nitrate of soda, and sulphate of ammonia, which are rich in nitrogen, but contain, of course, no phosphates. Peruvian guano, when used alone, may be employed at the rate of from $1\frac{1}{2}$ to $2\frac{1}{2}$ cwt. per acre; nitrate of soda alone, or sulphate (or muriate) of ammonia, at the rate of $1\frac{1}{2}$ to 2 cwt. per acre. The salts of ammonia are, however, relatively too expensive to be employed largely with profit; and both ammoniacal salts and nitrate of soda are more advantageously used in combination with guano. A very generally used top-dressing for the hay crop may be made of 3 parts Peruvian guano, 1 part nitrate of soda, and 1 part sulphate of ammonia. Of this mixture, 2 to $2\frac{1}{2}$ cwt. per acre may be employed. With this applied annually, and the application of 10 or 12 tons per acre of poor rotten dung once every four or five years, a good crop of hay may be taken off every year, without injury to the land. The best time of sowing the ‘artificial’ manures is generally in January; and it should at any rate be seldom postponed beyond February.”

While these lengthened experiments were being conducted on the chalk formation of Hertfordshire, an enterprising Scotch farmer, Mr. John Dove, on the clay soils of Eccles Newton, near Kelso, was hard at work on another, and still more practical branch of the enquiry—valuable labours, which were justly rewarded by the premium of the Highland Society of Scotland—(*Trans. High. Soc.* 1860, p. 213.) His leading object was to ascertain if other and cheaper manures than Peruvian guano could not be employed. He experimented upon the cereals, upon beans, potatoes &c.; but on this occasion, I am directing my chief attention to the efforts that have been made to find cheaper dressings than guano, for those crops which are intended for the food of stock. Let us take the grass trials first, and then the root experiments of Mr. Dove, chiefly giving the results per imperial acre; and for the more ready comparison of these, reducing them to the following tabular form:

The first experiment in 1857 was on a mixture of red clover and perennial rye-grass: after spring

wheat on a clay soil; the cost of the manure being in all cases about £1 17s. an acre.

	Ton	cwt.	qrs.
The soil simple produced of hay			
per acre	1	4	0
3 cwt. of guano	2	0	0
3 cwt. of ditto	1	15	0
2 cwt. of nitrate of soda	1	17	0
2 cwt. of ditto	1	19	0
2 cwt. of sulphate of ammonia ..	1	16	0
9 cwt. of saltpetre salt	1	8	2
6 stones nitrate of soda	}	1	16
6 stones sulphate of ammonia ..			
3 cwt. saltpetre salt			

The next experiment upon red clover and rye-grass, was made on a black loam, after barley. In this trial,

	Tons	cwt.	qrs.
The soil simple produced per acre			
of hay	1	10	0
3 cwt. of guano	2	1	0
3 cwt. ditto	2	0	0
2 cwt. of nitrate of soda	1	18	0
2 cwt. ditto	2	1	0
2 cwt. of sulphate of ammonia ..	2	0	0
9 cwt. of saltpetre salt	1	10	0
3 cwt. of saltpetre salt	}	2	1
6 stones of nitrate of soda			
6 stones of sulphate of ammonia }			

In 1858, another experiment upon grass, after wheat, on a loamy soil at Eccles Newton, gave the following result; the top-dressings being followed by extreme dry weather.

	Tons.	cwt.	qrs.
Soil simple produced of hay per			
acre	1	11	0
3 cwts. of guano	1	15	0
2 cwt. of nitrate of soda	2	0	0
2 cwt. of sulphate of ammonia ..	1	17	0

With Swede turnips Mr. Dove, in 1857, made two experiments, both on clay soil. In the following table the results obtained are given in tons and cwts. per acre. In the first trials the whole field got 15 loads of dung, and in its second trials 10 loads per acre.

	No. I.	No. II.
3 cwt. of guano	14	1 .. 15 17
$4\frac{1}{2}$ cwt. of superphosphate	13	15 .. 15 0
$3\frac{3}{4}$ cwt. of superphosphate	13	10 .. 15 9
and sulphate of ammonia,		
mixed 5 to 1	14	6 .. 15 3
$3\frac{3}{4}$ cwt of ditto, mixed 10		
to 1	14	1 .. 15 18
$3\frac{3}{4}$ cwt. of superphosphate		
and nitrate of soda, mixed	13	10 .. 15 9
5 to 1		
$3\frac{3}{4}$ cwt. of ditto, mixed 10	13	10 .. 15 9
to 1		
$4\frac{1}{2}$ cwt. of Odams' blood	0	0 .. 15 6
manure		

In 1858, two other trials were conducted by Mr. Dove on a free clay soil, after wheat; in the first experiment the field, a free clay loam, had 15 loads of dung per acre, and the following special dressings:

	Tons	cwt.
Soil simple produced of swedes	17	5
2 cwt of guano	21	0
3 cwt. of dissolved bones	22	2
2 cwt. 6 stones of dissolved bones and sulphate of ammonia, mixed 10 to 1	18	15
4 cwt. of rape cake	20	12

In the second trial, the dung was omitted, but the weigh of the special manures doubled; in this an acre of land dressed with

	Tons	cwt.
4 cwt. of guano per acre produced . .	22	10
6 cwt. of dissolved bones	20	5
5 cwt. 4 stones of dissolved bones and sulphate of ammonia, mixed 10 to 1	18	0
8 cwt. of rape cake	19	10

The conclusions at which Mr. Dove arrives from his experiments made in 1857, are these; that we need not consider that a supply of guano is absolutely necessary for keeping up the fertility of the soil, as there are other substances by which it can be done equally well, and that it is only a question of relative cost. On turnips, the crop to which by far the largest quantity of artificial

manure used around Kelso is applied, superphosphate of lime and sulphate of ammonia are quite equal to it; on wheat, sulphate of ammonia is greatly superior to it; on oats, there is not much difference between it and nitrate of soda, and on grass, nitrate of soda is better. And again at the end of the year 1858 he adds that the whole of his experiments made during that season do not show any discrepancy with those of the preceding year, but mostly go to support the results then arrived at. They show that should the supply of guano be stopped, we have other manures equal to it in their effect on all the crops usually grown in the country. Such a witness will reassure those timid persons who are apprehensive of serious results to our agriculture, when the supply of the Chinch Islands guano is exhausted; such may be assured that other nitrogeous manures will then be produced, new and cheaper modes of producing ammonia employed. The demands of mankind have always hitherto been bountifully responded to by the agriculturist and the men of science, who are now fortunately his help-mates; and never was there so little probability of those requirements being made in vain to these, the best friends of their country, as in the year of grace 1860.

THE HERDS OF GREAT BRITAIN.

CHAP. XIX.

MESSRS. BARNES AND CHALONER'S.

Ireland's Eye stood out bright and clear, as we steamed merrily into Kingstown on the Saturday before the Dublin Show, big with anticipation of at last seeing a whole century of bull-calves in battle array; but the sunny omen availed us nothing. Wind, rain, sleet, snow, and cold seemed to combine for the next four days, freezing the brain and wetting the note book. We had to wade ankle-deep through gate-ways, and fly wildly for shelter to adjacent trees and sheds, and it was perfect elysium to find ourselves at last under the roof of the Museum, and hearing from the late Tommy Fox, as, in full Connaught costume, he picked some superfluous hairs from the top of Dr. McHale's tail, just for auld acquaintance sake, how he had led the white's dam to victory in that place, and miraculously recovered his best pair of shoes. Gerty, the present master of the ceremonies at Westland, had brought out "The Doctor" for us at Dycer's on the day of our arrival, and never was man more justly confident of winning the rubber against Sir Colin. His charge had made wonderful progress since he had to bow to the roan of County Wicklow, at Dundalk, and save and except his being a trifle light in the flank, and perhaps not quite so well let down in the twist as he might be, his whole outline is a most remarkable combination of sweetness and level grandeur. In spite of his length, the fatal spot behind the shoulders, where such thousands fail, is one of his strongest points, and he moves as well

on parade as Nunykirk and Newminster, those renowned turf brothers, were wont to do in their canters. He was calved on the eighteenth of April, 1857, and served sixty cows last year, and after fulfilling the conditions of the *Farmers' Gazette Cup* and declining the Railway Cup, he was let to Mr. Torr, who passed over British Prince, on behalf of Warlaby, in return. Since then he has been reduced some twenty stone, and is getting the pick of the Aylesby cows, along with his sire, The Monk, Barley Sugar, and Booth Royal.

A circuitous railway ride of about sixty miles brought us to Kells, and three more on a jaunting car found us at the veritable Irish home of the Booth blood. The farm at Westland consists of 300 acres, and 200 acres at Oakley Park, with other land; make up Mr. Barnes's holding to about six hundred. The house, and the situation generally, bear the most remarkable likeness to Killerby, and we could hardly divest ourselves of the idea, that we were in the North Riding, for "a quiet day" once more, within ear-shot of the roar of the Swale, and the sound of the Caterick bell. About 150 acres round Westland are laid down in permanent pasture, but still the herd cannot be said to have the advantage of the cream of the Meath land. It is a fine alluvial soil for roots, and swedes and yellow globe mangels flourish best. In his younger days, Mr. Barnes devoted himself to the breeding of weight-carrying hunters. Prendergast, by Waxy, and Sir Edward, a grandson of Sir Walter, were the principal sires he used for his three-parts-bred mares; and Hawk, of his breeding, finished

third in the Liverpool National, and first for the Northampton. He gradually imbibed a taste for shorthorns from his old schoolfellow Mr. Robert Holmes, of county Westmeath, and when he had once seen Modish, who was bought by that Irish pioneer of shorthorns from the Booths for 120 gs. in 1825, the vaccination "took." Mr. Holmes offered 150 gs. the same journey for Sylph, by Remus (one of the finest sons of Comet), and descended on her dam's side from Col. Trotter's sort; but Mr. John Booth, who had bought her at his father-in-law's sale, considered her the best, and declined to let her go. Lord Ross, of county Longford, had introduced the old Teeswater style, even prior to Charles and Robert Collings's day; and two or three years before the daughter of Remus arrived, the Irishmen had been purchasers at Mr. Champion's sale. Many of the lots at Mason's sale followed suit, and it was there that Mr. Holmes gave 110 gs. for Victoria, own sister to Monarch; and crossed her with Booth bulls—one of which, Argus, he bought at Richard Booth's Studley sale. She died of dropsy after producing one heifer, Victoria II, and three bulls; and it was from that heifer that the whole of Mr. Holmes' fine herd was descended, which averaged £65 odd under Mr. Strafford's hammer. Mr. Latouche, of county Kildare, and Mr. Adamson, of county Westmeath, were also among the faithful in those days of shorthorn depression, and Mr. Holmes, conjointly with the latter, bought Monarch's dam, which produced them one bull, Napoleon, own brother to the great Masonic hero. "Kearney's Bull," as he was called, had been brought over from Mr. Mason's by a salesman in 1822, and by way of a beginning, Mr. Barnes sent a cow to him which he had picked up from Lord Ross's herd. The next step was to buy Mr. Holmes's Prince George, by Booth's Volunteer, from Mason's Victoria, but all these careful calculations of Booth on Mason were swept away by distemper, which killed fifteen of the best cows.

What seemed a grievous calamity at the time, proved to be the reverse. In 1841, the horses were sold by auction, and Mr. Barnes determined henceforth to give up his whole heart to Shorthorns, and taking his passage for England, set his face Killerby-wards. Modish, by Lord Stanley (4269), half-sister to the elegant Mantalini, the great winner of the day, and Milliner, a daughter of Mantalini, also by Lord Stanley, were, however, the only purchases which he effected there. Modish had won several prizes before he got her, and she was in-calf at the time with Albion, by Morning Star. Her luck did not desert her in Ireland, and the first heifer and cow prizes fell to her lot at the Dublin Royal, as well as the first cow prize at the Royal Irish. The above high-bred pair were singularly niggardly in their heifer-breeding, as each of them had only one a-piece, and the daughter of one and granddaughter of the other adhered rigidly to the same Malthusian practice. Luck, however, inclined towards Milliner, and of the eleven pure Booth females in the Westland herd, ten now deduce their origin from her, and only one from her companion. Baroness ranges herself under the Milliner line, through Britannia and Ophelia by Hamlet, whom Mr. Barnes still

thinks as fondly of as his very best cow. Lady Sarah was purchased as a six weeks calf, at Mr. Pollok's of Mountainstown, who had bought her dam Violet from Julia, at Capt. Barclay's sale. Her ladyship was sent over, along with The Belle (which picked her calf), at 10 gs. to Hamlet, and Young Hamlet was the produce. Those were days when 40 gs. was considered a good bull hire, and she had a bull calf to Hamlet for each of the next three seasons, while he stayed at Westland, and after that Ruby to Royal Buck, who followed with Baron Warlabby in Hamlet's footsteps. In fact, she was the only well-bred cow served by Royal Buck during his stay, as his excellent shoulders were required to correct her upright ones, a failing of which Baron Warlabby rather partook. She had eleven calves in all, and one of them, Lord Clarendon, was the first bull which ever made 80 gs. in Ireland. Bright Eyes, bred by Mr. Lawson, of Stapleton, and of the same family as Mr. Fawkes's Bridegroom, once bid fair to found a tribe, which has, however, been gradually sold off; but Pauline, who was bought from Mr. Whitaker, and is all Mason, with the exception of the cross of Jobson's Prince of Northumberland, and her daughter Primrose by Hamlet, still live in their granddaughters. The later purchases include Bloom, from Mason's Bloom, by Satellite (1420), and Sweetbriar, by Nimrod (13,388).

Roseberry (5011), by Rasperry, purchased from Mr. Torr, was the first of the Booth line of Bulls at Westland. Hamlet, by Leonard, from Bracelet, then took his three seasons; then came Royal Buck and Baron Warlabby, the latter of which was so especially successful as a getter of prize animals. Hopewell reigned four seasons, Windsor part of one, and Sir Samuel one, and then Harbinger was hired for 250 gs., and did not live out two-thirds of his time. After all, it was not with a Warlabby bull of his own hiring, that Mr. Barnes made his greatest breeding, but with Dr. McHale, as Sylph was sent to The Monk during his period of service with Mr. Kearney, of Clonmellan. Of the Monk, with his "grand monastic arched rib," it is said, that he has been so constantly engaged that Mr. Richard Booth has not cast eyes on him for upwards of eight years. The herd now consists of about 52 in all, 38 females and 14 bulls, and one-third of them are pure Booth. Dr. McHale, who does not go to Canterbury, has been rather an exception, as in consequence of the risk of forcing, Mr. Barnes scarcely ever shows anything but yearling bulls and heifers, and the Royal Dublin Spring Show is his principal arena.

We passed the arch leading into the bull-yard, and made straight for the three new boxes, in which Baroness, Modish, and Ruby held their court. There was no occasion for our cicerone to introduce us verbally to the two first, as already we had seen them holding a post of honour among the few herd favourites which adorn the Westland walls. Baroness has only been shown once, when she was the first-prize yearling at Dublin Spring, but her extreme neatness and goodness might have secured her royal honours. She has, however, been more worthily employed, and a long list of calves, beginning with Countess, and ending with The Druid by Dr. McHale, attest the wisdom of curbing ambition, and leaving nature to itself. Her calf, Baron

Hopewell, was purchased by Colonel Towneley for 300 guineas (the same price which was refused for herself), and with what success the bull-calf prize-list at Warwick, Hull, &c., can attest. Modish still bears the traces of the fine character of Killerby, and holds her own in spite of seven summers. She was never shown, but her dam, grandam, and great-grandam were all royal winners. The red neat-shouldered Ruby, of the Lady Sarah tribe, and got by Royal Buck, was well worthy of being classed with them. She is a very good constitutioned cow, but rather short in her hind-quarters. Her calf Emerald, a Dublin winner, was sold for 150 guineas, and again for £445, when she reached America; and another of her daughters Carnation (180 gs.) the highest-priced lot at the late Mr. Knox's sale, became the property of Captain Bal.

Bloom, of the old Mason sort, grandam by an own brother to Monarch, and bought at Mr. Fetherstone's sale, occupied the first of the five asphaltic roof boxes. She has remarkably nice shoulders, and a sweet placid head, and, after giving two good proofs, with Harbinger, of the applicability of the Booth cross, she is now in calf by Dr. M'Hale. Then came Lady Hopewell, from Lady Sarah, the second-prize heifer at Londonderry, in 1858, beating Mr. Douglas's Maid of Athelstane. Her shoulders are not quite so good as we might look for in a winner, but her fine wealth and substance and nice open head are quite a set-off. Next to her, and just returned from her fifteen-guinea visit to Third Grand Duke, at Lancaster, was Sylph (by Hopewell from Ophelia), the dam of Dr. M'Hale. She is a rare combination of blood, with capital ribs, neck, and loins, and a very prolific breeder, and, like Baroness, the first yearling prize at Dublin, has wisely bounded her Ribbon propensities.

Victoria, by Hopewell, and the last calf of Britannia, who struck us as a level, good-haired cow, with quite a Booth head, has since quitted the herd, at a high price for Lady Pigot's farm near Newmarket. Here, too, was Sweetbriar, who would remind us of Captain Spencer's Lizzy. She is a nice red cow, nearly a pure Booth, with grand neck and ribs, and "a very speaking" muzzle, and goes back to the Isabella tribe at Warlaby. Old Primrose, a winner at the Cork Royal in 1850, met our eye first in the tiled boxes, still bearing all the stamp of Killerby, after her thirteen years' pilgrimage. Hamlet, like Leonard, principally got bull calves, and this is his first Irish daughter, and the only one left at Westland. Next her was Flight, by Hopewell, from a Hamlet cow, of the old Lady Ross tribe, and her daughter Fly, also by Hopewell, and an improvement on her dam. Fly has a wonderful coat, and right well she must have needed it, sleeping out the whole winter through. Then came Empress, another of the Hopewells, from old Lady Sarah, one of the finest at Westland. She has a grand rib, and is the dam of the young Windsor, whom Mr. Stratton has been using so extensively, both this year and last. Anon we had a glance at the fine fifteen-year ruin of old Bright Eyes. She bore the first calf to Dr. M'Hale, in the shape of a roan heifer, and there is every hope that the line

may not end there. We also looked at Moss Rose, the dam of Captain Harbinger, and another of the roan M'Hales, with some interest, as she is the only representative of Roseberry, son of Raspberry, one of the best bulls that ever trod the Warlaby pastures. Countess, from Baroness, and an own sister to Baron Hopewell, was not a large, but a very neat cow, and occupied the next box, along with Pride of the Pauline family—a good cow, without any extra keep to help her, but decidedly giving place to her fine-sized companion Hope, an own sister to Sylph, and considered by some to be the plum of Westland. She has just had a roan heifer-calf to "The Doctor," for which, at three weeks, 150 guineas was offered by the Saxon in vain. Pearl, another of the Pauline tribe, a clever young cow, like the Hamlets in colour, greeted our arrival at the next box, where she was installed with the robust Red Violet, half-sister to Ruby; and the inmates of the adjacent one were a yearling heifer, Flirt, by Sir Samuel, from Flight, of the old Lady Ross sort, and taking after her sire in colour; and a fine-coated red heifer, by Harbinger, from Gift, to whom we perhaps gave the preference. Gem and The Queen, both of them little more than two years old, and on the point of calving, were winsome marrows; and the former, by Sir Samuel, from Ruby, is sold, to leave after calving, for 100 gs. The Queen is a white heifer, by Windsor, from Countess, and though her being due to calve to Dr. M'Hale so early may have somewhat stayed her growth, she will no doubt branch out her royal arms, when summer suns shine on the Meath meadows. A red yearling, by Harbinger, from Rosebud, of Roseberry descent, and a red and white by Paddy Hopewell, from Violet—the former for choice—made up the last pair, and then we retraced our way to the bull-yard, whose white hero had gone to sweep the lists at Dublin. The senior among the ten was his half-brother, the red and white Duke of Leinster, by Harbinger, from Sylph, who promises in many points to be as good as The Doctor, though he may never equal him in size; still there is little left to be desired on that head, and his shoulders, ribs, and back are all set in a capital mould. Master Harbinger, from Bloom, is younger, and has much style about him, and plenty of thick flesh; and two October reds, from Pearl and Prude, bring up the rear of the Harbinger division. Dr. M'Hale leads off well with Leonidas, from Modish, a very fine white young bull, of great size and substance, with the true Leonard loin, and very like his sire. Friar Tuck, from Ruby, is ten days his junior, and both handsome and very large; and of the four other rich roans, from Baroness, Syren, Primrose, and Gift, The Druid promises best at present, and although he will have no pull on the score of age, we quite hope to see him well to the fore at Dublin next spring.

A ride of about a mile, past the stone quarry in which old Harbinger lies buried, and fields dotted with pure Leicesters, brought us to the avenue of oaks leading to Kingsfort. The glen, that well-known meet of the Meath hounds, with its artificial earths and its rustic bridges, just faces the gate of the principal lodge,

and the laurels which form the underwood of its twelve acres, coupled with the dark hollies and double-ivy of Kingsfort itself, impressed our stranger eye, even in that early spring tide, with the rich colour-resources of a Green Isle landscape. The round tower and spire of Kells stood out in company three miles away; in the distance, to the right, loomed the pillar of Lloyds, built by the present Marquis of Headfort's grandfather as a famine landmark, in 1791; while, on the left, the Ardee hills cut the horizon in a wave-line, and died gradually away into space near Slane. Mr. Chaloner has nearly 400 acres on his own hand; a tithe of which form the park in front of the house, where a bevy of yearling heifers awaited us. The snow-white Windsor Pearl, a daughter of Windsor from Nancy, a Baron Warlabby cow, and tracing back to the Prince Ernest tribe, first caught our eye in the shape of a stylish heifer, with a rare neck vein, and bosom and back, and recalling the old bull in not a few of her points. The Sir Samuels mustered strongly in the group. Bella Donna, a two-year-old roan from The Bride, has caught his head exactly, and good hind-quarters, ribs, and loins along with it. Bon-bon IIIrd, but no third in merit, from Bonny Lass by Hopewell, passed proudly by, with her grand brisket, as if thoroughly conscious that she could beat most in the field. There was Heartsease, too, from Harriett, with a wonderfully soft mossy coat, and a deep bosom; the red and white Flower Girl from Fleda, with her companion the sweet-looking May Maid from May-dew, with horns as nice to the eye as her coat was to the touch. Going back somewhat in point of age, we came to the dark red two-year-old daughter of Hopewell and Fleda, to wit Favourite 2nd, as rich in colour as she is in quality, and an excellent milker to boot; and Hopewell was also well represented by her senior, the good coated Coronella. In the Garden Field, too, we found his daughter the rare cow Modesty, going back through Mirth and Marchioness, and Marquis of Chandos (6190) of Mr. Wiley's breeding, to old Buckingham, who was burnt to death with Mr. Barnes's herdsman on board the steamer, as he neared the Irish shore. Lady Portia, from Lady Fanny, the twelve-year-old matron of the herd, was there to speak for Harbinger; and hard by, near the dark fir plantations, we stopped to admire two evergreens of the herd in Bonny Lass and Miss Warlabby, two ladies of beauty and fortune which would bother judges not a little. But the *Irish Farmers' Gazette* has anticipated us, and hence we need not enter the yard, and follow out the other cracks in detail.

Although he had previously used Madcap (7183), a purchase from Mr. R. La Touche, of Harristown, Mr. Chaloner can hardly be said to have thought in earnest about the formation of a herd before 1838, when he broke ground with Prince Arthur (9502), own brother to Noble (4578). It was not, however, until Prince Ernest (7366), from Mr. Robert Holmes's herd, became the Kingsfort Premier, that the prizes began to flow in, both from the rapidly widening arena of the Dublin Spring, and the humbler gatherings of county Meath, where Prince Ernest appeared in person, and received a medal decoration. Booth's Augustus, and Victoria,

own sister to Monarch, were both high up in his pedigree, and the immediate cross of Booth on Mason showed itself at once in his produce. Save and except three, every one of Mr. Chaloner's prize-takers have been by him, or in close descent. In 1843 and 1845 came the large Dublin Show medal, and £10 for the best yearling heifer and best female in the yard; his daughter, Pink, earned the same honours in her cowhood; while her half-brother got a medal as second-best bull in the yard. The spring of 1852 found the winning ribbons on the best yearling heifer, and that of 1854 on the second-best; while the intermediate year proved the value of the union of the Prince Ernest and Baron Warlabby blood, in the gold medal victory of Admiral over every bull in his class, and in the yard. His grandam, Fanny the 1st, by Prince Ernest, had been a winner at the Irish Agricultural Show at Derry, in 1847, in Lord Dufferin's hands; and Field Marshal, by Hopewell, who beat the 134 yearling bulls in his class, and stood second among the 224 in the proud array of winners in 1858, owned a Prince Ernest dam in Young Favourite. The young roan had well nigh attained the proportions of the great Pellissier himself, as he girthed six feet nine at thirteen months. His grandam Favourite 1st was by Bright (1739), a purchase along with Rosemary by Rockingham (2550), from Mr. Fawkes, of Farnley; and Rosina, from the Mountains-town sale of 1846, was an eighty-guinea introduction of the Gainford (2044) blood.

In the following year Mr. Chaloner made a good English hit with Bonbon (150 gs.) from Lord Spencer's sale, but, unfortunately, out of the seven calves she produced only two heifers. Of these, Bonbon 2nd, by Baron Warlabby, died of pleuro-pneumonia in 1852; and Bonny Lass, by Hopewell, still keeps her memory green, while her line in male tail is sustained by the Baron, who was sold to Mr. Tanqueray for 150 gs.; Barleysugar, who is at present at Aylesby, and though in mere working trim dropped on to the Royal Warwick winner when he came to Great Grimsby with all his blushing honours last year; and St. Patrick, who after being sold to Lord Bangor for 110 gs., and then bought back, is now out on hire at Captain Ball's. Mr. Chaloner was not proof in 1854 against a high price for the majority of his females, and five of them went in one lot for £725 to Mr. Richardson, of America. The gaps, however, were quickly made up. Aylesby sent seven, to wit—Heatherbell, Fashion, Florence, and Delightful, by Vanguard; Heath Rose, by Baron Warlabby; Fanny, by Hamlet; and Lady Portia, by Harbinger. Primrose, by Orson (13432), came in company with Palmflower, from Earl de Grey's; and Moynalty furnished two Baron Warlabbys in Miss Warlabby (own sister to Baroness and Violet), from Lady Sarah, grand dam of the prize brothers, Mr. Bancroft's Sir Colin and Lord Talbot de Malahide's Clydesdale, both of which were bred by Mr. Tynte. Violet herself was exchanged with Mr. Barnes, for her half-sister Julia by Hopewell, who was own sister to Emperor, the sire of the above named prize bulls. Ever since Prince Ernest departed, Mr. Chaloner has used nothing but

Booth bulls, conjointly with Mr. Barnes; and the cows and heifers are at present in calf to British Prince and Dr. McHale. The list of the sale, which is appointed by Mr. Strafford for July 18, contains eight bulls and forty females. The latter are principally in calf to

British Prince and Dr. McHale; and one Hamlet, eleven Harbingers, five Baron Warlabys, eleven Hope-wells, two Windsors, six Sir Samuels, and four Dr. McHales compose the major part of the lots.

H. H. D.

AGRICULTURAL STATISTICS.

An opportunity offers at the present time, that may be made use of, to organize some steps towards inducing the Government to carry out an efficient system of agricultural statistics. The International Statistical Congress commences its fourth session at Somerset House to-day, under the presidency of His Royal Highness the Prince Consort; and is to be occupied the whole of the week in discussing various grave and weighty matters of universal interest. Official delegates from most of the European States and British Colonies, accredited by their respective Governments—men of position and great intelligence—will be present, to suggest, argue, and agree upon plans of action, and the best mode of conducting statistical inquiries, and deducing results therefrom.

The Congress is divided into six sections, charged with the investigation of Judicial statistics, Sanitary statistics, Industrial statistics, Commercial statistics, Military and Naval statistics, and Statistical Methods. Now, although there are matters of grave interest branching out from each of these inquiries, in which many or all are more or less interested, yet it is with the third section that we have specially to deal. This comprises Agriculture; and as we see that there are on the committee such names as Mr. Donnelly, the Registrar-General of Ireland; Mr. J. Caird, M.P.; Prof. Simonds, Sir W. Miles, Bart., M.P.; Mr. Edwin Chadwick, C.B.; Samuel Sandars, Esq., and others, their voices may perhaps be raised in favour of the incorporation of a complete system of agricultural statistics into our national census-records. There was a time when the nation was proud of its agriculture, and of what it had done and could do in the improvement and culture of land, and the rearing of live-stock. And we believe, immensely as the cotton industry has progressed, British agriculture has not retrograded, nor been entirely thrown into the shade by manufactures and commerce, if we had but the proper data for comparison.

How is it, that in a vast country like the United States so many important features connected with agriculture are embraced in the census, while scarcely anything of the kind can be obtained in a small island like Great Britain, with ample machinery available for prosecuting the inquiry? Even if the American returns are somewhat vague and loose in respect to precise accuracy, they at least furnish the basis for approximate estimates. Each successive census no doubt is an improvement on the last, from the experience gained, and the collation and comparison of data and returns. Let us see what are the

details given in the United States census with respect to agriculture. We shall find them to be far more comprehensive even than we should require here, owing in some degree to the great extent of country, range of climate, and number of products. Firstly the land is returned in acres, improved and unimproved. Then the cash value of the farms and of the farming implements and machinery is given. Next follows an examination of the live stock, under the separate heads of horses, asses and mules, milch cows, working oxen, other cattle, sheep, and swine, with the collective value of the whole of the live stock. Then the grain crops comprise wheat, rye, Indian corn, oats, and rice, barley and buckwheat, together with pulse and potatoes. Tobacco, cotton, sweet potatoes, and the vine are crops that would not occur in our returns; nor do we produce cane or maple sugar and molasses; but hay, clover, and other grass seeds, hops, hemp, and flax, do occur. The value of the orchard products and of market gardens is given, and also those of the animal products, as wool, butter, cheese, silk, bees'-wax and honey, and the value of the animals slaughtered. So also the value of home-made manufactures is supplied. Now if voluminous returns of this kind are obtained over the length and breadth of such a country as North America—if the British North American provinces think it desirable and important to prosecute similar inquiries—if Australia, with all its gold-seeking occupation, wide-spread settlements, and busy commerce, carries out creditably agricultural statistics—if European countries generally set the example of precision and method in collecting and tabulating all such data, what is to prevent Great Britain from following the example? The approaching census affords an opportunity for making agricultural statistics, in their widest and most complete sense, a part of the inquiry to be carried out.

The Royal Agricultural Society, even if it had the inclination to promote this useful object, is restricted by its charter from interfering with matters of this kind. But the International Statistical Congress should not separate without urging upon the Government, the expediency of prosecuting in England, as well as in Scotland and Ireland, a thorough investigation of the statistics of agriculture. By this means we may hope in time to arrive at a knowledge of the number of sheep, cattle, and live stock generally owned in the kingdom, the land under culture with wheat, the value of the animal products, the clip of wool, the consumption of meat, and other questions of paramount import-

ance both in a social and national point of view. Is there any good reason why England and Wales should be behindhand in such investigations, when the other portions of the United Kingdom, Scotland and Ireland, have had their agricultural statistics already carried out with a method and precision most creditable to the officials?

The subject of Agricultural Statistics has been brought before the Industrial section of the International Congress during the past month, and fully discussed. It was introduced by two papers prepared by Mr. James Caird and by the Registrar-General of Ireland, and by the programme for the section drawn up by Dr. Farr.

The statistics of agriculture, unlike those of trade, which are compiled by the public revenue departments, can only be procured by a special organization; and unless that can be made as little costly as possible, its continuance will be objected to on the ground of expense. Moreover, that branch of the inquiry which is most variable is less disliked by the farmer than the other. The extent of land under the several crops varies very much from year to year; but the annual fluctuation in the numbers of live stock is less considerable.

No one will, we think, deny the truth of the observations made by Mr. Caird, that "food being the first necessity of life, it behoves nations, in their collective capacity, quite as much as individuals in the interest of their families, to ascertain the sources and extent of the probable supply; and as, in our northern latitudes, wheat, the staff of life, yields a crop only once a year, if the season should prove unfruitful, there is no help for it in nature till another year comes round. The difference between the produce of a good and a bad year may be as much as fifty per cent. even in our temperate climate, though the average variation from year to year in the British Islands probably does not exceed five per cent. But other kinds of food, much in use in Northern Europe, are likewise subject to the variation of seasons. Beyond them all, in this respect, is the potato, which only fifteen years ago formed the staple food of millions of our countrymen in Ireland, and of millions also on the continent. The famine and its dire results, in 1847 and 1848, which followed the failure of the potato crop in these years, seemed for a time to have shaken all confidence in this root as a principal article of food. But the gradual return of healthy crops is unhappily restoring this treacherous root to the too easy confidence of the poorer peasantry in this and other countries. With the increased wages now received by the working classes, a greatly increased consumption and consequent demand for animal food has sprung up. The high prices paid for meat of all kinds, and the increased scarcity and high price of wool are giving a new direction to agriculture within the British Islands. Stock farming is more profitable, and less costly in labour, than corn; and the extent to which the surface of the country is being changed, from one kind of crop to the other, can only be ascertained by correct returns, in the absence of which an alteration of the most important nature may be going on, of

which the nation collectively is altogether ignorant. If one farmer finds it more profitable to lay one-fourth of his farm to grass instead of corn, partly from the increasing profit of live stock, partly from the scarcity of labourers, the probabilities are that other farmers, impelled by the same causes, are following the same course. But how vast may be the result of a change seemingly so simple! If we assume one-fourth of the corn crop of these islands at ten million quarters, we may be suddenly thrown on the markets of the world for this enormous supply; every corn market in Europe and North America would be agitated, an export of bullion and derangement of the monetary affairs of the country would follow, all interests would be effected, and disastrous consequences ensue. But a change like this, which is perfectly natural, would be accompanied by no such evils if the fact of its being about to take place were ascertained beforehand, and the requisite remedy thus opportunely provided. On the contrary, such an increased demand for the produce of other countries would, in that case, stimulate a legitimate interchange between nations, and promote the best interests of all. A remarkable example of such a change is shown by the agricultural statistics of Ireland. Between 1849 and 1859, the change in the agricultural management of that country has involved a diminution of one-fifth of the land yielding corn, and an increase of nearly one-half in the number of live stock."

In countries possessing a uniform survey of the entire surface, the extent of the various crops might be ascertained from the map, by merely noting the particular crop growing on each field. The period at which the facts may be best observed is between seed-time and harvest. There is, then, sufficient time left to tabulate and prepare the returns, so as to be published in September. The estimate of the produce may be taken in November, and be ready for publication by January.

The Congress have sought to impress upon the various governments the vast national importance of this subject. An early and accurate knowledge of the supply of food at the command of their people, from year to year, is the very basis of political and commercial prosperity. The loss occasioned by a single unnecessary food panic is more than the whole cost of the inquiry would be for a century. And the facilities of international communication are now so great, that the natural or accidental deficiencies of the harvest of one country may be repaired from the abundance of others.

The following propositions were affirmed by the congress: "That it is desirable in every state to determine the quantities of the principal kinds of produce annually—That in the case of agriculture the area of the land under each crop should be annually returned, and a return of the live stock obtained not less frequently than once in every five years, and if possible every year—The quantity of the produce should also be estimated—The means to be employed should vary according to the circumstances of each state; but especial care should be taken to avoid exciting the prejudices

or apprehensions of cultivators by unnecessary inquiries."

Mr. Donnelly, in describing the origin and mode of collecting the agricultural statistics in Ireland, stated that the present system commenced in 1847. The returns are now obtained annually in the month of June. The constabulary in the rural districts and towns, and the metropolitan police in and around the city of Dublin, procure the information. The number of enumerators employed is about 4,000, to each of whom a certain number of town-lands is allotted. Each farm or holding is visited by an enumerator, who ascertains from the occupier, or some person connected with the farm, the acreage under each crop, and the number of live stock. The maps of the Ordnance survey enable mistakes in returns of acreage being detected. The district assigned to each numerator averages about 5,200 statute acres, and five or six weeks are given for the collection. The information is voluntarily and readily furnished by the whole body of farmers and occupiers, now being in all about 600,000 persons.

Prior to the year 1847, the census commissioners, in 1841, procured and published, in their report, information showing the number and value of stock in the country, and the number of holdings, in five classes, according to size; but the acreage of the several crops was not obtained in that year. Under the present system of conducting the inquiries, not only is the acreage of each crop ascertained, but also in the autumn its probable yield, which is published at the beginning of the following year, thus enabling arrangements to be made for the supply of any deficiency in the produce of the preceding harvest. The average yield is obtained for each electoral division by the same body of enumerators who had procured the acreage under the various crops, and the returns of the yield made by them are all submitted for revision to the Poor Law Guardians of the respective unions.

The statistical data furnished by Mr. Donnelly in support of the value of the agricultural statistics were exceedingly interesting, as marking the changes and improvements that have taken place in Ireland, which but for his recorded facts, we should have been unable to arrive at with any degree of certainty or precision. Taking the returns of last year, and comparing them with 1850, we find there has been an increase of 237,000 acres in meadow land; of 45,240 acres in flax—a noticeable feature, as there had been a decline in the last few years; an extension of 320,000 acres under green crops, and a decline of nearly 500,000 acres under cereal crops—showing that stock is taking the place of grain.

Last year there were 598,413 holdings, of which 157,608 were farms above 30 acres. Between 1841 and 1851 there was an extension of 1,500,000 acres in the arable land, and since then much more uncultivated land has been brought into use.

The progression of live stock has been very considerable. The net increase in the value of all the stock owned between 1841 and 1859 has been nearly £15,000,000. The number and estimated value of this stock in 1859 was as follows :

	No.	VALUE.
Horses and mules ..	648,379	.... £5,187,032
Asses	169,354	.... 169,354
Cattle	3,815,598	.... 24,801,387
Sheep	3,592,804	.... 3,952,084
Pigs	1,265,751	.... 1,582,189
Poultry	10,251,749	.... 256,294

£35,948,340

The importance of the collection and publication of the statistics of agriculture in various continental and colonial countries, and the information to be deduced therefrom, was so ably shown by the delegates present, that we doubt not some steps will be taken to supply the existing deficiency in England and Wales.

THE PARIS AGRICULTURAL EXHIBITION.

The Palace of Industry, built in that unique promenade, the Champs Elysées, for the Great Universal Exhibition of the Industry of all Nations in the year 1855, is once more turned into a temple dedicated to the products of agriculture. The first time when this noble hall was made the fitting abode where agriculture dwelt, and held her solemn assizes, was an occasion still fresh in the memory of English agriculturists who took so conspicuous a part in that noble and interesting gathering of all nations, all climes, all breeds, all inventions—the great international show of 1856. Since that memorable event no agricultural show has been held in Paris; and although good grounds of expectation were held out that there should be another *international* show, and a programme had even been issued by the French Government, all expectant exhibitors throughout Europe were doomed to disappointment, and in many cases to serious losses,

from the intended exhibition being countermanded and put off to the Greek kalends.

Last year, the scheme was, however, revived, and an offer was made by the Minister of Agriculture to the Central Agricultural Society of Paris of a subsidy amounting to no less than twenty thousand pounds, provided they would assume all the work of management and organization. This they attempted, but soon found out they could not realize; and upon the principle that half a loaf is better than no bread, the Government decided that the show of 1860, instead of being *universal* and *international*, as had been first contemplated should be reduced to the somewhat humbler, but more practicable, proportions of a national show—an undertaking more easy to compass with the unquestionably limited means afforded by that stingy tyrant, *the Budget*.

A first glance at the stalls, a surveying look around the building outside, are, however, sufficient to create

and impression that, after all, this so-called *national* exhibition is by no means exclusively French, for a very large, and decidedly the most remarkable, portion of the whole can be justly claimed for England. By far the best specimens of cattle, sheep, and pigs, avowedly belong to English breeds. The shorthorns, the Ayrshires, the long and short wools, and especially the pigs, all of English extraction and unmistakable origin fill many pages of the catalogue, without reckoning the evident traces of English blood, especially shorthorn, in the many remarkable specimens of cross-breeds, that are exhibited not only in special classes, but also among the so called pure native breeds. As to the implements, the identity is still more palpable, if possible. There we not only see many machines, fresh from the works of the best English manufacturers, but it is a remarkable feature of this show, and it elicits in the most ostensible manner the fact that since the Great Exhibition of 1856, when the French had so good an opportunity of examining English implements, nearly every standard machine, from the spade to a combined thrashing machine, has been more or less felicitously copied. Indeed, in casting a glance over the catalogue, we find a great number of implements bearing the well-known names of Ransomes, Crosskill, Coleman, Turner, Garrett, Ashby, &c., &c., with the ludicrously-conceited rider that these implements have been *improved*, as well as *manufactured*, by such and such French maker, the fact of which assertion would most decidedly be demurred to by the original inventors, did they happen to see them.

The magnificent industrial hall, within whose immense precincts the exhibition of cattle is arrayed, is, as usual, most tastefully decorated. The cattle are ranged, according to breeds, in spacious stalls running in four-fold lines under the galleries, which are reserved for the exhibition of agricultural produce. The centre is transformed into a most lovely garden, with fresh lawns, miniature rivers, and water-works, spanned by rustic bridges. Masses of trees and shrubs, most artistically planned, are grouped here and there; and all over this luxuriant and smiling surface are displayed in glittering and fragrant groups such a floral exhibition as can rarely be seen. The whole presents a most enchanting *coup d'œil*. The interior of the building is exclusively devoted to the bovine species; the pigs, sheep, and poultry are placed outside, under temporary sheds. The horses, of which there is a most remarkable show—in numbers, if not in merit—are placed under a temporary shed ranging the whole length of the *Cours la Reine*.

On the whole, this exhibition is a great success. The arrangements are as perfect as can be. The classification of the various breeds—and they are very numerous—is as judicious in its design as it is successful in its execution, and the varied breeds of the Continent, so distinct from one another in shape and colour, present a most interesting collection, which it is equally instructive and pleasant to study. Each category represents one distinct breed, and these are again subdivided into the usual classes, according to sex and age. First come the native breeds, extending right and left of the main entrance from the central avenue of the Champs

Elysées. In the first place we have the bony and ill-shaped but good milking Norman breed, which muster to the number of 122 animals. Next come the red, long-legged and large-framed Flemish breed, which reach to 90. Thirdly, we perceive a long array of the beautiful white Charolais breed, so closely resembling the shorthorns—numbering 80. Next in order come the Gascon breed; of a light yellowish tawny colour, of which there are 17. Then the Garonnaise and Agenaise races, whose sleek coats the golden rays of the southern sun seem to leave imbued with their warm harvest tint; and of these there are 28 specimens. Next in succession the Bazadaise, represented by 17 animals. After these come the Marchaise, from the Charente, of which 5 animals only are entered. By a sudden transition we leave the West of France, and alight rather abruptly upon the celebrated Feline breed, a native of Franche Comté, in the extreme east of France, and of which there are 37 beautiful entries. Then come 10 animals of the Bressane breed, closely akin to the Feline. We take, again, another long stride westwards and come to the Manceille breed, of which there are 17. Next on the promiscuous list we perceive the mountain breeds of the Pyrennees, divided into those of Lourdes, Bearn, Basque, and Arriégoise. Of the famous working Limousine breed there are no less than 43 representatives; of the bright-red Salers and Auvergne, 47; of the breed of Aubrac, 31; Mezenec, 7; Parthenaise, Choletaise, and Nantaise, 66. The diminutive, but graceful, little Breton, so remarkable for its strength of constitution and milking qualities, is represented by the large number of 114. The various other breeds not classified in the catalogue number altogether 34 subjects, making a grand total of 801 animals belonging to the pure French breeds.

The shorthorns number 160. The pure Ayrshire (rather a favourite breed in some parts of France) are represented by 59; the Holland breed, by 89; and the Swiss, by 50. Other foreign breeds not classified number 21 animals, making a grand total of 379 animals of foreign races.

There is a special class for cross-bred animals by a shorthorn bull. This is a remarkable entry, and speaks volumes in favour of that cross, as I shall hereafter demonstrate. There are no less than 146 animals in this class. Of various other crosses there are 60 specimens, which, with 26 animals extra stock, 13 of which are contributed from the imperial farms, form a grand total of 1,470 head of cattle.

I have now only time and space sufficient to say that the entries in the sheep classes number 546; of the pig classes, 237; with 13 goats, 70 rabbits, and no less than 839 entries of poultry. The entries for implements and machinery number 3,976; and those of agricultural produce, 3,615. All these, with about a thousand horses, will suffice to give an idea of the magnitude and interesting diversity of this truly splendid exhibition.

A lengthened and attentive examination of the various departments of this exhibition has fully confirmed the favourable impression we had received of its excellence,

and of the remarkable breeds. We now resume our task, and attempt to describe the most striking features presented by each department, taking them in the same order as they are arranged in the bulky catalogue forming an 8vo. volume of no less than 648 pages, which the French authorities most disinterestedly supply for the reasonable charge of one franc.

THE HORSES.

The horse exhibition was placed along the Cours la Reine, where sheds divided into comfortable stalls, most substantially built, had been erected. The mangers were lined with zinc, and the racks were also made of galvanized iron. There were three rows of sheds: one for the stallions, one for the mares, and the third, which was divided into loose boxes, for mares with colts at foot. The whole length of the sheds was about 500 yards. They were boarded up at the back, and closed in front by substantial hangings, which were raised by day and dropped by night. A detachment of cavalry soldiers were every day to attend the horses, who were liberally provided with fodder at the expense of the Government.

There were about 800 horses exhibited, besides a few asses of very large kind, used for the breeding of mules in Poitou and the Pyrennees; and, certainly, anything more uncouth and ugly it would be difficult to conceive than the ungainly, long-eared, big-limbed, and shaggy-haired brutes we saw exhibited under the name of Poitou Assine breed, although we were told that six hundred guineas had been bid for the first prize animal, a vicious and hideous looking brute, setting up every now and then such a yell, in which his kindred heartily joined, that it sufficed to put all bystanders to flight.

There were only two classes; the first comprising the horses, the second the asses. These two classes were subdivided into categories and sections. The amount of the prizes offered for the horse class, irrespective of the gold, silver, and bronze medals, amounted to more than seven thousand pounds! and for the asses, of which there were very few—not more than seven or eight—to £232. The Horse Class was divided into six categories, comprising, 1, the thorough-bred horses; 2, the half-bred coaching horses; 3, the half-bred light-weight horses; 4, heavy-draught horses; 5, light-draught horses; 6, horses kept for the breeding of mules. Each category was subdivided into sections, each comprising peculiar breeds, or those horses bred in various districts of France. Thus the first category, that of the blood horses, comprised three sections, viz., pure English blood, pure Arab, and pure Anglo-Arab.

The second category was subdivided into three sections, comprising 1, horses bred in the departments of the province of Normandy; 2, those bred in Poitou, Saintonge, and Anjou; and, 3, those less distinctive races bred in any other district. This will suffice to give an idea how the exhibition was arranged, the desire of the managing committee being evidently to group the principal French breeds together. Among these, the most remarkable for their merits and distinctive points may be enumerated and described as follows: The Norman horses, generally half-bred, and principally used for

carriage purposes; of these there were 117 exhibited; many of them very useful horses, bearing unmistakable signs of English blood and mettle. Next came the Breton horses, generally of an iron-grey colour. There were 86 horses of this useful breed, divided into light-weight half-bred, heavy and light-draught classes. These horses, many of which are imported into the West of England, are strong, enduring, and indefatigable; but they generally lack mettle, and are very slow walkers. Having known this breed for many years, we may state that it has been greatly improved of late, and its representatives at the Paris exhibition certainly formed one of the most meritorious class in the horse show. The far-famed Percheron breed comprised 53 horses, of both heavy and light draught. This race of horses, which unfortunately seems to be on the wane as a distinctive breed, so diluted its blood appears to be by random and unjudicious crossings, is chiefly bred in the department of Orne. It is light grey in colour, almost merging into white about the neck and head; but there were many animals exhibited in this class who had not even this characteristic point to show their kindred. Some of the brood mares were splendid, exhibiting every feature and point of excellence for which this breed was in olden times held in so much esteem and repute.

Among the heavy and light draught horses, and especially for the latter purpose, we have again a very valuable breed, called the Boulonaise, from the north of France. Before the railway era these horses were chiefly bred for bringing the fish supplies from Boulogne and Calais to Paris. They have, of course, been somewhat neglected of late, their peculiar usefulness being totally cancelled by the railway mode of transport; but it presents still many valuable qualities, which, especially in the eye of the Boulognese breeders, give it a great value, and, it must be said, a somewhat overdue appreciation of its excellence. In the year 1856, at the Chelmsford meeting of the Royal Agricultural Society of England, there were several good specimens of this breed, although they failed to enlist on the part of Englishmen an equal amount of enthusiastic admiration as was expressed by their owners. Their principal merit consists in their trotting powers, and the long stride which their muscular legs enable them to take. These are the principal distinct breeds of France; all the others, although they bear on the catalogue some distinctive appellations, do not appear to possess any characteristic mark or any fixed point which may stamp them as an established breed peculiar for its purpose, or even native peculiarity. There were altogether 765 entries of horses and 23 of asses. Taken as a whole, this department of the Great Exhibition was more interesting, from its collective and comparative character, than from any extraordinary merit in the animals exhibited; and it may be said without any disparagement of our neighbours, that they must make yet a much greater advance in the process of improving their breeds of horses before they can reach the standard attained in England.

THE CATTLE DEPARTMENT.

The French breeds of cattle were arranged into 18

categories; the foreign breeds were divided into five, and the crossings into two. The French breeds were represented by 801 animals, divided among 19 different *denominations* of breeds, rather than distinctive breeds. Among this motley array of cattle, gathered from all parts of France, there appears only six well-defined types to which all the animals exhibited may be traced; and these are not only distinct from well-marked and conspicuous traits, but also from the districts in which they flourish. First, the Norman breed is chiefly characterized by its large size, big bones, ill-shaped and angular frame, and good milking qualities; it is of slow growth, and hard to fatten. Crossed with the Shorthorns, it yields almost entirely its bad points, without losing its good milking qualities. It was evident that many of the best specimens of this breed that were exhibited at Paris had unmistakable traces of Shorthorn blood; and nearly all the prize takers avowedly presented this hopeful peculiarity. The breed chiefly flourishes amidst the rich pastures of Normandy; which alone from their fertile and luxuriant character seem capable of supplying it with an adequate fodder at all commensurate with their enormous appetites. Under any other circumstances it pines, and soon degenerates.

The next type is the Flemish, chiefly bred, as its denomination shows, in the northern districts of France bordering the Belgian frontiers. This breed is distinguished by its deep dark red colour, with dotted spots of white about the face, and sometimes under the belly. It is a large-legged, ill-shaped, gaunt race of cattle; slow feeder, but excellent milker—a quality greatly prized by the French agriculturists, and one to which our English breeders would do well to pay a little more attention.

The third type to which we would call our readers' attention is the Breton breed. This is chiefly characterized by its diminutive size, fineness of bones, black and white colour, and milking qualities. This very small breed flourishes on the poorer parts of Brittany, and is a native of the heath-wastes of that province; as is sufficiently indicated by its diminutiveness. As will be seen hereafter, this musters stronger than any other French breed, which would indicate that it is held in greater esteem. There appears to be several causes for the extraordinary taste of French agriculturists for this pretty, but to all intents and purposes useless breed. It is alleged that it gives an extraordinary quantity of rich milk; and some appear to carry their enthusiastic infatuation so far as to believe this milking fecundity associated with a remarkably small consumption of food—a fallacy which we need no argument to expose. It is true that when well-fed, or fed to the same amount as larger cows, this breed gives a supply of milk somewhat larger than its size would lead to suppose; but this result is never attained except in the most favourable circumstances, that is, when the animal is supplied with an unlimited amount of rich and nutritious food; and we fully believe that, taking everything into account, there is no breed of cattle so costly

to maintain and so unprofitable in its returns. But it is a cheap luxury to acquire. Formerly the best Breton cow could be bought in any fair of Brittany at prices ranging between £3 and £4; and although fashion has given them an artificial and wholly unwarrantable value, yet with the easy sacrifice of a five pound note any Frenchman can enjoy the luxury, and glory in calling himself the owner of a dairy cow. It is lamentable, because to a certain extent a characteristic trait of the motives which actuate the proceedings of French agriculturists, that, owing to their parsimonious habits, their dread of spending money in improving their lands, and perhaps their want of capital, *cheapness* is the one great merit in everything, be it implement, cattle, seed, or anything else. Efficiency and durability only come next in their appreciation. The Breton cattle are, however, capable of considerable improvement. When bred on rich land, it increases greatly in size and milking properties; and when crossed with Shorthorn blood, it yields a produce remarkable for its fine quality of meat and its early maturity; but, nevertheless, we cannot call this morbid because senseless taste of the French for this insignificant breed by any other name than a lamentable infatuation, in which capital, energy, and valuable influence are wasted and lost.

The next type to which we will draw the attention of our readers is the Charolaise, one of the most distinct breeds of France, from the fixed character of its white colour and peculiarity of shape. It closely resembles our Shorthorns, especially about the head and horns; and many breeders eagerly seek white Shorthorn bulls for crossing purposes, in order to impart to the breed early development and maturity, increase of bulk, and greater symmetry, without losing the distinctive character of the breed, viz., its white coat. Unfortunately, as every one knows, this feature is one of the greatest uncertainty in the Shorthorn breed; and it often occurs that a red or a roan calf is produced, to the great disappointment of the Charolaise breeder. This breed of cattle is chiefly reared in the department of the Cher, Nièvre, and Allier, that is, the central district of France. The tribe, notwithstanding its form, is generally a slow feeder and bad milker: crossed with the Shorthorns, its quality improves in every respect.

The fifth type consists in the working breed of Salers, Auvergne, and Limousin. Their colour is generally deep red, except the last, which is generally of a yellowish brown tint, similar in character to nearly all the southern breeds. These are very valuable animals for the yoke; and yielding in their old age, when worn out by labour, beef of excellent quality.

In the sixth and last type may be comprised all the Femeline of Franche Comté, the Maraichine, Choletaise, and Nantaise in the western provinces of France; thus embracing a zone which extends from the extreme frontier in the east to the western boundary of the Atlantic, and passing south to the Mediterranean and Pyrennees. The colour of all the breeds comprised in that zone varies from the yellowish cream colour of the Femeline to the rich and warm hue of the southern tribes, where the colour closely resembles that of ripe wheat. Others are also of what is called badger colour, that is a pale whitish grey, on the back, neck, and head, getting darker and darker, almost to brownish black, as it reaches the under part of the belly and the lower extremities. Although some of these races, particularly the

Aubrac and the Landaise, present some distinct characteristics, no doubt from the peculiarity of the country in which they prevail, all these breeds belong, no doubt, to the same origin. Therefore in this type may be comprised the following varieties, which we found represented at the Paris Exhibition.

1st. The Femeline and the Bressan, a mixture of Swiss and Charolaise.

2nd. The Gascon, the Garonnaise, the Bazadaise, Lourdes, Mezenc, Arriègeoise and other Pyrenean races.

3rd. The Aubrac, and some Limousine from the mountains of Aveyron.

4th. The Maraichine, from the ten districts of the Charentes, the Parthénaise, Nantaise, and Choletaise, from the departments of Vendée and Loire Inferieure.

To give an idea of the relative importance of these various breeds as shown by their muster at the Paris Show, we will add their respective numbers.

ENTERED. EXHIBITED.

Norman	122	..	78
Flemish	90	..	70
Charolaise	80	..	73
Gascon.....	17	..	12
Garonnaise & Agenaise.	23	..	21
Bazadaise.....	17	..	15
Maraichine.....	5	..	5
Femeline.....	37	..	35
Bressan.....	14	..	13
Mancelle.....	17	..	13
Lourdes.....	10	..	7
Béarnaise, Basquaise, &c.	12	..	12
Arriègeoise.....	15	..	15
Limousine.....	42	..	41
Salers and Auvergne ..	47	..	45
Aubrac.....	27	..	27
Mezenc.....	7	..	7
Parthénaise, Choletaise, and Nantaise.....	66	..	66
Breton.....	114	..	112
Various other breeds ..	32	..	32
	801		699

After many difficulties, raised by routine, ignorance, and prejudice, those arch-enemies of progress in all times and places, the Shorthorn breed of cattle has at last gained a firm and progressive footing in France. It is not only conspicuous in this exhibition by the number of animals exhibited, but the ground it has gained is still more manifest by the evident improvement the admixture of its rich and generous blood with the coarse and uncouth native breeds has achieved. The Shorthorn classes, both pure bred and crosses, comprise no less than 318 entries, of which 160 are pure bred.

Nothing can be more invidious than finding fault with the decision of judges; but we are bound to say that, in our opinion and that of some of our best English judges of cattle who happened to be present, that a more unaccountable selection of prize animals was never made. It is a remarkable fact that the judgment, so far as it related to French breeds, may be pronounced as equitable as can well be; but as regards English breeds, it is evident that the notions as to what constitutes a good animal are totally at variance on the two sides of the Channel; and either English breeders or else the Parisian gentlemen who form the Central Agricultural Society of Paris, and from whose ranks the majority of the judges were selected, must be decidedly wrong in their notions of animal aesthetics. We really think that a larger proportion of practical men would be advisable in these juries; for it is not likely lawyers, military men, writers, professors, and Parisian *rentiers*, who never farmed an inch of ground or owned a head of cattle in their lives, can discriminate between good, bad, and in-

different with a sufficient nicety to form a correct judgment, whatever their predilection for animals bred in the Government establishments may be. It is rather a curious fact that most of the prize animals come from the Government breeding-farm of Le Pin, where annual sales of cattle take place, just three months before the shows, the regulation being, that the exhibitor must have owned his animal or animals at least three clear months previous to the meeting. This favouritism is so generally received as a fact by the breeders, that it is avowedly the principal motive that makes them attend those sales, where prices, even for indifferent animals, range much higher than in any other.

The show of French shorthorns is a fair average of quality, although they do not come up to anything like the standard of excellence we have attained in this country. The heifer-class was particularly a good one; and among the aged cows and bulls there were many animals that would command a well-deserved attention in our own exhibitions.

There was also a pretty good muster of Ayrshire cattle, which seem to grow in favour with our neighbours.

We need only mention the names of the Swiss and Dutch cattle as being there represented.

The numbers of animals in the foreign and cross classes were as follows:

	ENTERED.	PRESENTED.
Shorthorns.....	160	160
Shorthorn crosses.....	159	159
Ayrshire.....	59	59
Dutch.....	89	89
Swiss.....	50	50
Other prize breeds, consisting of Devons, Herefords, polled Angus, Alderney, &c.	22	22
Total of foreign-bred animals	539	539

We must not omit to notice six very remarkable specimens of the Algerine breed of cattle, which attracted a great deal of well-deserved attention. They are very small, but of excellent symmetry, and showing many good points which betoken the possibility of easy and speedy improvement.

The amount of prizes given to the cattle classes, besides gold, silver, and bronze medals, comes to £6,240.

The sheep classes were chiefly remarkable from the number and merits of the leading breeds now adopted in France—the Merino and the Southdown; but this department offers nothing worth the notice of our readers. We will, then, merely dismiss it by saying that the Southdowns exhibited by Messrs. the Comte de Bouillé, the Marquis de Dampierre, the Comte de Benague, and M. Mallet do equal honour to them and the Babraham flock, from which the parents were obtained.

There were 548 entries in the sheep classes, divided as under:

	ENTERED.	PRESENTED.
	Lots.	Lots.
Merino.....	187	152
Foreign longwools (chiefly Leicester).....	31	24
Foreign shortwool (all South- downs).....	78	72
Mauchamp.....	7	7
Charmoise.....	17	15
Barbarine.....	4	1
Various French breeds.....	44	33
Crosses, all with English breeds	143	111
Extra stock from Government establishments.....	32	31
Total of entries.....	548	446

The amount of the prizes in money alone was £1,106 for this department.

The pigs were nearly all English, and equal to anything we have seen in England. Out of 243 entries, there were 229 belonging to English breeds, or crosses with boars of English extraction; in fact, there were only ten animals of pure French breeds.

Together with the pigs there were 13 entries of goats and 70 of rabbits, for all which most liberal and numerous prizes were offered.

The poultry numbered 685 entries, but presented no feature of sufficient interest to be worth noticing, except several very ingenious contrivances for the rearing of chickens, of which we may speak on another occasion.

The machine department was as varied in the descriptions of implements exhibited as it was judiciously arranged to enable the visitors to form their judgment. In England each maker groups all his machines together, so as to give his exhibition more the character of a selling stand than a mere exhibition of his goods for competitive purposes. This plan is, no doubt, more advantageous to exhibitors; but very distressing to the visitor, who has no means of comparing machines of one kind or purpose with another when in juxtaposition. In Paris, all machines of one kind were grouped together, irrespective of the exhibitors' names, so as to enable visitors to compare and form their judgment. Among the many implements exhibited we were pleased to remark so large a proportion bearing the stamp of our best manufacturers, especially from their excellent workmanship forming so favourable a contrast with the clumsy imitations exhibited by native makers. Monsieur Ganneron, the well-known agricultural implement merchant of 56, Quai de Billy, Paris, had a very complete exhibition of implements, the majority of which came direct from the Orwell Works, at Ipswich; and a splendid lot of machines it was, consisting of steam-engines of various power, combined thrashing-machines, as well as ploughs, and all kinds of barn implements. The Messrs. Howard, Barrett and Exall, Smith and Ashby, Crosskill, Garrett and Sons, had also sent excellent specimens from their manufactories.

One of the most important features of this show, and one holding a prominent position in the programme, was the international competition of mowing machines. The trials took place on the Imperial farm of Vincennes, and created an intense interest among French agriculturists, who at this important period of the year are suffering most severely from the want of harvest hands, especially haymakers. Monday and Tuesday, the 18th and 19th instant, were exclusively devoted to the operations of the jury, during which very few people were admitted. What took place on these trials we of course do not know; but on the Wednesday, when the public were admitted on the grounds, and when practical farmers were enabled to witness the performances of the competing machines, the most unanimous astonishment was depicted on every countenance, spoken from every tongue, and freely commented upon by every one present, when it was known that a flimsy, inefficient one-horse machine had been thought worthy of the first prize, and the medal of honour; while the business-like, compact and efficient mower exhibited by Messrs. Burgess and Key had been awarded only the second prize. We do not remember ever having witnessed so general and spontaneous a reversal of an award by any practical agricultural assembly, and so earnest a condemnation of a judgment which nobody could understand, and which many would not even believe to be possible. Judg-

ing merely from what we witnessed ourselves, we can fully bear out the general testimony of the vast multitude of practical men. The facility and ease with which Allen's mowing machine accomplished in half less time than its toy-like competitor the task allotted to its performance, the perfection of the work done, the closeness and evenness of the cutting, and the steadiness of the machine, were the theme of general admiration; and Mr. Burgess, who was present, can well console himself for his defeat, with the flattering encomiums passed upon his valuable implement, and the perfect ovation bestowed upon it, by a large assemblage of practical men far more competent to form a judgment of what mowing ought to be, than the learned and distinguished Parisian gentlemen who composed the jury—the forensic talents of a Dupin, the military skill of general Allard, and the other eminent scientific and literary attainments of the other judges, notwithstanding.

At all events, let it be recorded that a French jury has thought proper to reverse the verdict of the Warwick judges; and that in the eyes of an official French jury Wood's machine is in every respect superior to Allen's. Let it not be understood that we wish in any degree to disparage the merits of Wood's machine: all we want to convey is, that, in our opinion, which is based upon personal observation, and further corroborated by the unanimous assent of every one on the trial ground at Vincennes, it certainly failed to justify the unaccountable verdict of the French judges. This much was, however, acknowledged by all, that all English implements used for haymaking were highly superior to anything that French skill could bring into competition. In that interesting and highly important race for mastery, it was evident from the beginning that the French machines were of a most undeniable inferiority as compared with the English.

We have no space left for comments upon the Produce Department of this Exhibition. We regret it, because this was one of the most interesting parts of the whole exhibition, both from the variety of the articles exhibited, and for the skill and judgment with which they were arranged and managed. Indeed this encomium is not confined to one department; the whole exhibits a display of taste, judgment, prudence, and skill to a degree that leaves any similar exhibition in England in a comparative inferiority, the idea of which could not be conveyed in words however skilfully expressed. Every thing bore a character of that easy-going work, smooth agency, and perfect handling which it would be impossible to surpass, and a most arduous task to equal.

It was also a hopeful sign to witness the numbers of visitors; for, although the payment for admission was a franc, a most serious obstacle with the French, no less than 103,000 persons paid for admission during the first four days, and the Exhibition being prolonged up to next Monday, and Tuesday being a free day, there is no doubt but this solemnity has excited a much greater interest among the French public than the universal one of 1856. This is undoubtedly a pregnant sign of a healthy revival of agricultural progress, fully borne out by the great advance everywhere manifested, and the growing interest felt by the landed proprietors in agricultural pursuits, and the personal management of their own estates. Debarred from the allurements of official position and political influence, the French aristocracy have gradually relinquished the excitement of public life, and directed their pent-up energies towards agriculture—the *Alma Mater* of civilization, happiness, and prosperity.

Paris, June 16.

ESSEX AGRICULTURAL SOCIETY.

MEETING AT SAFFRON WALDEN.

The "weather permitting" proviso with which Masters of Hounds head their advertisements, threatens to live right round to another season. Never, indeed, was such a consideration of more importance than it is just at present. Nothing would appear to prosper, and all from this very drawback. The mowing grass is rotting instead of ripening; and the wheats are sickening for a little warmth and genial sunshine. Fruit is scarce; and flowers, if they dare to blossom, are quickly robbed of all their bloom by the wind and the rain. The pursuits of pleasure and business are alike interfered with. The London season is passed within doors. Pic-nic parties are adjourned *sine die*. The very mention of water trips and yachting matches is received with a shudder; and visits to Kew, Erith, or Richmond postponed indefinitely for "some fine day." He must be a sanguine man who now depends upon such a promise. We rather face our "liabilities" with a kind of grim despair, and talk with bated breath of getting through or over them the best way we can.

It must have been with some such sensation as this that the Management of the Saffron Walden Show proceeded to their several duties. They wanted nothing but favourable weather to insure a most successful meeting. Never since the formation of the Society had the entries been so generally good. Never before had the object been so thoroughly taken up. There was not a district within the range of the Association but was well represented. Never, in a word, had Essex stood so strong for stock—horses, cattle, sheep, and pigs. Then the county was admirably supported by the town. Rarely has any place been more tastily adorned than was Walden last week, with its turreted arches, its *flowery* sentiments, and its wreaths of WELCOMES. The country gentlemen, again, backed the townsmen, and you stepped from the street into Lord Braybrooke's Deer Park—the finest show-ground it was possible to ask for. The railways ran special trains, and with no lack of travellers either; and the neighbourhood made all due preparation for the reception of their stranger visitors. But this was all to no purpose. In those few words that an Englishman so well understands and appreciates, Tuesday turned out a *thorough wet day*. It rained almost from the time the judges went to work in the morning, until the company were sitting down to dinner in the evening. And the triumphal arches were hurried through unhonoured and unseen; and the watery welcomes were trickling tears upon the passer-by. And the mighty Suffolks were praying Professor Simonds to let them go home again; while the placid shorthorns suffered in silent dignity, and the prize sheep looked as miserable as perhaps only a sheep can look when he is undergoing the gradual process of getting wet through. There could have been scarcely a man who, when he went to pay his shilling at the lodge entrance, but would have been rejoiced to hear that the meeting was put off until next week or next month; that the cattle had been sent back, and the dinner brought on, from half-past four to half-past twelve.

As it was, a great proportion of the stock—of the horses especially—never kept to their standings or numbers, and many, we imagine, left the park almost as soon as the visitors entered it. The judges, however,

spoke highly of the Suffolk horses, and generally commended the whole class of aged stallions, in which a home exhibitor, Mr. Slater, stood first, with a horse of his own breeding; and Mr. Jonas Webb, also, with one of his own sort, second. It was a close thing between the two, and Mr. Webb's horse, which has been in strong use, as well as in constant work on the farm, is a smart-looking, active young animal, with more fashion about him than many of the Suffolks. By a recent rule of the Society, Mr. Badham was prevented from again sending Emperor, but he had Havelock in the entry; and Mr. Carter, Mr. Sturgeon, Mr. Brown of Felsted, Mr. Giblin, Mr. James Christy, Mr. Hutley, Mr. Partridge, and Mr. Perry were also amongst the commended—rather a significant compliment to a class of no less than eleven known horses. Still all these, and they nearly all entered for the open prize, were beaten by a gentleman from Suffolk itself—Mr. Hare, of Holbrook, who thus maintained the honours of the home-bred. The few two-year-old colts were by no means of equal merit, and the Judges withheld both premiums; but there were some very handsome mares and fillies. From a glance at those we did happen to come across, it is manifest that the Suffolk is being crossed out of his peculiar purity into something better. Many of those shown at Walden were, clearly, improved upon. They had neater heads, finer and more "open" eyes, with shoulders well laid back, and, in fact, much of the heavy "character" of the animal fast disappearing. With well-drained lands and easy-running roads we can afford to lose a little lumber. As the names of the exhibitors who stand on the prize-list will show, nearly all the agricultural horses were the chesnuts, now almost as general in Essex as in the adjoining county. Mr. Colvin, however, furnished one remarkable exception in a pair of great fine piebald mares, that ought to fetch any price, from their power and colour combined, for Wombwell's Menagerie, or the heavy business of Batty's Circus.

The roadsters and hackneys were not altogether so good as they were at Chelmsford, or even at Colchester. From what we saw of the hacks, there was nothing like Mr. Hutley's gay galloway, or the Boxted miller's little chesnut. Then the weight-carrying hunters wanted Lord Redesdale to look after them. If either of the two mares could live with twelve stone on her, it was quite all she was up to. A long way the best of this division was Mr. Roope's Norfolk trotting-stallion, a horse with wonderfully grand action, and at the same time very fast. He is, too, very clever and handsome to look over, and by a lucky chance we just caught him, as with a "by-your-leave" he was threading the crowd for his quarters. The thorough-bred prize stallion Horatio is the first that ever yet took a prize in the county class, this having been refused at both Chelmsford and Colchester. He is a neat, useful nag, but scarcely looking quite so well-bred as he ought to be. It will be found that he also took the twenty-five pound premium in the all England class; but surely the competition here should be far better than it every yet has been.

If the cart-horses were all Suffolks, the cattle were all Shorthorns; and it is noticeable to see how they are

now thriving in Essex, a quarter where some time since they would not "have" them. Already there are the established, carefully bred herds of Mr. Jonas Webb, who has a farm in the county, Mr. Sturgeon of Grays, Mr. Christy of Roxwell, Mr. Upson of Rivenhall, Mr. Bramston, M.P., Mr. Clayden of Littlebury, Mr. Colvin, Mr. Sam. Jonas, and others. Mr. Webb, in fact, is getting as famous for his Durhams as he is for his Downs, and with the same encouraging results in long prices and tempting offers. As, for instance, he has just refused five hundred guineas for his young bull, Sir Charles, the best of the county class; but, to the chagrin of many of his friends, not this year the best bull of the show. The judges declared they had a better animal in Mr. Noakes' Prince Alfred, and some of the public went so far in support of this opinion, as to say he was the best bull they ever saw. But Prince Alfred is by no means unknown, particularly in his own county—Kent, where he has taken a number of prizes, including the first at the Ashford meeting last autumn. He was also highly commended at Warwick, where many maintain he should have stood higher. He is now grown into a beast of extraordinary dimensions, commendable alike for his breadth, depth, symmetry, and quality. Indeed, exhibited as he was, very fat, there were those amongst his admirers who affirmed that he might be taken or mistaken for a steer. This, though, is scarcely a compliment, despite its truthfulness. We should the rather say that, if anything, Mr. Noakes' bull lacks some of the proper characteristics of a male animal. He has a singularly mild look about the head, and not that muscular development of thigh and quarter one expects of an animal in use. Prince Alfred was bred by the Prince Consort from one of Booth's bulls, and is, no doubt, the best Short-horn they have turned out from the Home Farm. Of course he goes on to Canterbury. Mr. Webb's bull, a little light in the neck, was in other respects quite good enough to warrant all that was expected of him. He was not shown so big or so pampered as his conqueror, but still, on his merits, was beaten fairly enough. There is a grandeur about Royalty that Sir Charels will never grow up to. Mr. Sturgeon's second-prize bull, if we recollect right, comes of the same strain of blood as Prince Alfred. Mr. Christy, Mr. Clayden, and Mr. Upson sent some very superior young bulls; and Mr. Webb came again amongst the heifers, with a pair it was hard to choose between, they were both so handsome and so good. Standing side by side, Miss Tanqueray and Michaelmas Daisy were quite the gems of the show, and the admiration excited from short-horn men must have gone far to compensate their owner for any other disappointment. Mr. Webb had to encounter this not only in the special prize for the best bull, but in another open class—for the best ram of any age or breed. Three of the Babraham flock were entered, while Mr. Mumford Sexton sent as many Cotswolds, Mr. Bryan two Oxford Downs, and Mr. Giblin a couple of Cotswolds. There were also two other pure Downs; and with so many varieties to select from, it must have been rather a trying business to adjust the *pros* and *cons* of which was the best of the lot—particularly "under the circumstances." Eventually, the judges declared for an admirable Wold sheep of Mr. Sexton's, while they placed Jonas Webb second and third, with two high commendations. It is right to say that none of his trio were thought quite up to the established Babraham excellence. The Prize List must speak to the rest of the sheep show, generally good as it was; and the Berkshires and Fisher Hobbs' Blacks had the call in a small but choice sample of hogflesh. There was a poultry show, which afforded some welcome shelter, and another tent

full of ladies and flowers, only to be inspected at an extra charge of half-a-crown. Then, according to the catalogue, Garrett of Leiston, Humphries of Pershore, Maggs and Hindley from Wincanton, Boby of Bury, Coleman of Chelmsford, Smith and Ashby of Stamford Smyth of Peasenhall, Woods of Stowmarket, Ransomes, of Ipswich, Maynard of Whittleford, Prentice of Stowmarket, Barnard and Bishop of Norwich, Burrell of Thetford, Goss and Peene, and others were amongst the exhibitors of implements. But the judges could not find sufficient novelty or decisive improvement in their wares to warrant the award of the two premiums to be devoted to this kind of encouragement. Coleman, of Chelmsford, was pronounced to have got together the best collection, and Goss and Peene, and Woods and Son came next in the order of succession. But if anyone suffered in body and estate on such a day, it must have been the unprotected artificers who "squatted" about the park without any protection from the elements, and destitute alike of encampment and custom.

As a happy release, then, people hurried off to buy ready-made boots, and so to *dress* for the dinner. This took place in the Agricultural Hall, where a party of between two and three hundred assembled under the presidency of Lord Braaybroke, and the direction of Mr. Clayden, who on the ground and in the room was alike active and efficient in the discharge of his duties as a steward. The entertainment went well to the end, although with nothing to record in a journal not especially devoted to the interests of the county. The landlords and the yeomen seem to be on the best terms with each other, or we might have had a word or two on a delicate question tolerably well understood, although not much talked of, in Saffron Walden. Great here is the reverence paid to hares and pheasants, and little the law allowed to a travelling fox. No wonder one or two worthies in high places rather paled at the echo of a halloo which told he was away!

PRIZES FOR STOCK.

HORSES.

HORSES FOR AGRICULTURAL PURPOSES.

JUDGES.—Professor Simonds, Royal Veterinary College, London, J. Thomas, Bletsoe, Beds.

Owen Wallis, Overstone Grange, Northampton.

The best Stallion having served 20 Mares in the County.

First prize, £15, George Slater, Saffron Walden (Boxer).

Second, £8, Jonas Webb, Babraham (Rising Star).

Third, £5, James Brown, Felsted (Hero).

The class generally commended.

The best Entire Two-year-old Colt.

No award—not sufficient merit.

The best Colt Mare, not under four years old.

First prize, £6, John Ward, East Mersea.

Second, £4, G. D. Badham, Bulmer (Matchet).

The best Mare with Foal at foot.

First prize, £10, William Thompson, jun., Thorpe.

Second, £5, George Carter, Danbury (Scott).

Highly commended.—George Slater, Saffron Walden (Smart).

The best Three-year-old Filly.

First prize, £5, Lord Braybrooke, Audley End.

The best Three-year-old Gelding.

Prize, £5, William Canning, Henham (Prince).

The best Two-year-old Filly.

First prize, £5, John Clayden, Littlebury (Queen of Diamonds).

Second, £3, George Slater, Saffron Walden.

Highly commended.—W. P. Partridge, Elmstead-hall.

The best Yearling Colt or Filly.

First prize, £5, G. D. Badham, Bulmer.

Second, £3, G. Cockerell, Easton, Dunmow (Honest Tom).

Commended.—John Gosling, Boeking.

The best pair of Plough Horses or Mares.

Prize, £5, B. B. Colvin, Pishobury, Sawbridgeworth (Pie-bald). Highly commended.—William Canning, Henham (Snailer and Diamond).

The best Entire Horse.

ALL-ENGLAND special prize of £25, George Hate, Holbrook, Suffolk (Goliath).

Highly commended.—Charles Frost, Wherstead, Suffolk (Sir Colin).

Commended.—Samuel Clayden, Linton (Royal George).

RIDING AND COACHING HORSES.

JUDGES.—E. Green, Bury St. Edmunds.
H. Thurnall, Royston.

The best Thorough-bred Entire Horse.

Prize £15, and ALL-ENGLAND special prize of £25, Robert Glasscock, Great Saling (Hortatio).

The best Weight-carrying Mare.

Prize, £5, Francis Barker.

The best Weight-carrying Hunting Gelding.

Prize, £5, F. Barker, Ingatstone.

The best Hackney Mare.

Prize, £5, Edmund Emson, Littlebury.

The best Hackney Gelding.

Prize, £5, B. B. Colvin, Pishiobury.

The best Brood Mare, with Foal at Foot.

No entry.

The best Three-year-old Filly or Gelding.

Prize, £5, Joseph Hudley, Braxsted Hall.

The best Entire Pony under 14 hands.

Prize, £6, Charles Long, Saffron Walden.

The best Mare Pony.

Prize, £4, Samuel Jonas, Chrishall Grange.

The best Entire Hackney.

Prize, £10, W. G. Roope, Colchester (Prickwillow).

Extra Stock.

Highly commended.—Sir T. B. Lennard, for a Suffolk Mare.

CATTLE.

JUDGES.—C. Barnett, Biggleswade, Beds.
R. Millward, Thurgarton Priory, Southwell, Notts.
J. Slipper, Tottenham.

The best Pure-bred Shorthorn Bull.

First prize, £15, Jonas Webb, Babraham (Sir Charles).
Second, £5, Charles Sturgeon, the Elms, Grays (Jason).

The best Bull of any other pure breed.

Prize, £10, Edward Roberts, Berden Hall (Durham).

The best Two-year-old Pure-bred Shorthorn Bull.

First prize, £10, James Christy, Roxwell (Lucknow).
Second, £3, James Upson, Riv-nhall (Gregory).

*Commended.—John Clayden, Littlebury (Duke Humphray).**The best Two-year-old Bull of any other pure breed.*

No competition.

The best Yearling Pure-bred Shorthorn Bull.

First prize, £5, John Clayden, Littlebury (Statesman).
Second, £3, Hon. C. C. Neville, Heydon House, Royston (Lord Clyde).

The best Yearling Pure-bred Bull of any other breed.

No entry.

The best Pure-bred Shorthorn Cow.

First prize, £8, Charles Barnard, Harlow-bury (Ellena).
Second, £5, B. B. Colvin, Pishiobury (Kitchen Stuff).
Commended.—James Christy, Boynton Hall, Roxwell (Polyanthus and Myrtle).

The best Cow of any other pure breed.

Prize, £5, W. M. King, Littlebury (Alderney).

The best Pure-bred Shorthorn Two-year-old Heifer.

First prize, £5, John Chaplin, Ridgewell.

Second, £3, the Hon. C. C. Neville (Rosebud).

The best Two-year-old Heifer of any other pure breed.

Prize, £4, John T. Lyles, Heydon (Alderney).

The best Pure-bred Shorthorn Yearling Heifer.

First prize, £5, Jonas Webb, Babraham (Miss Tanqueray).

Second, £3, Jonas Webb (Michaelmas Daisy).

The best Yearling Heifer of any other pure breed.

Prize, £4, Henry Evershed, Park Hall, Gosfield (Alderney).

The best Fat Ox or Steer not exceeding three years old.

First prize, £5, Samuel Jonas, Chrishall Grange (Shorthorn).

Second, £3, John Clayden, Littlebury (Shorthorn).

The best Fat Cow or Heifer.

First prize, £3, James Christy, Boynton Hall (Shorthorn).

Second, £2, James Upson, Rivenhall (Shorthorn).

The best Cow or Heifer for Dairy Purposes.

First prize, £5, Myles L. Formby, Sampford Hall.

Second, £3, James Christy, Boynton Hall (Myrtle, Shorthorn).

The best Heifer of a pure breed, not exceeding 12 months old.

First prize, £4, James Christy, Boynton Hall, Roxwell (Primula, Shorthorn).

Second, £2, James Christy, Boynton Hall, Roxwell (Frauline, Shorthorn).

Commended.—Lieut.-Col. Brise, Spains Hall, Finchingfield (Shorthorn); J. T. Waldock, Little Chesterford Park (Shorthorn).

The best Bull of a pure breed, not exceeding 12 months old, and not under 6 months.

First prize, £5, Jonas Webb, Babraham (Shorthorn).

Second, £2, Lord Braybrooke.

SPECIAL PRIZE.

The best Bull of any age, of a pure breed, open to all England.

Prize, £15, J. T. Neakes, Brockley, Lewisham (Prince Alfred, Shorthorn).

SHEEP.

JUDGES.—T. Crisp, Butley Abbey, Woodbridge.
C. Uward, Biddenham, Bedford.

The best Southdown Ram of any age.

First prize, £5, Sir T. B. Lennard, Bart., Belhus, Aveley.

Second, £3, Samuel Jonas, Chrishall.

The best Ram of any other other short-woolled breed.

First prize, £3, P. Portway, Sampford (Suffolk).

Second, £3, P. Portway (Suffolk Tup).

The best Long-woolled Ram of any age.

First prize, £5, John Hine, Epping (Leicester).

Second, £3, Joseph Giblin, Bardfield (Cotswold).

The best Shearling Southdown Ram.

First prize, £5, Sir T. B. Lennard.

Second, £3, T. W. Bramston, M.P.

The best Shearling Short-woolled Ram of any other breed.

First prize, £5, Joseph Giblin, Bardfield (Oxford Down).

Second, £3, Joseph Giblin (Oxford Down).

The best Shearling Long-woolled Ram.

First prize, £5, Joseph Giblin (Cotswold).

Second, £3, Joseph Giblin (Cotswold).

The best pen of five Shearling pure Down Ewes.

First prize, £5, George Ward, Bentley.

Second, £3, Sir T. Baird-Lennard.

The best pen of five Shearling Short-woolled Ewes.

First prize, £5, P. Portway, Sampford.

Second, £3, J. Chaplin, Ridgewell (Black-faced Suffolk).

The best pen of five Shearling Long-woolled Ewes.

First prize, £5, Joseph Giblin (Cotswold).

Second, £3, George Ward, Bentley.

The best pen of five Ewes of any kind, with their Lambs.

First prize, £5, Samuel Jonas, Chrishall Grange (Southdown).

Second, £3, Lord Braybrooke.

The best pen of five Fat Shearling Short-woolled Wethers.

First prize, £3, Samuel Jonas (Southdown).

Second, £2, Samuel Jonas (Southdown).

The best pen of five fat Shearling Cross-bred or Long-woolled Wethers.

No entry.

The best Ram of any age of a pure breed.

ALL-ENGLAND special prize, £10, Mumford Sexton, Earls Hall, Cockfield, Suffolk (Cotswold).

Highly Commended—Jonas Webb, for two Southdown Rams.

PIGS.

JUDGES.—T. Crisp.
C. Howard.

The best Boar.

First prize, £5, Robert Edwards, Berden Hall.

Second, £8, Samuel Jonas, Chrishall Grange (Berkshire).

The best Boar not over 12 months old.

First prize, £4, John Clayden, Littlebury (Improved Essex).

Second, £2, John Clayden (Improved Essex).

The best Sow in Pig.

First prize, £4, George Griggs, Romford (Berkshire).

Second, £2, John Clayden (Berkshire).

The best Sow with her Pigs, not to exceed 12 weeks old.

First prize, £4, Samuel Jonas (Small White).

Second, £2, John Clayden (Essex).

The best pen of three Sow Pigs of the same litter under nine months old.

First prize, £4, S. Courtauld, Gosfield Hall (Sussex).

Second, £2, John Clayden.

WOOL.

JUDGES.—R. Cole, Bishop Stortford.
T. Hitchcock, Lavenham.

The best ten Fleeces of Southdown Wool.

Prize, £3, T. W. Bramston, M.P., Skeens, Chelmsford.

There was no competition for the other premiums for wool.

IMPLEMENTS.

JUDGES.—H. B. Caldwell, Luckham House, Chippenham.
C. Wilsler, Finchingfield.

The best General Collection of Agricultural Implements.

First prize, £20, Coleman and Sons, Chelmsford.

Second, £10, Goss and Peene, Rayne.

Third, £5, Woods and Son, Stowmarket.

The prizes of £10 and £5 for the Best New Implement, and the Best Improvement in any known Implement, brought no competition.

The JUDGES of POULTRY were—The Reverend Morton Shaw, Rougham, Bury St. Edmunds, and Mr. Twose, Halstead.

OXFORD AND BANBURY UNITED AGRICULTURAL SOCIETY.

This meeting was held in turn at Banbury. The show of stock was still considered on the improvement, but the attendance of visitors, from the unfavourable state of the weather, was not large. Mr. Langston won his own Champion Prize with "Royal Turk," purchased of Mr. Ambler at the Warwick National Show, where he was a great favourite with all who saw him. Mr. Stratton sent Hickory Nut, Duke Humphrey, and others; and Mr. Hewer also transplanted some of his stock direct from Dorchester to Banbury. The short-horn entry was, indeed, altogether very strong. Mr. Garne has entered an objection to some of the sheep, as not shorn in accordance with the published conditions. Colonel North presided at the dinner:—

PRIZES FOR CATTLE.

JUDGES:—S. Bloxidge, Warwick.
C. Randall, Evesham.

J. Robinson, Clifton, Olney.

The best horned animal in the yard, a silver cup, value £5 5s., to J. H. Langston, M.P., Sarsden House, Chipping Norton (Royal Turk).

The best bull, not less than two years old, £7, to J. H. Langston, M.P. (Royal Turk). The second best, £3, to R. Stratton, Broad Hinton, Swindon. Commended: Mr. J. Dodwell, Long Crendon, Bucks; Mr. W. Hewer, Sevenhampton, Wilts.

The best bull, not more than two years old, £5, to R. Stratton, Broad Hinton. The second best, £3, to J. H. Langston.

The best bull, under 15 months old, a silver cup, value £8 5s., to W. Hewer, Sevenhampton. Commended: G. Garne, Charchill Heath, Chipping Norton; R. Stratton, Broad Hinton.

The best cow of any age, in milk, having calved within six months, £5, to R. Stratton, Broad Hinton. The second best, £3, to J. H. Langston, M.P.

The best heifer, under three years old, in milk, or in calf, £5, to R. Stratton, Broad Hinton. The second best, £3, to R. Stratton.

The best pair of heifers, under 18 months old, £5, to R. Stratton, Broad Hinton. The second best, £3, to Rev. C. W. Holbech, Farnborough. Commended: Mr. T. Garne, Broadmoor, Gloucester.

The best pair of heifers, under 18 months old, the property of a tenant farmer, a silver cup, value £5 5s., to R. Stratton, Broad Hinton.

Highly commended: W. Cother, Middle Aston, for a fat cow. Commended: W. Cother, for another fat cow.

HORSES.

The best brood mare for breeding hunters, a silver cup, value £5 5s., to Colonel North, M.P., Wroxton Abbey.

The best mare with colt, £5, to B. Millington, Ardley. The second best, £3, to J. Greaves, Elsfield.

SHEEP.

The best Southdown ram of any age, £4, to Col. North, M.P. The second best, £2, to Col. North.

The best Down ram, of any age or breed, except Southdown or Oxfordshire Down, £4, to H. J. Sheldon, Brailes House. The second best, £2, to H. J. Sheldon.

The best long-woolled shearing ram, £4, to W. Garne, Bibury. The second best, £2, to J. Gillett, Minster Lovel.

The best long-woolled ram, above 2 years old, £4, to Wm. Cother, Middle Aston. The second best, £2, to W. Cother.

The best Oxfordshire Down shearing ram, £4, to J. Bryan, Southleigh. The second best, £2, to J. Druce, Ensham.

The best Oxfordshire Down ram, above 2 years old, £4, and extra prize of £3 2s., to H. L. Gaskell, Kiddington. The second best, £2, to J. Bryan, Southleigh. Commended: H. L. Gaskell; J. Bryan; Duke of Marlborough; Joseph Druce.

The best pen of five breeding Down ewes of any breed, except Oxfordshire Downs, with their suckling lambs, £3, to E. Lythall, Radford.

The best pen of five breeding long-woolled ewes, with their suckling lambs, £2, to Thos. Blethingdon. The second, £2, to Alban Bull, Drayton.

The best pen of five breeding Oxfordshire Down ewes, with their suckling lambs, £3, to the Duke of Marlborough, Blenheim. The second best, £2, to the Duke of Marlborough.

Highly commended: W. Cother, for three ewes.

PIGS.

The best boar, not less than twelve months, or more than three years old, £3, to Col. North, M.P. Commended: W. Hemming, Coldicot.

The best boar, not more than twelve months, £2, and extra prize of 2s., to Wm. Hewer, Sevenhampton. Highly commended: Joseph Druce. Commended: Mr. J. K. Tombs, Langford.

The best sow, above nine months, and not more than three years old, £2, to J. K. Tombs. Highly commended: W. Hewer.

The best sow, not exceeding nine months old, £2, to W. Hewer, Sevenhampton. Commended: J. K. Tombs.

PRIZES FOR IMPLEMENTS.

JUDGES:—J. Coleman, Sulgrave.

J. Greaves, Elsfield.

T. Horwood, Steane.

S. Smith, Somerton.

Coleman's improved cultivator, £2.

Seaman's patent improved harrows, £2.

Braggin's patent hinge, £1.

Gardner's patent chaff cutter, £1.

Barford, collection of implements, £3 10s.

Allgood and Gibbs, collection, £3 10s.

Mascord, collection, £3.

THE AGRICULTURE OF FLANDERS.

THE DISTRICT SURROUNDING DUNKIRK—FLEMISH IMPLEMENTS.

Dunkerke, May, 1860.

Nothing perhaps, to the observant traveller, is so provocative of thought, as the quickness of the change which the sailing of a few hours across the Channel brings about, in throwing him amongst a people, and amidst sights and scenes, so essentially different from those with whom he has been accustomed to mingle, and on which he has from infancy gazed. He leaves the Thames, with its dingy huddled-together wharves, and its smoke-engrained black masses of buildings, and after a few hours mayhap of sick uneasy tossing, or perhaps of pleasant sailing, he walks on deck to look out upon quaint middle-aged gabled buildings, then red-tiled roofs lying warmly, and then pure white walls dazzling brightly in the sunshine, and on the somewhat silent, and—to one fresh from the busy bustle of the banks of the Thames—almost deserted quays; he sees lazily lounging men in strange garb, soldiers and gendarmes in varied costume and unusual numbers, and fresh comely women hurrying along—for the women seem only to be fervent in business—with graceful cloaks and caps of dazzling whiteness. The very ships and boats he passes in the harbour, and the heavy carts he hears lumbering on its quays are all strange and new to him. While musing in meditative mood on all this "jugglery"

which a short steamboat sail has brought about, he is roused to action, and in a short space of time through the "passport" and "custom-house" examination, to a thorough consciousness of the fact that, amongst the strange people with whom he for a time has cast his lot, and whose strange language is dinning in his ear, he is to be no longer a free agent—no longer at liberty to roam—"no man to bid him nay," as in brave old England; but tracked from place to place in the pages of the police books, obliged to be but a poor unit of the countless numbers who, for reasons to be vainly understood by him, consent to give up to a few all freedom of action, and perhaps to a great extent all liberty of expression of thought. These considerations, strangely as they strike the traveller who visits for the first time the Continent, need not, however, cause him any permanent uneasiness, for a little experience will soon convince him that they will not in any way curtail his comfort. Unless he be a very pretentious fidgetty body indeed—and people of this class had better remain within the shadow of their chimney-piece—he will be able to get along with an amount of interference with his movements very much less than he might have anticipated from his first experiences with the "passport" or at the "custom-house." We have travelled not a

little about—have wandered into all sorts of bye-paths, odd country villages, quaint towns and splendid cities, and, save an occasional examination at a *bureau d'octroi*, or a *duane*, we might have been wandering about along the dear old lanes of Merrie England, so far as any interference of gendarme or big-coated, peg-topped trousered authority was concerned. All the so-called annoyances of continental travelling are mere trifles, and vanish into thin air at even the faintest show of resolution and a determination to take things easy. A little patience and forbearance is all that is required—little, indeed, of the latter, for, in truth, the forbearance is all the other way; for trying it must be to foreigners, whose country we invade, to come into contact with a people whose manner and modes of thinking they do not understand, and whose behaviour, brusque and John Bullish as it too often is, must be a sore trial of patience on many an occasion. Certain it is that none of our readers desirous of personally examining this region full of agricultural interest needs allow any fear of his not "getting on," as the phrase goes, to come between him and a trip here. A short sail, the expenditure of a little time and not much money, will enable him to see much that is altogether new to him—to witness many processes of interest, and to take away, we make bold to think, not a few hints most serviceable to him in the daily avocations on his own land.

Without further preamble we propose jotting down for the amusement and, we hope, the instruction of many of our readers, such "notes" as wanderings in the neighbourhood and the results of various inquiries have enabled us to make.

Dunkirk, or Dunkerke in the French language, is a seaport town, in the North Sea, at the mouth of the Manche. Its situation gives considerable importance, or rather it has done so, for a variety of circumstances have tended very considerably to reduce its trade. It derives its name from two Flemish words—the *Dunes* and *Kerke*, the church of the Dunes. The dunes—downs, the English equivalent—are sand heaps formed by the dejections of the sea blown into mounds of various forms and size by the wind. Of these, however, more hereafter, when we come to talk about their agricultural interest. The church of the dunes here referred to as giving its name to the town was founded by Saint Eloi, Bishop of Noyen. This was at a very early date, for at the commencement of the tenth century the first fortifications were begun to be erected near the church. Remarkable as many of the towns in the northern part of France are for the changes of masters which they have come through, none excels in this respect the town of Dunkirk; wars, marriages, successions made it to pass through a never-ending series of changes. It once belonged to the Counts of Flanders, to the Austrians, the French, the Spanish, and the English. Placed by the fortune of war in the hands of the Spanish, the harbour served as the place of rendezvous for the Spanish Armada—a fact which necessarily imparts a great interest to the town in the eyes of the English visitor. Turrenne, by the celebrated battle of the Dunes, in which an united army of French and English defeated the Spanish, gained possession of the town. As, however, Louis XIV. had engaged to cede to the English the first town which was taken by the allied armies, it fell into their hands, so that Dunkirk was held by three powers in one day—in the morning by the Spanish, by the French in the middle of the day, and by the English in the evening. Charles II., however, becoming "hard up," to use an expressive of somewhat vulgar phrase, sold the town to Louis XIV. for 5,000,000 livres. This "monarque grande" laid out vast sums in repairing and improving the fortifications, which, however, were, by the stipulations of the treaty of Utrecht, razed to the

ground, much to the delight—according to a French authority—of the English and Dutch, who had suffered much from the onsets of the gallant privateers of the town. Of these same privateers—or, to speak more truly perhaps, pirates—Dunkirk boasts of a long line of worthies, who were famous for deeds of wondrous valour and of heroic actions. A statue of one of these—to wit, Jean XV. Burt—adorns a large square or place; it is thoroughly French in style, and in its affected *posé* and theatrical accessories gives little notion of the rude and the energetic pirate or privateer whose deeds it is designed to commemorate.

The town is at present fortified. The harbour is gradually becoming filled, admitting, and that with increasing difficulty, vessels of comparatively small burden.

The town possesses a few objects of interest. The Belfry is interesting; it is a square tower, about 35 feet at the base, and 22 feet in the side at the top; its height is about 160 feet. It is terminated by eight little turrets, which give an elegant finish to the structure. The top is reached by a flight of steps 265 in number. The trouble incurred in the ascent will be well repaid by the magnificent view obtained. The agriculturist will, if the day is fine, be able to gain a fair idea of the general outlines of the country, and of the mode of laying out the fields.

We have, however, so long detained our readers from the consideration of matters more befitting our pages, that we shall withdraw our further notes on matters connected with the town and its rights: and proceed at once to notice those connected with the agriculture of the district which surrounds it.

A walk over the dunes of which we have already spoken will bring out some points of interest. Their general appearance is that of a long range of low hills; these are composed of sand driven up by the winds, and they assume in many places a wave-like form. In some parts the height to which they attain is considerable, and in picturesqueness of outline is thus frequently obtained. Towards the sea few signs of vegetation are met with, but to consolidate the sand-heaps and to form by them a sort of barrier between the sea and the cultivated land, the growth of couch and rushes is encouraged. In some parts of the dunes at Dunkirk, the rushes are set out in lines, at distances of some nine inches apart. It is curious to note how closely the habitations of men come up to these barren sand-heaps, and still more curious to see the bold attempts made by the peasantry to grow plants upon them. Thus in the course of our rambles we saw two women engaged in setting out potatoes in a place affording—as an Englishman would have thought—as much chance of yielding a crop as the sand of the sea-shore. Indeed, the soil—if soil it could be called—averages little better than this. Nothing indeed, but the most lavish use of liquid manure, composed chiefly of human excrement, could enable any crops to be raised from such an ungrateful soil. It is interesting to trace upon the line of the dunes the gradual increase of vegetation as one proceeds inland. First you toil wearily along over heaps of sand, so light that you kick it into tiny clouds as you go along, then patches of couchy grass, at intervals few and far between, then larger and more refreshing oasis on which a sheep or two, or a donkey, or a goat may be seen precariously picking a livelihood; still further, flowers begin to appear, gladdening the eye with their sweet colours, and leading the mind forward to the contemplation of smiling meadows which are seen afar off in their gladdening greenness. Next tiny trees and under-growth of bushes are met with, these increasing in size and profusion, till at last the confines of cultivation are arrived at, and the triumph of man over na-

tural obstacles is seen to be complete. And it is a triumph of no ordinary kind, for examining the fields and gardens which stretch for miles away from the dunes with their rich burdens of produce, it is difficult to believe that they have been freed from so ungrateful a soil. Yet from a wide extent of country the soil of which has been the lightest and poorest of sand, a large amount of garden and farm produce is raised and sent off to Paris and other large towns. As before hinted at, the grand agent in producing such fertility is manure, more especially the liquid manure. Evidences certainly not the most odoriferous meet you at every step you take in this interesting district. Every garden and farm has its tiny tank, and carts (*tormeaux*) meet you constantly bearing to the country the treasures of the towns—treasures—the value of which *we*—that is the English—somehow will not admit. The tanks are generally placed in a corner of the garden lined with bricks, and covered with a simple thatched triangular-shaped roof. The ends are generally closed, and an aperture made in one through which the manure is taken by means of a long handled-ladle. A wooden spout is often placed at an aperture near the road, by which the manure is passed from the carts to the interior of the tank. In passing along we saw in many fields the liquid manure being applied to the land. It is taken in a barrel provided with iron hasps at the side, through which poles are passed, and which enable the men to carry it. The manure is distributed over the field by means of the long-handled ladle, and its distribution is remarkably uniform. The operation is not an odorous one certainly, but its effects are soon observable in the surpassing richness of the products, and the rapid amelioration of the soil, bringing it from a state of sterile sand to that of a rich looking loam.

In dividing the gardens, which are very numerous on the Ostend side of Dunkirke, straw is much used to make fences. Stakes are placed vertically in the ground at a distance of from eight to twelve and fourteen feet, between these strips are placed horizontally, and the straw placed vertically, between them being interlaced as it were within the horizontal strips or battens. The whole makes a neat and secure fence, taking up very little space, for its thickness does not exceed, we should think, three inches. Outhouses, &c., &c., are also made with the walls of straw, and very neat they look, and astonishingly strong: they form warm shelter sheds for cattle.

Further from the town where the farm lands begin, fences disappear; indeed, one of the peculiarities of Flanders, both French Flanders and the east and west provinces of Flanders in Belgium, is the absence of fences. The fields are generally divided in the district we are now writing about by stone marks so small as to be scarcely seen. The ditches and water-ways are numerous. The trees in looking across the landscape appear to be very numerous, and convey the idea of a well wooded country. But the trees are rarely, indeed we may say they are never placed in the fields of Flanders, space for cultivation is too valuable for that, but along the road, in many cases forming fine avenues stretching along for miles in length. Small clumps are also now and then met with; and as the orchards are pretty numerous the landscape by no means lacks the light and shade and artistic repose which trees invariably give. Indeed, although flat, as far as the eye can reach, the country is a pleasant one to look upon, the farmhouse and buildings studding the fields here and there are generally in their form and outline picturesque in the extreme: their high-peaked rough thatched roofs, and the numerous wind-mills stand out in fine relief against clear blue sky beyond.

Beautifully farmed as the fields are in the neighbour-

hood of Dunkirke, they scarcely, to our thinking, presented the garden-like appearance and the high finish of the farms of Belgium Flanders, such as we have seen in the neighbourhood of Bruges, or of Courtrai, or in the Pay de Waes between Ghent and Antwerp. But nevertheless the cultivation is of a high order, the ploughing executed in the finest style, ditches and the edges of fields carefully trimmed up, and every evidence given of the careful attention which the husbandman devotes to his fields. The crops usually grown are wheat, rye, oats, clover, bectroot, potatoes, and beans. Cassel, a beautifully situated town on the road to Lille, is celebrated for its crops of beans.

The farms generally are of small extent in the district; there are, we have been informed on good authority, 1,270 farms of less than 12 acres, 666 from 12 to 25 acres, upwards of 700 from 25 to 50 acres, nearly 800 from 50 to 100 acres, about 150 from 100 to 250, and not quite 30 of more than 250 acres. The general average price of land is 3,700 francs per hectare (a hectare is $2\frac{1}{2}$ acres nearly), and is let for 97 francs the hectare. Pastures rent at 116 francs. Grass land sells at 4,500 francs the hectare. The yield per hectare of wheat is 22 hectolitres; of oats, 42 hectolitres; of barley, 44 hectolitres; and of rye, 20 hectolitres. The wages of a man labourer are 212 francs per annum, of a woman labourer 110 francs. Weeding is executed at the cost of 13 francs per hectare.

Drainage is on the increase, 7,000 hectares have been drained in the district at a cost of 150 francs the hectare, and the results have been very satisfactory.

Guano is used to some extent, but *torteaux* or oil-cakes are most used.

Dairies are considered profitable, and dairy-farming is an important branch of industry in the district.

Great attention is now being and has for long been paid to the rearing of fine cattle. Last month the Agricultural Society of Dunkirk held a meeting, at which was exhibited a number of fat milk cows. Twenty-two were exhibited, all of them very fine animals. It is to be noted that none of them were specially reared for exhibition. The animal which took the first prize weighed 798 kilogrammes (a kilo. is $2\frac{1}{8}$ pounds of English weight), and it furnished of meat 466, and 92 of fat. The second prize animal weighed 859 kilos., and gave 472 of meat, and 143 of fat. The third animal weighed 820 kilos., and gave 449 of meat, and 102 of fat. The fourth weighed 763 kilos., and gave 412 of meat and 75 of fat.

It may interest some of our readers to know that the Agricultural Society of Dunkirk intend holding an exposition of agricultural and horticultural products, of machines and implements, and of stock, in the month of September of this year, from the 6th to the 16th, inclusive. Strangers are invited to exhibit. Application to be made to M. Harcourt, Rue Emmery, No. 12, Dunkirk, before the 15th of August.

As the object of these exhibitions is to give as much practical information as possible, the exhibitors of agricultural products—only those of the harvest of 1860 admitted—are required to give the following information along with the articles exhibited:—1st, the locality and farm where produced. 2nd, the nature of the soil, and the extent of the ground where the product has been raised. 3rd, the amount per hectare. 4th, the kind and quantity of manure employed per hectare. 5th, its selling price. Twelve medals will be given for the cereals, of each of which 8 kilos. must be exhibited, and two litres winnowed and cleaned for market. For forage plants 5 medals will be given, and for roots 2. For the textile and oleaginous plants 5 medals. For the industrial plants (hops, tobacco, chicory, sugar, beet,

and sorgho) 3 medals. For plants medicinal, 2 medals. For butter and cheese, and for linen and hemp fabrics, 5 medals.

For the best implement or machine, or collection of machines, a medal of honour; and 13 medals extra will be awarded to the makers of the machines likely to be most useful to the agriculturist.

To add to the attractions of the exhibition, the Society will open an exposition of stock belonging exclusively to the district of Dunkirk; and will hold a "ploughing match," in which the farm labourers of the district will display their capabilities. When to all this is added the attraction of a flower, fruit, and vegetable show, our readers will perceive that there is some inducement for a visit to be paid to Dunkirk this autumn. Visitors going to Paris can take Dunkirk in their route by one of two ways, incurring very little loss of time. One of the ways of proceeding is from Dover to Calais, and by railway from Calais to Hazebrouck, changing carriages there (the train by which he leaves Calais going on to Lille, Amiens, and Paris), and taking the railway to Dunkirk. The second way is to go by the steamer direct from Irongate Wharf to Dunkirk, and from thence by railway to Paris. It is worthy of note here that a considerable saving can be effected by *booking through* to Paris, the sum charged from London to that city being but a franc or two more than the usual railway fare from Dunkirk to Paris. A through ticket allows of a few days' stay at Dunkirk. A good English house, with English comforts, at Dunkirk, is Kelly's Cherry Tree Hotel. The French and principal hotel is the Chassean Rouge. Should our supposed visitor not care to go to Paris, by taking the diligence to Furnes (in Belgium), and the railway from that town to Courtray, Ghent, and returning to Bruges and Ostend, he will traverse the most interesting district of Flanders, where he will see Flemish agriculture in all its perfection. He can easily embark for London from Ostend, going direct by sea; or to Dover, thence to London.

A few remarks on the character of the implements of *Flemish* farming will doubtless be expected of us by the readers of the *Mark Lane Express*. To this department of farm economy, both in French Flanders and Belgic Flanders, we have paid some considerable attention. We have seen them all, or nearly, in work; and have taken sketches or descriptive accounts of them. To

go over all the points we have noticed would occupy so much space, that at present we must confine our remarks to what we may call the rudimental implements of agriculture—the plough, the harrow, and the roller. To one looking merely at the highly-finished condition of the fields, and the luxurious state of the crops which they bear, the thought would naturally arise in the mind that the implements by which this labour and these results were carried out would be of a high class of mechanical perfection. But nothing scarcely can be farther from the truth: agricultural mechanism throughout the Flanders district has been, and is now—except where efforts are being made to introduce English implements, or copies of these—at a very low ebb. Rudeness and heaviness of construction, a great weight of material put together, showing little evidence about it of the laws of strength of materials having been considered and applied, are the two characteristics in chief of Flemish implements. We are far, however, from wishing to infer that the implements do not do good work. On the contrary, the work they do is good in the generality of, and first-rate in some instances; but there can be nothing but loss, and that of a continual kind, where an excess of material is employed, and that in a way the worst calculated to bring out its best and most economical features. We have rarely seen implements at work, or the huge bulk of the farm carts being dragged wearily along, but we have wished that their place could have been taken by the light yet strong and beautifully constructed mechanism which the show-yards of our great agricultural meetings, or the fields and yards of our farms display. Those agriculturists and leading men who are acquainted with the progress of agricultural mechanism in this country, and what it has done for the practice of farming, are daily making efforts to improve the arrangement and simplify the construction of the agricultural mechanism of Flanders. Many leading men have imported machines from this country, or have induced the country mechanics to make others after their model; and it is gratifying to know that wherever agricultural mechanism of a superior class is introduced, it is either imported from England, or, if made in the country, it has the compliment paid to it of being likened to the machinery of a *grand English farm*—a compliment in every way well deserved by our English manufacturers.

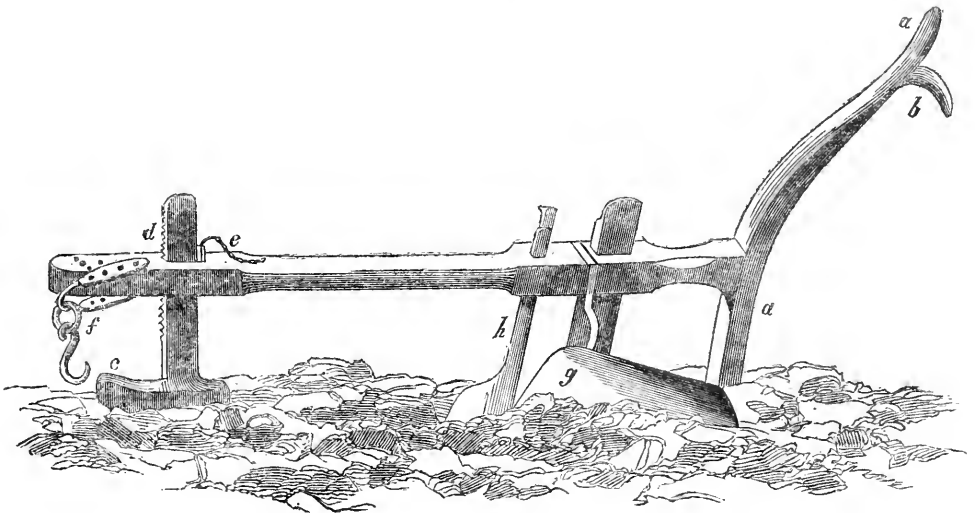


FIG. 1.

The Flemish swing plough shown in the illustration, fig. 1, has been called the "model of the Rotherham, and the parent plough of all our most improved swing-ploughs for light soils." This plough works very easily; with it a single horse can plough in the usually light lands of Flanders an acre a day to a depth of six or seven inches. The furrow is laid over with great regularity, the land-side is cut square and clean, while the sole is level, showing little irregularity in its progressive motion—unlike some work we have seen done with swing-ploughs in Scotland, where the sole has been hilly and irregular. So easily, however, is the Flemish plough worked, that two handles are not necessitated, one only, as in *a*, fig. 1, being used. This is curved upwards and forwards, and terminated by a small horn or handle, *b*. By this the plough is easily held, and lifted out at the end of the bout, to turn the plough round to commence another. This facility of regulation is, however, to be attributed greatly to the lightness as well as uniformity

of consistence of the soil in which it works, which presents none—at least, very few—of those obstacles met with in many of the soils of England and Scotland, and which necessitate a continual vigilance on the part of the ploughman. The end of the beam carries a curved shoe, *c*, the stem of which is provided in front with a rack *d*, the teeth of which take into an iron plate, the two being kept in contact, and the shoe suspended at any height desired by the wedge *e*, secured to the beam by the small guard chain, as shown. The construction of the "bridle," *f*, is obvious enough, from an inspection of the sketch. The mould-board, *g*, is made so as to lift the slice well up before it turns it over; being little inclined laterally, the furrow-slice is laid on at the usual angle of 45 degrees. The share is broad, and the sole formed of a straight piece of wood like a sledge. The coulter, *h*, is variously made of the hatchet form in fig. 1, or the curved one shown in fig. 2. The implement is constructed altogether of wood, the mould-

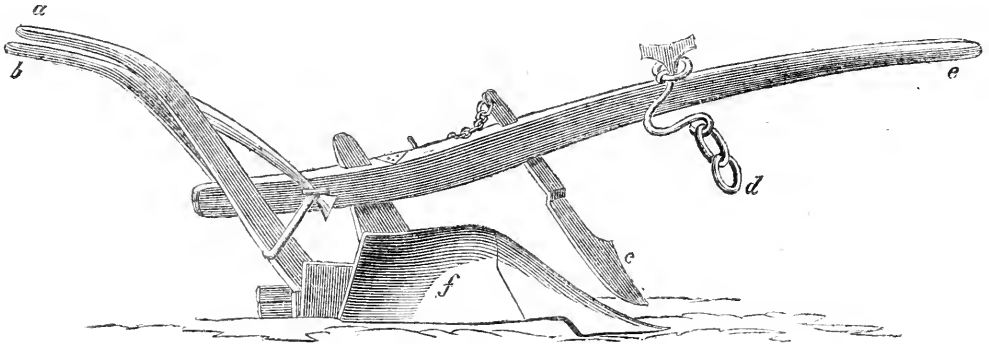


FIG. 2.

board in many instances being merely covered with sheet-iron. It is altogether a rude-looking implement, and gives, at first sight, anything but the idea of a capability to do good work. It is, however, thought to do this so well, or, at all events, the Flemish are so prejudiced in its favour, that ploughs are now being constructed after

plough appears to be at a first examination of it, it is a "handy-looking" implement compared to the wheeled plough, a sketch of which in two of its principal parts is shown in figs. 2 and 3. The acting parts of the plough are somewhat different from those of the swing-plough in fig. 1. Two handles, *a* and *b*, are used, and the coulter, *b c*, is more closely resembling that of our own ploughs; the chain, *d*, is used to connect the beam, *e*, with the "avant-train," as it is called, or the wheel part, *e*, the arrangement of which is shown in fig. 3. As will be seen, the diameter of the wheels is equal, no furrow or land-wheel being adopted, as in our wheel-ploughs. The necessary adjustment of the wheels, so that while one is running in the furrow the other is on the land, is simply made by the part of the wheel-carriage, *a*, being made with a curved slot on its upper side, in which the end of the beam, *b*, rests. Any difference of level of the two wheels does not, from this arrangement, interfere with the position of the beam, *b*. The wheels and wheel-carriage can be brought nearer to, or farther from, the working parts, *c f* (fig. 2), of the plough by shortening or lengthening the chains, *e* (fig. 2). The rude arrangement of the "bridle," *c c*, is shown in the illustration (fig. 2). The block, *a*, in which the beam, *b*, rests, is made so as to have a lateral or side movement on the under-block, *b d*, so as to shift the position of the beam, *b*.

The harrow generally used is entirely of wood, both tines and frame. The frame, *a a a* (fig. 4), is triangular, and provided with cross-bars, *b b*. The tines, *c c*, are curved in their outline, and project forward. For bringing up weeds and cleaning the land, the harrow is drawn forward from the angle *c* in the direction

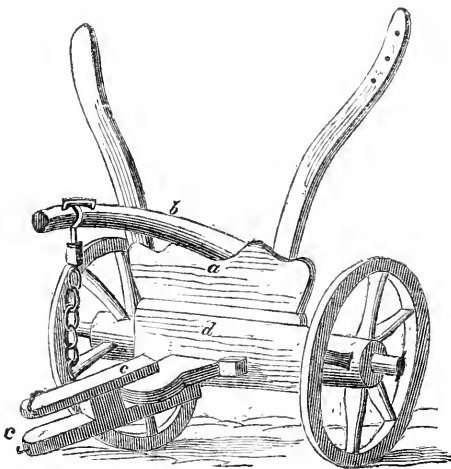


FIG. 3.

its model, but in which the whole of the parts are made of iron. Clumsy an implement as the Flemish swing-

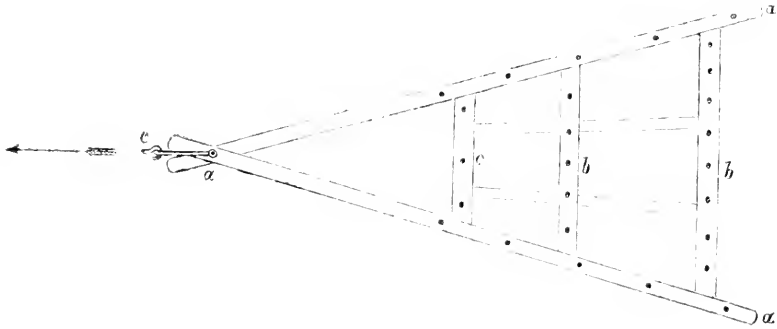


FIG. 4.

of the arrow, but from an opposite angle when seed is to be covered or the land smoothly finished off. Another form of harrow is square in form; all the teeth

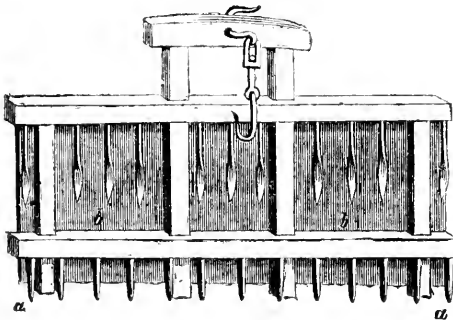


FIG. 5.

of each row in this run in the same line. To obviate

this inconvenience, the rhomboidal frame is sometimes used, the teeth of which all form independent tines. English harrows are being introduced into Flanders. There is no soil better adapted to the action of the *chain-harrow* than the highly-worked, fine-tilthed soils of Flanders. We should like to see the best forms of this kind of harrow, as well as the recently-introduced "rotating harrow," tried on Flemish soil. There might be a worse "spec" than sending over a few specimens for trial to the coming Dunkirk show, of which we have given a notice in this article. We commend the idea to one or two of our leading men. We have in our mind's eye a fine field in a snug corner of West Flanders where we should like to see the trial carried on. The harrows might not inaptly be accompanied or preceded by a Howard's or a Hornsby's plough. These would reap new laurels from fresh fields.

An implement peculiarly Flemish is the *traineau*. It is a frame of wood, made of various forms, one of which is shown in fig. 5. It is dragged over the land to break the clods or smooth the surface. It is sometimes provided with tines, as in fig. 5, one row, *a a*, being of wood, the other, *b b*, being of iron. While being worked, the driver stands upon it. A lighter form of the *traineau* is used in place of a bush-harrow.

The Flemish roller is a very rude-looking implement, being altogether formed of wood. We give a rough sketch of this in fig. 6. The sides, *a a*, are curved, and are held together by the stays or stretchers, *b b*. They are seldom well-proportioned; the diameter of the roller, *c*, being too great for its length, or, on the other hand, the length being too great for the diameter. In fig. 6, the upper diagram is a side elevation, the lower a plan of the implement.

Such may be taken as a brief explanation of the peculiarities of the Flemish field implements. We may, at a future time, refer to the manual implements of the farm, and the machines, &c., used in the steading.

R. S. B.

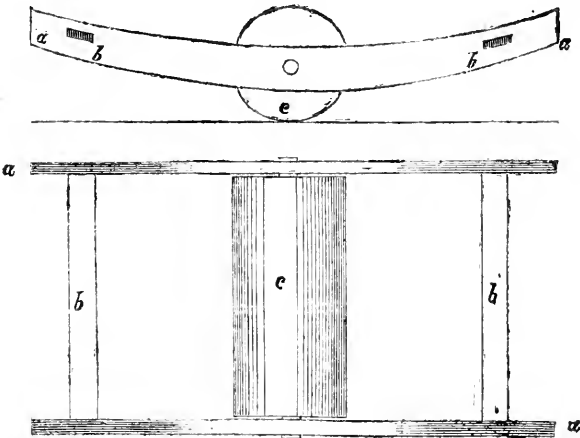


FIG. 6.

THE TWO AGRICULTURAL BENEVOLENT INSTITUTIONS.

His Grace the Duke of Richmond occupies just at present a somewhat peculiar position. He is the President of an Agricultural Benevolent Institution that is considered to be gradually declining, and he is the President of another Agricultural Benevolent Institution that is declared to be rapidly developing. The great essential difference between these two Associations is, that the Duke himself originated the one, and Mr. Alderman Mechi the other. That which his Grace was not merely the first to suggest, but that actually bears his own title upon it, the farmers would seem to care little or nothing about. Even with such an introduction, the Richmond Institution has long been little better than a dead letter. The one or two thousand pounds nest-egg have remained very much at the same figure; while we cannot undertake to say whether any poor widow has ever put in her claim to that assistance the Society was intended to offer. Arising as it did in a personal tribute to the man, the finest compliment that Agriculture could have paid to the Duke of Richmond would have been to *establish* the Institution of which he was the founder. But somehow or other Agriculture did not seem to care about such a diversion from the first intention, and so it came to pass that while Agricultural Societies and Clubs flourished more than ever, Agricultural Charities flourished not at all. Farmers could meet and talk and subscribe about anything but pensions for themselves, or alms-houses for their widows.

What, however, the Duke of Richmond could not do, Mr. Mechi is courageous enough to think that he can. And so far he has clearly the more success of the two. There are people who say that the new Agricultural Institution would have been already a much greater fact than it is, if it had not been for the unhappy association of Mr. Mechi's name with its fortunes. The Executive Council, indeed, have gone so far as to request that he will withdraw from any share in the direction. But this at best is a very transparent blind, and, with his own partner still on the Committee, cannot tell for much. Let it rise or let it fall, the new Agricultural Benevolent Institution will be as directly identified with Mr. Mechi as Tiptree-Hall, Leaden-Hall, or large profits, come from which of the two they may. And in common justice, giving to every one credit where credit is due, this should be so. The names of Mr. Mechi and of his partner Mr. Bazin are those that of all others should occupy a prominent position in the management. So far from thinking that this Benevolent Institution has suffered anything from its connexion with the firm of Mechi and Bazin, we do not believe that it would have been half what it now is without them. Mainly through such instrumentality the thing has been well worked. Telling circulars have been issued; moving appeals have been made in the right quarters; and where the Duke of Richmond could not count upon two thousand pounds, Mechi and Bazin have already more than four.

Still, how much of this comes from the farmers themselves? How far can such a movement be regarded as a spontaneous one on their parts? It is indirect aid and patronage that have given the new Benevolent Institution the start it enjoys. Landlords perhaps feel it both a matter of duty and policy to countenance such an undertaking, especially when put

to them in that business-like form it was sure to be by Mechi and Bazin. Their agents naturally follow so noble an example, and add their ones and twos to My Lord's ten or twenty. Then, the implement makers—many famous in many ways for ready, open-handed liberality—were not the men to be solicited in vain; and Clayton and Shuttleworth give their fifty, the Ransomes a fifty, the Howards their twenty-five, the Hornsby's another twenty-five, and so on. A few leading agriculturists, like Jonas Webb, John Clayden, Rigden, Sanday, the Russells in Kent, Barthropp and Crisp in Suffolk, and another stray man here and there, join in; but it is not from their order that the strength traces. Look, for instance, at three such counties as Norfolk, Northampton, and Nottingham succeeding each other on the subscription list, and note the number of farmers who have responded to the energetic appeal of Mechi and Bazin. Why, the Richmond Institution must surely have done as much or more amongst them. Not that the notion was quite a novelty even then. Some such a fund has, in fact, been suggested over and over again. A very energetic gentleman has often mooted it in Hampshire, and everywhere else that he has had an opportunity; while, we believe, there is still lying in one of the local Banks in Norfolk a certain sum long since got together for much the same purpose. Let Messrs. Mechi and Bazin look to it, though if not with all the claim of the first discoverers.

Anxious as we are that the great body of practical agriculturists should take their own view of this question, we give a very full report of "the Opening Festival," as it is called, of the new Institution. This indeed runs to a much greater length than the general character of the oratory deserves. With the exception of Mr. Wren Hoskyns, who very becomingly and unexpectedly undertook the duties of the chair—and saving with him Mr. Mechi himself, the speech-making could not have been more common-place, or, as in one or two cases, more thoroughly indifferent. Take for example a Mr. Wood, a barrister, who by some unlucky "accident" became connected with the Society; and on the strength of this was placed on the right of the Chair, and positively called upon to deliver *two* of the most tiresome and tedious addresses we ever had the misfortune to sit through. But we do not go quite to the length of reporting him in full. Then on the other side of "Taipa," was Mr. Batson, a gentleman who at one time made a good deal of talk over his farming in Herefordshire; but, according to all accounts, did not make it answer, and who must have occupied his prominent position at the London Tavern a good deal on the same showing as "the frightful example" at a teetotal festival. However, Mr. Batson is no less a man than the Chairman of the Executive Council, so that the Institution is launched under the most encouraging auspices.

But Mr. Wren Hoskyns is a thinking man, and he rarely writes or speaks without suggesting something for profitable reflection. He dwelt here on the effects of the law of primogeniture, of intestacy, and the many difficulties opposing the transfer of land; and in proposing the toast of the occasion, he went on this wise: "In the neighbouring country of France, by one of the laws of the first Napoleon, that land was so divided and cut up

into small portions, that agriculture could hardly be said to have yet assumed in that country its full proportions, or to have had anything like a chance of being compared favourably with the land of Great Britain. In this country exactly the opposite principle prevailed, and in avoiding one extreme the State had perhaps rushed into the other. Nearly the whole of the soil belonged to a few great proprietors, and to the many other disadvantages to which the tenant-farmer was subjected was added that of great uncertainty of tenure." And, again: Lord Macaulay, in his "History of England," spoke with deep regret of the gradual disappearance of the substantial yeomen of former days—the men who owned the land which they cultivated—and the substitution for them of those who merely cultivated what belonged to another. The land was now almost universally cultivated by those who were mere vicarious possessors of it, and not real owners. The position of a tenant was, to a certain extent, that of a hireling; the produce of the time and money which he invested in the improvement of the soil were more or less at the mercy of another person; and let gentlemen who were familiar with the ordinary course of business in that city say what it must be to invest capital, and feel that it was not under your own control." While he added, with all justice, that the farmers of this country "Nobly did their duty in the cultivation of the soil, as was proved by its general condition when compared with that of any other country in the world." Now here is something to go upon. In the first place, we do not surely want to regret with Lord Macaulay the loss of the small yeomen, or wish so to see the kingdom "divided and cut up into small portions," as is still the lamentable fact in France. On the contrary, we have a rapidly improving race of tenantry, employing more means and developing more ability; "who nobly do their duty by the cultivation of the soil." But as Mr. Hoskyns well observes, they do not hold their proper position. There is not due security of tenure. The tenant is still to a certain extent something of a hireling. His time and his money are too much at the mercy of others. And then he asks what would the city gentlemen say to this? Mr. Hoskyns could only ask for one answer:—"Achieve your independence. Insist on due opportunity for carrying out your business; and, above all, do not put yourselves at the mercy of others." One of the standard objects of this journal has been to urge such a course, and we here urge it still. But how? Is independence, security, and something better than the position of a hireling to be had by asking those we deal with for ten-pound notes to put our widows into alms-houses, or to keep our children out of the charity-school? There is a hard struggle for a recognized standing now going on that will never be gained, but only seriously retarded by the extended operation of any such a society as this Agricultural Benevolent Institution. We counsel the farmers to carefully take their own course over the project. At best we rank it but a good intention, fostered by some too-ready benevolence, no little personal vanity, and a good deal of semi-concealed self-interest. Let us ponder over all Mr. Hoskyns can say for it.

THE AGRICULTURAL BENEVOLENT INSTITUTION.

The opening festival of this Institution, "for the relief of farmers, their widows and orphans," took place at the "London" Tavern, on Tuesday, June 26. The Duke of Richmond, who was suffering from a sore throat, was un-

able to preside; and Lord Spencer had also to decline the duty solicited of him. Under those circumstances, Mr. Chandos Wren Hoskyns kindly undertook the office of chairman. He was supported on his right by Mr. Alexander Wood, a barrister, and the Treasurer of the Welsh Society; and on his left by Mr. Thomas Batson, who at one time farmed in Herefordshire. There were also somewhere about a hundred and fifty others present; and amongst these Mr. Samuel Brooks (the banker of Manchester), Major Parker (one of the members for West Suffolk), Mr. Burton (of the firm of Ripon and Burton), Mr. Alderman Mechi, Mr. Bazin (of the firm of Mechi and Bazin), Mr. James Howard (the implement maker), Mr. Collins, Mr. R. Morgan and Mr. Giblett (the Smithfield salesman), Mr. Thomas Scott (land agent), and the following, whom we were enabled to identify from the agriculturists "up" for the occasion: J. Clayden (Essex), G. Shackel (Berks), J. Smith (Rye), T. Knight (Edmonton), T. Crisp (Suffolk), J. W. Brown (Swindon), J. Cutts (Essex), R. Russell, G. Russell, and J. Russell (Kent), J. Cressingham (Surrey), J. W. Brown (Wilts.), R. W. Baker (Rutland), W. Walton (Hants), J. Reeve (Norfolk), F. Sherborn (Middlesex), C. Burrell (Essex), W. Boards (Edmonton), R. B. Smith (Edmonton), Goodwin, Palgrave, Belcham, Tayloe, &c. &c.

After the health of Her Majesty, most loyally responded to, in proposing the next toast of "The Prince Consort, the Prince of Wales, and the other members of the Royal Family," the CHAIRMAN said it was customary for those who occupied his own position to leave that toast in respectful silence, though it was always received with enthusiasm; but he could not on that occasion refrain from saying two or three words. He had had frequent opportunities of witnessing the deep interest which was taken in agriculture and all its branches, and in different manufactures connected with agriculture, by His Royal Highness the Prince Consort, who had set an example which was well worthy of being followed by every English landowner, by the care, the attention, and the continued interest which he had bestowed on the science and practice of agriculture in this country. As a steward of the implement department at Salisbury, he had the honour of conducting his Royal Highness over the grounds, pointing out to him the chief implements exhibited; and he must say that though he had been forewarned that he would find very little mechanism employed in agriculture upon which His Royal Highness needed information, the result of what he witnessed in that respect greatly exceeded his expectations. There were very few things indeed with regard to which he had occasion to afford explanation. The Prince showed himself thoroughly able to appreciate any improvements of importance; and when he met with any special novelty of a useful character, he was almost sure to secure the advantages which it afforded for his own farm, by giving an order. As regarded the Prince of Wales, he would observe that there were antecedents connected with his race, besides those presented by the career of his royal father, which might well induce him to prove a lover of agricultural pursuits. His great-grandfather not only farmed, but wrote on farming under the name of "John Robinson;" and it was to be hoped that the heir to the throne would duly appreciate a branch of industry with which were so closely bound up the wealth and happiness of Great Britain (cheers.)

The CHAIRMAN said he thought he might venture to say that there never was a period in the history of this country when the toast he was about to propose was more cordially

welcomed than it was sure to be now: it was the "Army and Navy," to which he would add "The Volunteers" (great cheers). He could well remember the time when that toast awoke no enthusiasm, because the achievements of the army and navy were almost entirely matters of history, or of recollection on the part of those who were advanced in life; but they were now able to look back on recent triumphs, not exceeded by any that were to be found on the page of history. They all had fresh in their memories deeds of the most wonderful heroism performed by their own countrymen in opposing vastly superior numbers. When they thought of the struggles of that awful winter in the Crimea, and when, advancing a little further down the stream of time, they recalled the deadly strife that was waged between the representatives of European and Asiatic races on the burning plains of India, and recollected how the "faithful few" manifested, under enormous disadvantages, the superiority of the European over the Asiatic, in arms as well as arts, they could hardly find language to express the admiration and gratitude with which their minds were inspired. He need say nothing more about the army of this country. They had now been recently cheered by a sight which was as novel as it was heart-stirring, and which afforded an illustration of the motto recently adopted, "Defence, not Defiance;" he referred, of course, to the spectacle of 20,000 men, a large proportion of them well-educated, and occupying good positions in life, who appeared before the eyes of their Queen on the previous Saturday (cheers), animated by one sentiment—the love of country; and showed, by their presence on the peaceful ground of Hyde Park—no Campus Martius, no grand theatre for the movement of masses of soldiers, but the scene of the peaceful rambles of their fellow-citizens—their readiness to defend their country in case their services should be required (much cheering). He would not "paint the lily" by adding anything to what he had already said, but would at once propose "The Army, the Navy, and the Volunteers."

Major PARKER returned thanks in appropriate terms for the army; and Lieut. SCOTT, First Lieutenant of the London Scottish Volunteers, in acknowledging the last part of the toast, observed that he had, in common with multitudes of his comrades, been under drill for many months, and the satisfaction which they had given to their Queen and fellow-countrymen was an ample reward for all the time and labour that they had bestowed.

The CHAIRMAN, on rising to propose the toast of the evening, was most enthusiastically cheered. He said if he had entertained any doubt as to the reception of that toast, those cheers would have dispelled it. He appeared before them only as the deputy of a deputy, and he deeply regretted that the task which had devolved upon him was not in worthier hands. The post which was then filled by himself was to have been occupied, as they were all aware, by one who had long been known in connection with every department of practical agriculture; he meant his Grace the Duke of Richmond. (Cheers.) He held in his hand a letter from his Grace, in which he mentioned, as the cause of his absence, what many present must be acquainted with, inasmuch as it had for some time prevented him from taking any part in public assemblies, and that explanation fully accounted for his absence that evening. Lord Spencer, also, who had kindly promised to fill the place which had been intended for the Duke, was most unexpectedly prevented from doing so. How was he (the Chairman) satisfactorily to discharge duties which were assigned to persons whose names were so intimately connected with the history of British agriculture? All he could do was to endea-

avour, as the representative of those noblemen, briefly to set forth the claims of the institution which they were that evening met to encourage, and, as he trusted, to assist in starting it upon a favourable and useful career. (Cheers.) It could not but have been a matter of surprise to many, considering what advantages were provided by benevolence for those who were decayed or unsuccessful, or those who were left unprovided for, in almost every department of trade and commerce, and almost every branch of industry, that the farmer should have been hitherto left out of the great circle of charity, which embraced nearly all other classes of society. (Hear, hear.) And yet to anyone who knew the history and peculiarities of the agricultural body as well as he thought he himself knew them, this might not, after all, appear very astonishing. The practice of agriculture from its very nature involved separation, to a considerable extent, between those who were engaged in it, and among the disadvantages of separation might be mentioned a want of mutual co-operation and sympathy. All who were familiar with town life knew how much depended on the influence of association, how greatly an accidental meeting with a friend in the street affected one's career, and how much the path of life was smoothed and the whole of existence made happier and better through the intercourse of men with their fellow-men residing in the same town. Now advantages of that kind were to a great extent denied to the agriculturist, and there could not be a better illustration of that than the fact that until recently no attempt was ever made to establish for the benefit of the agricultural body an institution like that which they were met to support. (Hear, hear.) It might, perhaps, be well to consider what were the peculiar elements in the life of the farmer that made him especially liable to failure or misfortune. Of course he was, in common with every other human being, subject to accidents and losses which no human foresight could prevent. But, beside this general liability, there was the fact that land was in this country somewhat peculiarly situated, and that its singular position greatly influenced the destinies of those who devoted their lives to the pursuits of agriculture. In the neighbouring country of France, by one of the laws of the first Napoleon, that land was so divided and cut up into small portions, that agriculture could hardly be said to have yet assumed in that country its full proportions, or to have had anything like a chance of being compared favourably with the land of Great Britain. (Hear, hear.) In this country exactly the opposite principle prevailed, and in avoiding one extreme the State had perhaps rushed into the other. (Hear, hear.) Nearly the whole of the soil belonged to a few great proprietors, and to the many other disadvantages to which the tenant farmer was subjected was added that of great uncertainty of tenure. (Hear, hear.) The law of primogeniture tended to keep the land in few hands, and with this was combined the increased difficulty and expense which accompanied the transfer of land from one person to another. He happened to have been present at the meeting at Bradford in October last, where one of the vice-chancellors of England described the enormous delay and expense to which he was himself subjected in attempting to buy a cottage and a bit of land. Such was the state of the law at present, that one of the first judges in the country could not purchase a small property without the expense more than doubling the value of what he wished to acquire possession of; and if such were the result in the case of such a person, notwithstanding all his knowledge and astuteness, how could a simple farmer expect to fare any better if he attempted to become an owner instead of a mere occupier? (Hear, hear.) Lord Macaulay, in his *History of England*, spoke with deep regret of the gradual disappearance of the substantial yeomen of former

days—the men who owned the land which they cultivated—and the substitution for them of those who merely cultivated what belonged to another (Hear, hear). The land was now almost universally cultivated by those who were mere vicarious possessors of it, and not real owners. The position of a tenant was, to a certain extent, that of a hireling; the produce of the time and money which he invested in the improvement of the soil were more or less at the mercy of another person; and let gentlemen who were familiar with the ordinary course of business in that city say what it must be to invest capital and feel that it was not under your own control (Hear, hear). He was far from saying that that which was one of the great characteristics of the people of this country, namely, a love of justice, did not influence the conduct of landlords; he was far from denying that, generally speaking, the landlords of England were disposed to do their duty. But he should certainly be glad to see the soil of England more widely distributed, and capable of being purchased with a little greater facility. He should like to see many a farmer owning his 100, 200, or 300 acres, so that he would not be entirely subject to the will of another (Hear, hear). As, however, that was not the case, and there did not seem to be much prospect of its being the case at present, let them endeavour all the more, as far as possible, to prevent the evils of poverty and misfortune from overwhelming those who nobly did their duty in the cultivation of the soil, as was proved by the general condition of the soil of this country as compared with that of any other country in the world. Let them endeavour to prevent the widow and children of the farmer from suffering too severely by losses and changes which they perhaps did nothing to produce; and even in cases in which there was some cause for blame, let them not be too ready to assume the office of censor, or attempt to connect, with great nicety, the punishment and the offence. As regarded the position of the society, he was happy to say that in the month of October, in the present year, it would be enabled to grant annuities to fifteen decayed farmers and five farmers' widows, to which, he hoped, would be added provision for a number of orphans (Cheers). He had too much regard for the patience of the audience to enlarge on the claims of the Society; but at the same time he had too heavy a sense of the responsibility that rested upon him not to endeavour to impress on them a sense of the value and necessity of such an institution (cheers). He was cheered by the presence of such large numbers, and by the recollection that the greatest works of that kind had small beginnings (Hear, hear). As he had before said, he did not believe Mr. Mechi would fail to obtain the support of the great body of the landowners of England in carrying out his benevolent object (cheers). Such persons would, he felt convinced, give the aid of their countenance and their money to so excellent a work. Everything connected with agriculture was slow, but he hoped to see the stream of liberality proceeding steadily and strongly; and he felt morally certain that the institution which they were met that evening convivially to inaugurate, would progress from year to year, and ultimately become in some degree commensurate with the vast extent and importance of the body for whose benefit it was designed (loud cheers). He concluded by proposing "Success to the Agricultural Benevolent Institution." The toast having been drunk with great cordiality,

The Secretary, Mr. C. SHAW, then read a list of subscriptions and donations, which amounted to upwards of £4,000. In doing so, he observed that, should the same success attend the society for the next ten years, they would have received a fund amounting to £40,000. Deducting 25 per cent. from that sum, for working and other expenses, there would remain

£30,000, which, at three per cent., would give them an annual income of about £900, and thereby provide annuities of £30 each for thirty decayed farmers or their widows.

Mr. ALEXANDER WOOD proposed "The Chairman." He said it was through what might be termed accidental circumstances that he became connected with that institution. He happened to be connected with a well-known institution for the training and education of poor Welsh children, of which his friend Mr. Shaw was the secretary, besides being the secretary of the Agricultural Benevolent Institution—a fact which would convince any one who was acquainted with the Welsh charity that he was a valuable officer, and an accession to this new institution. Such was his respect for that gentleman, in consequence of the mode in which he had seen him discharge his duties, that he always regarded a request from him as a command; and it was at his solicitation that he became one of the vice-presidents of that institution. He deeply deplored the absence of his Grace the Duke of Richmond, not merely because there was in the list of the British peerage no one who had added more lustre to it than the noble Duke, but also because there was no one in the country who could have presided more efficiently or more appropriately on such an occasion than the nobleman in whom they were all delighted to recognize the President of the Society (cheers). Nothing, he was sure, but severe indisposition would have prevented his Grace from taking the chair; and deeply did he deplore the cause of his absence. At the same time, as a commoner of the realm, he was glad to see a noble volunteer in his Grace's place; and it was with unfeigned satisfaction that he proposed the health of their actual Chairman (cheers). It was well known that the Chairman had of late years devoted a great deal of time to the study of agriculture; and he was sure they were all deeply indebted to him for the manner in which he had advocated the claims of a class with whom he was so closely connected (cheers).

After a cordial response to the toast,

The CHAIRMAN briefly returned thanks, expressing the pleasure which he had felt in rendering any services of which he was capable in favour of so excellent an institution.

Mr. Alderman MECCHI proposed "His Grace the Duke of Richmond." He said he was afraid that he could hardly do justice to his feelings in proposing that toast, because he was convinced that if there was one man who would, more than any other, be proud and delighted to find that charity prospering, that man was the noble Duke, whose health he had risen to propose. (Cheers.) Fortunately for the institution, he had had the honour to receive an invitation to visit his Grace's estate in the north, and presuming on their prior acquaintance, he wrote to his Grace to ask for an interview. This was granted, and he then asked his Grace to become the president of a charity which was about to be inaugurated in connection with the agriculture of England, adding that one reason why he made that entreaty was that the farmers of England had the greatest confidence in his Grace. The noble Duke, after making requisite inquiries, said he approved of the plan, and would do what was requested. He afterwards observed to his Grace that nothing effectual could be done for a charity without a dinner, and begged him to preside at the first public dinner of the institution, and that request also was most kindly acceded to. It was a source of deep pain and regret to him (Mr. Mechi) that his Grace could not fulfil that promise. Everyone who knew the Duke of Richmond knew that what he promised he intended (cheers), and he was convinced that nothing but severe indisposition could have led to his absence that evening. (Renewed cheers.)

In whatever point of view they regarded the noble Duke—whether they regarded him as one who had fought the battles of his country under the great Duke of Wellington, as an agriculturist carrying out improvements on his own estate with the greatest care and sagacity, or as a landowner offering the greatest facilities to his tenants for the profitable cultivation of their farms—they must all feel that he was entitled to their respect and confidence. (Cheers.) Before he consented to connect himself with that charity, his Grace took care to acquaint himself with the rules and regulations, and this rendered his sanction and support more valuable and important. It was with very great pleasure that he proposed the health of his Grace the Duke of Richmond. (Cheers.)

Mr. MECCHI afterwards proposed the health of the Vice-Presidents, coupling with the toast the name of Mr. Samuel Brooks, of Manchester, who, he said, not content with contributing liberally to the funds, had come all the way from Manchester to support the institution by his presence that evening, adding that Mr. Brooks had been engaged for some time in making a drain as deep as that room. (Laughter.)

Mr. BROOKS, in returning thanks, said that the drain to which Mr. Mechi referred had proved a great drain as regarded his pocket, and observed that he feared Mr. Mechi's course as an agricultural improver had, as frequently happened in such cases, done far more good to others than to himself (laughter).

Mr. A. WOOD, in proposing the health of the treasurer of the Institution, Colonel Hood, adverted to the fact of that gentleman having been selected by the Prince Consort to superintend his farm, and congratulated the friends of the Society on its having so excellent a treasurer.

The CHAIRMAN said he had now to propose a toast which was certainly not one of the least important on the list; it was the health of a gentleman whose career in agriculture might appear to some of the farmers of England in the present day to partake of the character assigned to the rocket, that of going up too fast and coming down too swift—"too fast," was perhaps the expression which such persons would be disposed to apply to what Mr. Mechi had done as an English agriculturist. But when was it ever otherwise with anyone who was the pioneer of any science or art? When did we ever hear of that man being popular among persons of his own class, who attempted to prove to others that what they were doing might be done better? (Hear, hear.) Of course he would be unpopular who ventured to tell others they were wrong when they thought they were right. If they listened to what farmers said of each other in any district, even of tolerably well cultivated land, they would find a very free spirit of criticism prevailing among such persons; but when a man came forward openly, and from public and patriotic motives, gave utterance openly to such opinions as were expressed by others privately, he was sure to encounter great opposition. He did not stand there to praise Mr. Mechi's farming or his writings, but he did stand there to praise him for the bold, undaunted, and, at the same time, good-natured spirit which he had constantly manifested (loud cheers). He could not have gone on so long and so perseveringly as he had done if he had not had a solid and permanent object at heart. He had now proved that he had such an object. He (the Chairman) would not undertake to say that what he did before, either practically or scientifically, proved it. He was not prepared either to assert or to deny that; but he would say that his inauguration of that Society showed that in all he had written and all he had done, he had in reality but one great object, namely, to benefit the English far-

mer (great cheering). He had visited Mr. Mechi's farm more than once, and on each occasion had heard expressions of excessive admiration on the one hand and of excessive reprobation on the other (Laughter.) Neither produced much impression on his own mind (Hear, hear.) The best farms in England no doubt afforded some material for criticism, and unbounded praise was almost sure to be wrong. Few farmers were in a position to imitate Mr. Mechi's enterprise, and few had the advantage which he possessed of calling the land which they cultivated their own, the result of that being that if there were no immediate return for the capital invested, there might be a very satisfactory one some years hence (Hear, hear.) Land was such an absorbent thing, that it was almost impossible to get a return all at once: a generation might pass away before it was witnessed; and the problem which tenant farmers generally had to solve, under the existing state of things, was how to obtain the greatest possible amount of profit within the shortest possible time (Hear, hear.) He would not presume to pronounce an opinion upon what Mr. Mechi had accomplished as a cultivator of the soil. As an owner of light as well as heavy land, he knew that what was good for one was bad for the other. He was convinced that great benefit must arise from intelligent persons who were not dependent on farming, and whose means were ample, devoting their minds and their pens to the study and improvement of agriculture in its various branches (cheers.) He always liked to see farmers themselves taking an interest in questions involving the improvement of agriculture, for when that was the case there was reason to hope that the truth would be elicited and agriculture advance. He had to propose Mr. Mechi's health more particularly, not as an agriculturist, but as the founder of that excellent institution (cheers.) He well knew with what energy and perseverance he had laboured for that object; and he believed there was not a farmer to be found in England, who, although he might often indulge in a little criticism on Mr. Mechi at an ordinary, and on other occasions, would not hereafter, at all events, if he were not so now, be deeply thankful to the man who had devoted his time and his talents, his knowledge, his experience, and his money to the founding of an institution for the special benefit of unfortunate individuals connected with their own class (great cheering.) He had then much pleasure in proposing the health of Mr. Mechi.

The toast having been most cordially responded to,

Mr. MECCHI said, it was always a very easy thing to him to talk about agriculture, but a very difficult one to talk about himself, and therefore he hoped they would excuse him for not saying much on the latter point. At the same time he could assure them that he appreciated that acknowledgment of his services very highly. Like other human beings he was apt to feel pleased when any kind thing was said about him, and he felt especially indebted to the Chairman for the manner in which he had spoken of him (cheers.) Men were not masters of their own destinies. Many a man did at 40 or 50 what he never dreamt of doing at 21 or 25; and little did he himself expect, when a young man, that he would occupy the position that he had done of late years in relation to agriculture. He had differed, and still differed from many British farmers. He said to a man who had a stiff clay farm, "Your farm would pay better if it were drained." And if the person addressed replied, "that it would not pay for draining," they were at once at issue on a question of principle, and he did not see how they were to do otherwise than differ. He believed that a hundred years hence the farmers of that period, looking back on their predecessors of the present day, would exclaim, "What an old-fashioned set of fellows those were! Why, we are doing a thousand things which they seem never to have thought of." It was not a hundred years ago since the man who introduced the drill was called a fool; and he really believed that there would be many things done fifty years hence for which any one who did them now would be exposed to ridicule. For example, all farmers were now in the habit of turning their cattle out to fatten in the cold and wet. That was the case during the whole of the last winter, while the people were paying, as they were still, a high price for their beef and mutton. The great want of farmers as regarded cattle was that they should fatten without eating much, and for that

purpose the grand point was to keep them warm and dry (Hear.) How did the Manchester manufacturers act with regard to the people whom they employed? Why, they took care to keep them warm and comfortable, well knowing how much they do with health and vigour. They avail themselves for that purpose of the waste steam of their engines—he believed that in less than a hundred years every farmer in this country would have plenty of steam—and in that manner they no doubt promoted their own interest as well as that of their work-people. He was convinced that the time would soon arrive when it would be as customary to regulate the temperature of the bullock-house as it was to regulate that of the factory, and the tendency of that would be to cheapen beef and mutton to the public, and at the same time to ensure to the farmer a larger profit (cheers). His heart was, he assured them, cheered by the spectacle which he witnessed that night. He had long been in the habit of presiding at public dinners—when Sheriff he had presided at two in one day; and while attending the anniversary festivals of charitable institutions for the trades of butchers, fishmongers, and many other callings—for there was hardly one which had not charity connected with it—he had often asked himself why it was that the most powerful and perhaps the richest interest in England, that of agriculture, had no institution for the relief of distressed persons connected with it (Hear, hear). The farmers of Great Britain paid £50,000,000 a-year as rent to their landlords, and the land they cultivated was worth in the market twenty-eight years purchase. How was it then, that agriculture stood alone in possessing no charity for the benefit of those who followed its pursuits? Such was the train of thought which had often occurred to his mind, and it was that which led him to take the course that he had done in reference to the object which they were assembled to advance (cheers). Railways and the penny postage system had enabled him thus far to carry out a design which a few years ago would perhaps have been impracticable in consequence of agriculturists being such a widely-scattered body and the vast unavoidable expense of communication; and he trusted that in reference to that object, as well as in other matters directly connected with their interests, farmers generally were now about to lose their isolation, and to become a homogeneous body, conscious of, and energetically using, their own power for their own benefit, and at the same time for that of the community of which they formed such an important part. He did not know any body of men who were more hospitable than farmers, and hospitality and charity were, he need scarcely say, closely allied (cheers). He trusted that that was the beginning of great things, and that the institution

would not want adequate support. He was not one of those who believed in the poverty of agriculturists as a body. That was all fudge (laughter). Agriculture was powerful and wealthy; its resources were, moreover, constantly accumulating; and if only a very moderate amount of the spare money of farmers were devoted to the encouragement of this new charity, there would be ample provision for such cases as it was intended to meet. (Hear, hear). That an institution of that kind was needed no one could doubt who had at all reflected on the matter or observed what was continually passing around him. Only that day he had received a letter from a decayed farmer, who, after having occupied 700 acres of land for a considerable period, had been ruined by his own children, and was now in a union-house; and whether it was from such a cause as that, or from the want of tenant-right, or from some other of the numerous causes of failure to which farmers were subject, cases must frequently present themselves in which charitable aid was absolutely indispensable to prevent others from being placed in a similar position. He thanked them most cordially for their presence that evening, and was amply rewarded by it for any labour which he had performed or any anxiety which he had suffered in the inauguration of the institution (cheers).

Mr. WALTON expressed his gratitude to persons unconnected with agriculture who had lent their pecuniary aid and their countenance to the formation of the charity.

Mr. JOHN CLAYDEN proposed "The Council of the Society," observing that those gentlemen had devoted their time and their talents to the revision of the rules of the institution, and had thus no doubt contributed greatly to its future usefulness. He trusted that all farmers who were themselves in a prosperous condition would feel it to be a duty to subscribe towards the support of an institution which was formed for the benefit of their own class.

Mr. BATSON, in acknowledging the toast on behalf of the Council, testified to the unanimity which had characterized their proceedings, and to the great assistance which they had received from Mr. Mechi and his partner Mr. Bazin, who had both laboured to the utmost in laying the foundation on which the Council hoped to be enabled to rear a goodly structure (cheers). The toast of "The Stewards" having been proposed by Mr. Griffith,

Mr. R. W. BAKER returned thanks, remarking that he regarded his connection with that institution as one of the happiest circumstances of his life.

The CHAIRMAN then gave "The Ladies," with which toast the proceedings terminated shortly before twelve o'clock.

ON THE INFLUENCE OF CLEARINGS IN THE DIMINUTION OF RIVERS AND STREAMS.

[TRANSLATED FROM THE "JOURNAL D'AGRICULTURE PRATIQUE."]

It is an important question, much agitated at the present time, whether agricultural operations have any effect in modifying the climate of a country. Extensive clearings, the draining of marshes, which effect changes in the distribution of heat during the different seasons of the year, do they also exercise an influence on the running streams which water a country? whether in diminishing the quantity of rain, or in promoting a more quick and rapid evaporation, where extensive forests have been cut down, and transformed into cultivated farms?

In numerous localities we have believed it to be apparent that since a certain period watercourses formerly employed as mill races have very sensibly decreased. In other cases, there is reason to think that the rivers have become less deep; and the increasing extent of the spaces covered with single appearing on their shores, seem to attest the diminution of a part of these waters. Lastly, once abundant

springs have almost dried up. These remarks have reference principally to valley overhung by mountains, and we believe we have observed that this diminution of the waters has followed closely upon the period at which they began to destroy, without any consideration, the forests which were scattered over the face of the country.

These facts seem to indicate that wherever these clearings have taken place it rains less than formerly. This is in fact an opinion which very generally prevails on this point; and if we admit it without a more close examination, we should be led at once to draw this conclusion, that clearings diminish the annual quantity of rain that falls upon a country. But at the same time that we have stated the above facts, we have observed that since the clearing of timber from the mountains, the rivers and torrents which appear to have lost a portion of their waters exhibit risings so sudden and extraordinary as to produce

often great disasters. In the same manner we have seen springs nearly dry, in consequence of violent storms give out all at once with impetuosity, and dry up soon after.* Those last observations, we can easily conceive, ought to caution us not lightly to embrace the common opinion, which assumes that the felling of woods diminishes the annual quantity of rain; for it is not impossible that not only this quantity has not varied, but it may prove that the volume of the stream-waters has remained the same, in spite of the appearance of drought presented at certain seasons of the year, by the rivers and springs. Perhaps we shall find that the only difference is, that the flow of the same mass of waters becomes more irregular by the effect of cutting down the woods. For instance, if the lower waters of the Rhone, during a part of the year, were exactly compensated by a sufficient number of large floods, it would result that, at present, that river still bears to the Mediterranean the same volume of water it formerly poured into it at a period anterior to the clearing of the woods that has taken place near its sources, and when probably its mean depth was not, as in our days, subject to such considerable variations. If such was the case, the forests would have still this advantage, that they regulate, and in some manner economise, the flow of water. If, in reality, this flow becomes less abundant in proportion as the clearings become more extended, it ought to follow that the rains also are less plentiful; or rather that the evaporation is greatly promoted by depriving a soil of trees, so that it is no longer sheltered from the sun's rays and the wind. These two causes operate in the same way, and ought often to combine; and, without seeking to estimate separately what belongs to each, we must, in the first place, examine whether it is well established that the streams diminish on the face of a country in which great clearings are effected; in a word, we must ascertain whether we have not taken an appearance of the fact for the reality. Here indeed lies the question, and we must see if nature has not provided an order of phenomena that may serve as a guide to solve it.

The lakes without outlets that we meet with, whether on the plains or on different elevations of the chains of mountains, appear to me eminently proper to enlighten the discussion. We ought, in fact, to consider them as natural gauges, destined to render valuable, on a colossal scale, the variations to which the streams which water a country are liable. If the mass of these waters are subject to a variation of any kind whatever, it is evident that that variation will be indicated by the average level of the lake, for the reason which causes the level of a lake to vary at different seasons of the year, according as it proves dry or rainy. Thus the mean level of a lake will be lowered if the annual quantity of running water it receives diminishes. On the other hand, it will rise if the supply is increased. In short, this level will remain stationary if the volume of water that is returned to the lake proves without variation. In this discussion I have preferred taking the case of lakes without issue, the reason for which it is easy to perceive, since it involves changes of level frequently very small. In the meantime, I have not overlooked what relates to those lakes which discharge their waters by a channel, because I am convinced their study leads to very exact results. Before going into the subject, I must give some explanation, in order to define what I understand by *changes of level*.

Geologists know that everywhere on the surface of the

globe the level of the waters *appears* to have undergone considerable variations, whether we seek for them on the sea shores or on the borders of lakes. The fact is universal, and not doubted by any one; but they are not so generally agreed upon the reality of the phenomenon; some, and that the majority, pretend that in many cases the change of level is but apparent, that the masses of water are not lowered, but that the banks have been elevated; others, on the contrary, perceive a real disappearance of the mass of liquid, a true drying up; and reasons are urged in favour of both points of view. It is not my task to take a part, for the moment, in the dispute which divides the geologists; I shall have no occasion to occupy myself with the shores washed by the ocean; nor shall I more avail myself of the great differences of level that have evidently taken place in certain lakes, in consequence of certain geological circumstances, the examination of which is not in the limits of my subject. These displacements, frequently enormous, appear in general to have been occasioned by violent catastrophes, which, with very few exceptions, are anterior to historical periods. I shall make use only of the changes of level noticed in the lakes by our predecessors or our contemporaries. In a word, I shall attach value only to facts that are accomplished under the eyes of men, since it is the influence of these works upon the meteorological state of the atmosphere that I propose to appreciate. What I have to relate has been particularly observed in America. However, I shall endeavour to establish, that what I believe to be true for America will be applicable to every other continent.

One of the most interesting portions of Venezuela is undoubtedly the Valley of Aragua. Situated at a short distance from the coast, endowed with a warm climate, and a soil of unexampled fertility, it embraces all the productions proper to the tropical regions with those of Europe. Wheat succeeds on the high grounds of Victoria. Limited on the north by the chain of sea coast, on the south by a system of mountains, which separate it from the Llanos, the Valley of Aragua is inclosed on the east and west by a series of hills which completely shut it in. By this singular conformation the rivers which take their rise in its interior, having no embouchures towards the ocean, form by their union the fine Lake of Tacaragua or Valencia, which, according to Humboldt, exceeds in extent that of Neufchatel, and is elevated 439 metres (about 1,410 feet) above the sea. Its length is about ten leagues, its greatest breadth does not exceed two-and-a-half leagues. At the time when Humboldt visited the Valley of Aragua, the inhabitants were suffering from the gradual drying-up of the lake, which had been in progress for thirty years. Indeed it is quite sufficient to compare the descriptions given of it by historians with its present condition, to acknowledge, after allowing largely for exaggerations, that the waters have considerably diminished: the facts speak loudly enough.

Oviedo, in his history of the province of Venezuela (re-published in 1725), who, at the end of the 15th century, had so often gone over the Valley of Aragua, says positively that Nueva Valencia was founded in 1555 at half a league from the Lake of Tacaragua. In 1800 Humboldt found that city 5,260 metres (about a league) from the shore.

The aspect of the ground exhibits in other respects new proofs; many hillocks of the plain still retain the names, to this day, of isles which they formerly bore with more propriety when they were surrounded with water. The lands, laid bare by the retreat of the lake, were transformed into admirable fields of cotton tree, bananas, and sugar cane.

* Observations communicated by M. Larivière, at a sitting of the Society of Natural Science.

Buildings raised upon the shore saw the waters withdraw year by year. In 1796 new islands made their appearance. An important military post, a fortress built in 1740 on the island of *Cabrera*, was then found on a peninsula. Lastly, on two islands of granite—those of *Cuba* and *Cabo Blanco*—Humboldt found, in brushwood, at some metres above the level of the waters, naked sand filled with helictes. Facts so clear and certain have not failed to give rise to numerous explanations, which had all, in common, a subterranean issue, permitting the waters of the lake to have a free escape towards the ocean. Humboldt did justice to these hypotheses; and, after a mature examination of the localities, that celebrated traveller does not hesitate to ascribe the diminution of the waters of the Lake of Tacaragua to the numerous clearings executed during half a century in the Valley of Aragua. "In cutting down the trees which covered the summit and slopes of the mountains," he says, "man, under all climates, prepares for future generations two calamities at once—a want of fuel, and a scarcity of water."

Since Oviedo—who, like all chroniclers, has kept a profound silence respecting the diminution of the lake—the cultivation of indigo, sugar cane, cotton, and cacao, has been extensively developed. In 1800, the Valley of Aragua shewed a population as dense as the best peopled parts of France. Travellers were agreeably surprised at the comfort which reigned in the numerous villages of that industrious country. Such was the prosperous state of that fine district when Humboldt dwelt at the Hacienda of Cura.

Twenty-two years later I explored in my turn the Valley of Aragua. I had fixed my residence in the little town of Maracay. For many years the inhabitants had observed that not only had the waters of the lake diminished no longer, but that they had exhibited a very perceptible increase. Fields formerly occupied by cotton plantations were submerged; the Isles of Las Nuevas Aparecidas, which rose above the surface in 1796, had again become shallows dangerous to navigation. The tongue of land of Cabrera on the north side of the valley had become so narrow that the smallest swell inundated it to such a degree as to submerge it. A north-east wind was sufficient to overflow with water the roads of Maracay and Nueva Valencia.

The fears which were for a long time entertained by the owners of property on the shores were changed in their character; they no longer dreaded the complete drying-up of the lake; but they asked if the successive invasions of the waters would continue, for any length of time, to take away their lands. Those who had explained the diminution of the lake by imaginary subterranean channels now endeavoured to show that they were stopped up, in order to find a reason for the change.

In the twenty-two years that had passed great political events had been accomplished. Venezuela no longer belonged to Spain; the peaceable Valley of Aragua had been the theatre of the most bloody struggles; war to the death had devastated those smiling countries, and decimated their populations. At the first cry of independence a great number of slaves obtained their freedom under the flag of the new republic. The extensive cultivation had been abandoned, and the forest, so encroaching under the tropics, had soon resumed a great part of the land which men had snatched from it by more than a century of constant and painful labour.

During the prosperity of the Valley of Aragua the different tributaries of the lake were made use of for numerous irrigations. The beds of these rivers were found to dry-up during more than six months of the year. At the

period of which I speak, the waters which were no longer utilized flowed at liberty.

Thus, during the development of agricultural industry in the Valley of Aragua, when the clearings were multiplied and extensive cultivation was carried on, the level of the lake gradually lowered. At a later period, during a period of disasters happily passed away, the clearings were arrested, the lands occupied by cultivation have partly returned again to forest; then the waters ceased to sink, and soon after an ascensional movement was very perceptible.

I shall now shift the discussion, without however quitting America, to a region where the climate, analogous to that of Europe, admits of the culture of cereals. I refer to the plateau of New Grenada, of those high valleys, elevated from 2,000 to 3,000 metres, and in which they enjoy a temperature of 14 deg. to 16 deg. centigrade.* The lakes are numerous in the Cordilleras, and it would be easy for me to describe a great number of them, but I shall confine myself to a description of those which have been the subject of ancient observations.

The village of Ubaté is situated in the neighbourhood of two lakes. Sixty years ago these two lakes formed only one.† Since that period the waters have been noticed to diminish gradually, and new shores extended themselves from year to year. At the present time, fields of wheat of extreme fertility cover a tract that thirty years ago was completely under water.‡

In going over the environs of Ubaté, consulting the old hunters of the country, and inspecting the archives of the parishes, we ascertained that numerous forests have been cut down. These clearings continue, and it is evident that the retreat of the waters, although much slower than formerly, has not yet wholly ceased.

The Lake of Fuquené, situated in the same valley, to the east of Ubaté, claims all our attention. By barometrical measurements made with extreme care, I have found that it has the same elevation as those of Ubaté. It is nearly two centuries ago that this lake was visited by Don Lucas Fernandez de Piedraheita, Bishop of Panama, author of the *History of the Conquest of New Grenada*. This writer, of whom I have more than once had occasion to state the exactness of the estimate he has made of distances, gives to the Lake of Fuquené a length of ten leagues and a breadth of three leagues.|| By a happy circumstance Dr. Roulin had occasion some years since to draw a plan of this lake, when he found it a league and a half in length and a league in width.

It might be feared that the dimensions stated by Piedraheita were exaggerated, but I do not think so; and in forming my opinion on the one hand on my own barometrical levels, and on the other on the silence of chroniclers in regard to the Lakes of Ubaté, which is the more remarkable that they make mention of collections of water much less considerable, I am inclined to believe that at the period at which the Bishop of Panama visited that country there was only one large lake, which extended without interruption from Ubaté to Zimijaca. With this supposition, the estimate of Piedraheita was in no respect exaggerated. In other respects the fact of the retreat of the waters is much more important than the estimate of the surface of the land

* The centigrade thermometer has 100 degrees between the freezing and boiling points (32 deg. and 212 deg. of Fahrenheit).

† I found the elevation of these lakes to be 2,532 metres.

‡ The lowering of the mean level of a lake is so much the more easy to ascertain, that a reduction of 3 or 4 inches often lays dry a large surface of land.

|| Piedraheita: *Historia de la Conquista de la Nueva Grenada*, page 5.

left dry; and this fact is doubted by no one. The inhabitants of Fuquené all know that the village was built near the lake, whilst now it is nearly a league off. Formerly they proquired without difficulty the wood for building purposes, the adjacent mountains being covered with timber proper to these cold regions, to a certain height. The oak of the Cordilleras (*encino*) abounded there; the laurels (*myrica*) also abounded, from which they extracted a large quantity of wax. Now, these mountains are almost wholly denuded of wood, and it is principally the working of the salt springs of Taosa and Enemooon that has been the cause of the rapid destruction of the woods in the neighbourhood of Ubaté and Fuquené. To these authentic facts, which I might if necessary multiply, it will doubtless be replied, that the disappearance of the waters, however incontrovertible it may be, might have taken place without the clearing of the forests. They may strictly maintain that the drying-up of the waters is to be ascribed to a totally different cause, to us unknown; and that we must range it among the numerous phenomena of which we can prove the reality, but that it is not given to us the power to explain.

I have not cited here, as I might have done, in respect to the Lake of Valencia, a recrudescence of the waters, occasioned by the abandonment of cultivation, and the re-appearance of new woods. I might, however, urge in favour of the opinion I defend, the slowness of the drying-up in the Valley of Fuquené, since the felling of the trees ceased. The cultivators finding those fertile tracts, formerly left dry by the retiring lake, no longer forming themselves so rapidly, endeavour to obtain directly what they obtained by the effect of clearances. It was for this object that, in 1826, some speculators proposed a scheme for draining entirely the bottom of the Valley. I prefer, however, to bring forward a proof of another kind, by shewing that those lakes which are in such a position that no clearance of the woods has taken place in their vicinity, have displayed no alteration in their level.

I shall begin with the Lake of Iota, because that it is not very far from Fuquené, that it is found in similar geological circumstances, and that it is at the same time the most singular of the lakes of New Grenada.

The Iota is situated upon a very elevated point of the Cordillera of Sogamoso; its altitude approaching to nearly 4,000 metres. At this height vegetation almost entirely

disappears. Here and there we see dispersed over the grey rocks some of the plants which characterise the region of the Paramas, such as saxifrages, frelejosas (frail cheeks), covered with a thick down, and those grasses, similar to dry straw, which has given to the Savannah the title of *Pajonales*.

The lake is nearly circular, and *Piedraheita*, who visited it in 1652, states it to be two leagues in diameter. Its waters, when they are raised by the wind, form waves which render navigation dangerous. A tradition, much anterior to the discovery of America, gives residence in the lake to a marine monster, and this it is who agitates the water, and pours it over the road passing along the shore.

Persons worthy of credit have assured me that they have seen on the surface of the lake, not a monster as the Indians assert, but a mass of water rise suddenly, and communicate in falling so great an agitation to the body of the lake that its waves instantly inundate the road over which travellers must pass. Every one will call to mind in this description a phenomenon analogous to the *seiches* of the Lake of Geneva. The Indians pretend to be able to predict, by the aspect of the atmosphere, the approaching agitation of the water, or, as they say, when the lake will get angry. It is then prudent to avoid travelling on its shore. In 1652 the road passed, as it still does, quite on the shore of the lake, and the *seiches*, which succeeded each other then with as much frequency as at present, rendered the passage quite as dangerous, the road running between the lake and a wall of high rocks. The waters wash the same rocks, and their level has experienced no more change than that desert and barren country that surrounds it.

Perhaps it will not be considered necessary to bring into the discussion the description of a lake placed at the extreme limit of vegetable life.

Apprehending that the example which I have selected, because it appeared a striking one to me, may be rejected, just because it is taken from the midst of a rocky country stated to be destitute of vegetation, I feel myself compelled to describe new lakes less elevated than that of Iota, the waters of which have remained stationary for centuries, although they are placed in the centre of a country enriched by its agriculture, but whose aspect has never changed. It is near the equator, in the Province of Quito, that I have studied them.

(To be continued.)

NOTES IN THE PARIS PALACE OF INDUSTRY.

In the first place, what a magnificent building! how precisely adapted in every part for the purposes of a show like this! How can we manage in London without a similar permanent pavilion, conveniently situated, within reach of all visitors, whether from the busy streets of the city, the residences of the West End, or from the railways which surround us at all quarters? Then how tastefully and agreeably is the central nave laid out in garden beauty and pleasantness, with objects of art to deck the scene, and so much space provided for air and light, that the presence of the cattle classes, in long colonnades of substantial stalls, distributed around the floor of the immense palace, offends not the most delicate sensibility of visitors; and the vast assemblage of people perambulate without crowding or annoyance, to inspect the wonders at their pleasure. The stalls are so admirably arranged, that, while I can walk straight through the classes of cows

or of bulls of all the different breeds, without break or interruption, I find all the animals of each breed in the same neighbourhood, only occupying different aisles or standing-places, according to their sex or age; an arrangement which facilitates the comparison of the breeds. Again, what excellent sheds and pens for sheep and swine outside the building! and what complete stables for the great show of horses in another part of the palace grounds! Or, in the implement department, what a facility it is, to have the different varieties of implements or machinery classified and placed together! and in the galleries, how orderly is the arrangement of the myriad products, and contrivances, and stands for the display of artistic objects! I buy a catalogue, and find in its ample, large-typed pages, an arrangement which pleases me; for the French have a talent for analysis, and the orderly marshalling of details. The show of breeding animals is not all under one management, the

horses being an entirely separate affair; but still in the catalogue all appear as one. The horse division of the show is in five categories for horses for different purposes, these being divided into sections for different breeds, and then subdivided into animals of different ages, and these still further into male and female. A sixth category is added for mules; and asses are classed in a category to themselves. The exhibition of breeding stock, implements, and products, is in three great divisions. The first is in five classes, namely—cattle, sheep, pigs, domestic animals, and birds of the courtyard. The cattle class is divided into categories for different breeds, these into male and female, and these again into sections for different ages. The sheep class is divided into categories for different breeds, these into sections of different ages, and then into male and female. The pig class is in categories for different breeds, divided into male and female; and so on. The implement division has its entries alphabetical, according to the exhibitors' names; and the division of products is arranged according to the geography of the country which has furnished the specimens—the departments of France being classed into twelve regions; the catalogue, however, following the alphabetical order of the exhibitors' names.

In going through the stock classes, I am surprised at the measure of improvement apparent since the exhibition a few years ago. I see in the red cattle of Salers and Auvergne, in the fawn-coloured Parthénais of Poitou, in the yellow-brown Gascon, with lyre-like horns, points capable of being developed very quickly into animals of most superior character. The compact Charolais and Garonnais, as well as many of the cream-coloured beeves, are already good sorts; while the Normandy oxen are capable of giving any amount of good beef, and the Dutch cows are superb for dairy purposes. France exports only about nine million pounds of butter annually, while little Belgium exports more; and we English receive four times this quantity from Holland. The amount of butter sold yearly in the Halle of Paris averages 15 or 16 million pounds; but in the rural districts, particularly of the south, butter, no matter how good its quality, is a scarce article; and in the matter of cheese the English beat the French by long odds. The cattle are so largely used for ploughing and carting that meat and milk are mere secondary considerations. The crosses with our shorthorns show the wonderful improvement to be effected in the native breeds by their use; and the Government may well derive encouragement from this show to persevere in its patronage, and their exertions in the cause of agriculture and live stock. It is an interesting fact that the £83,000 spent by the Belgian Government some years ago, in the province of West Flanders, in the purchase of Durham bulls and cows, produced the happiest effect; and amongst the whole herd of cattle in that province, nearly all have manifested the improved form and economical qualities derived from the crossing.

I see in the pig pens some pretty good specimens, but they are mostly of English breed. France, large as it is, does not feed more hogs than England does, and certainly slaughters them much older. The peasantry don't eat meat, except very rarely; they live on bread and cider, soup, peas, and cabbage, in the north; and in the south they drink wine, very *ordinaire*, and have chestnuts instead of apples and pears.

The merino sheep are in great force, and we have here also many specimens of the French native breeds, and of breeds improved by crossing; together with many Leicesters and Downs. The south of France produces the fine wool, the mutton coming chiefly from the north and centre. The Paris abattoirs are supplied with sheep from Flanders and Artois, which are the first

comers after Lent; then arrive muttons from Brabant, from Alençon, Bourbonnois, and Poitou. Sheep from Berri come in June; then from Hainault and Normandy. During the autumn, the forest of Ardennes, Touraine, Liege, Brabant—all supply fat sheep to Paris; and they come from Brie and Beauce to the middle of winter, followed by animals from Picardy, Santerre, and Beauvais. Paris draws one-third of its mutton from the country within thirty miles around; one-third from the Ardennes, Alsace, Lorraine, and the German States, to which Lorraine graziers travel to buy sheep. The hornless white-faced sheep of the lower basin of the Seine are akin to our Kents, and to the sheep of Flanders; in Normandy, the flocks, with red legs and faces, are of a moderately large kind, and have heavy long wool, manufactured into serges at Valogne. The real French long-wool is a thin-carcased, coarse-fleeced animal, with long legs; but now much improved. The Pyrenees support a black-faced sheep; and in south-eastern France are immense flocks of short-wools, grazed in winter in the valleys, and in summer on the Alps. The Auvergne sheep are a mountain-breed; the Berrichons a good sort, capable of much improvement. Some Piedmontese sheep are exhibited, with long lapping ears and short hairy wool: in fact, like huge rabbits more than sheep. One of the most interesting portions of the sheep-show is that of the Mauchamp variety of merinos, having a new kind of wool, glossy and silky, similar to mohair. This is an instance of an entirely new breed being as it were created from a mere sport of Nature; it was originated by Mons. J. L. Grewx, of the Farm of Mauchamp, Commune de Jurincourt, Department of Aisne. In the year 1828, a merino ewe produced a peculiar ram-lamb, having a different shape to the usual merino, and possessing a long, straight, and silky character of wool. In 1830, M. Grewx obtained from this ram one ram and one ewe, having the silky character of wool. In 1831, among the produce were four rams and one ewe with similar fleeces; and in 1833 there were rams enough of the new sort to serve the whole flock of ewes. In each subsequent year the lambs were of two kinds: one possessing the curled elastic wool of the old merinos, only a little larger and finer; the other like the new breed. At last, the skilful breeder obtained a flock combining the fine silky fleece with a smaller head, broader flanks, and more capacious chest; and several flocks being crossed with the Mauchamp variety, have produced also the Mauchamp-merino breed. The pure Mauchamp wool is remarkable for its qualities as combing-wool, owing to the strength, as well as the length and fineness, of the fibre. It is found of great value by the manufacturers of Cashmere shawls and similar goods, being second only to the true Cashmere fleece, in the fine flexible delicacy of the fibre; and when in combination with Cashmere wool, imparting strength and consistency. The quantity of the wool has now become as great or greater than from ordinary merinos, while the quality commands for it twenty-five per cent. higher price in the French market. Surely breeders cannot watch too closely any accidental peculiarity of conformation or characteristic in their flocks or herds.

In the matter of machinery and implements these French engineers are outrageously ingenious: they are too clever by half. I see here all descriptions of horse-power, and thrashing-machines for small occupations. Some makers erect a pillar or standard, round which the horses walk, and multiply gear causes a hand-wheel at the top of the standard to revolve rapidly, and so drive a machine by a strap above the horses' head. Another inventor builds his whole thrashing-machine, with drum, riddles, straw-shaker, winnower, &c., upon the middle of his horse-work frame, and the horses

walk round, passing beneath the straw-shaker. The mode in which this arrangement is carried out in several instances reminds us strongly of the children's roundabouts in the gay avenues of the Champs Elysées.

Some curious contrivances are shown in the valves, governors, &c. of steam-engines: one portable engine has its cylinder, crank-shaft, bearings, pump, &c., and all its working parts, fixed on a cast-iron bed-plate, bolted on the top of the boiler. There is some extra weight in this arrangement, but it gives the facility of being able to remove at pleasure the whole of the engine from the boiler, for repairs or other purposes. One manufacturer constructs a portable engine and thrashing-machine, all upon one pair of carriage-wheels. Endless-belt straw-shakers are very common; and riddles of various kinds, attempt to solve the very difficult problem of the best shaped hole or slat, &c., for separating corn from cavings. In the way of grass-mowers there are several contrivances for mowing by revolving scythe-blades, attached to a little machine pushed forward by hand. There is actually a scythe-blade mounted on a support, with small travelling-wheels: this is drawn forward by a cord coiled round the barrel of a small portable windlass in the form of a strong dung-fork. While one man winds up the rope with a wrench, another man guides the travelling scythe, giving it a slashing motion by means of a handle. There is one mower with small cutters on an endless chain; one with fixed cutters, and the fingers made to oscillate with a radial motion, and so clip the grass; and there are several machines with endless-chain, endless-bands, &c., for delivering the cut hay in a swathe. One machine is of triangular knives, in shape like a thistle-cutter, or a snow-plough; one machine has the old revolving disc, with fixed fingers to hold the gear. One machine, very cumbersome in its construction, has a novel method of allowing the cutter-bar to adjust itself to inequalities of ground; the cutters are in front of the main frame, and hung upon a loose frame balanced upon an axis at right angles to the advance of the machine. There is a colossal horse-rake, for drawing up hay into winrows, but its action was very imperfect. There are horse-rakes in which the driver is mounted upon a seat over the front, just behind the horse's tail, and delivers the collected hay by depressing a foot-board: but of course, to know if you are doing your work clean, you ought to follow the implement and see how the work is being done. I cannot detail all the implements here exhibited of English makers through their agents, but I am sorry to say that the judges being to a considerable extent Parisian gentlemen instead of practical farmers, have given prizes to implements with little comparative merit, and at any rate have looked well to the credit of the native makers. Howard, Ransomes and Sims, Garrett, Barrett and Exall, Ashby, Page, and many other well-known firms, are here; also Smith's and Fowler's steam-ploughs. A large number of English implements arrived too late for admittance into the show, among which were a large assortment of Bental's broadshares, pulpers, &c., and Bradford's new washing-machine. The steam-plough of M. Lotz, of Nantes, is an unmechanical imitation of some English inventors: the barrels (on a fixed windlass) upon which the wire ropes are wound, are only some 18 inches diameter; the sheaves or pulleys even smaller. The anchorages are of plate-iron, like long flat pans turned upside down, the flanges cutting into the soil, and presenting resistance to a side strain. They are drawn forward by a hand windlass, like that of an old-fashioned wind-mill. The implement is a single turnwrest plough of large dimensions, for deep work.

In the galleries of the Palace is a wonderful and most interesting collection of products and materials useful

to agriculture. The various agricultural associations of France contribute samples and specimens from the different departments: there are a great number of stalls and stands filled with the productions of private exhibitors; and the special shows of colonial products are valuable and elaborate in the extreme. We have grains, fruits, collections of insects, wools, wines, products of agriculture, products of the forest, as fuel, charcoal, bark, timber, acorns, mast, nuts, resin, &c.; in fact, a complete study of the whole would occupy many months, and a due report would fill many volumes. The grand exhibition of colonial produce includes infinite specimens of woods, textile raw materials, cotton, &c., silk, dyes, gums, oils, meals, sugars, alcohols, coffees, spices, medicines, grains, tobacco, honey, wax, &c., &c., &c.

The whole value and significance to us of the exhibited agricultural productions of France itself, is dependent upon our knowledge of the surface which yields them; a few facts may, therefore, be of service. The whole French territory is about 130 millions of acres, about two-thirds of which area is cultivated, and so largely are grain crops grown, that while a proportion of only one-sixteenth of the whole surface of Britain is so appropriated, nearly a quarter of the entire surface of France is under cereal crops. The disparity in the quality of husbandry, however, is so wide, that if the French average yield equalled ours, their gross produce would be double its present figure: for the French average is only 14 bushels of wheat or 11 of rye per acre. Owing to the backward state of agriculture in the centre and south, wheat cannot be grown as the chief grain crop, as with us. In a country sparsely peopled, that is, having scarcely any large towns, little or no manufactures, and trade confined to the limited wants of the inhabitants, the cultivators are not able to introduce such improvements in management as are necessary to the successful growth of wheat; they raise wretched yields of rye instead, as the English formerly did; the climate enables them also to raise maize and buckwheat; so that the harvest of these three grains amounts in quantity of produce to much more than half the amount of wheat. There being no market at hand, the expenses of transport to the north as to the coast would in many districts equal the entire value of the produce: the metayer and his master cultivate the crops merely for a bare subsistence, and, land being abundant, and following sufficient to support such poor cropping, have no inducement to enter upon a better system. While the cultivated land of England may average £32, that of the north of France is £24, and of the south half £16 per acre, in money value.

Of the best vineyards, the gardens, the lands bearing flax, hops, mulberry, tobacco, and madder, the produce rises as high as £20, £30, or even £50 per acre. The general average of animal and vegetable products of the cultivated land, excluding the extremes of wood and water, and these highly managed lands, is about 34s. per acre. Dividing France into two equal portions, north and south, there is a gross production of £2 per acre for the northern division, and 26s per acre for the southern, which ought to be the richest. In some localities, as in the environs of Orange and Avignon, the vineyards of Cognac and Bordeaux, the districts producing oil, silk, &c., the returns are magnificent; but the *landes* and the mountains cover a fourth of the soil, and the remainder is most of it farmed without capital or intelligence.

Comparing the departments together, the most productive are those of the Nord, Pas-de-Calais, Somme, Oise, and Seine-Inférieure, where the average gross production is 66s. per acre. The department of the Nord produces at least £5 per acre, but this is the only

one so high. Those which produce the least are the Landes, Lozère, Hautes and Basses Alpes, and especially Corsica. The average may be about 10s. per acre. The rest of France varies between those two extremes.

The gross production of England per acre is reckoned at just double that of France: but while our animal and vegetable produce are about equal in value, in France the animal produce is only one-third.

I shall close my random notes by a curious instance of an improvement in breeding a kind of live stock which is a novelty to the English farmer. The French raise £600,000 worth of raw silk every year, and the breed of silk-worms (*Bombyx mori*) is a matter of importance, and there is a central society of Sericulture in France to watch over the silk production. The main object is to obtain cocoons of a large size, composed a long, strong, very fine, even, and lustrous thread. There are three main varieties of silk-worms, the "Sina," the Syric," and the "Novi." The Sina is noted for the pure whiteness of its silk, the thread of which is fine but weak, and lustrous. The Syric variety is of a larger size, produces a cocoon abundant in silk, but the thread is rather coarse, and inclines to a greenish tint. The Novi race is small, but the cocoons are firm and well made, and the silk has a yellowish tint. Thus there are good qualities and defects in all,

and it takes the best points of three silk-worms to form a perfect one. Can the principles of breeding be applied to these singular insects? Well, at our Great Exhibition of 1851, Count de Bronski, of St. Selves, near Bordeaux, showed some specimens of a new breed, the cocoons remarkable for their large size and regularity of form, and the silk for the unusual length of the thread, its natural pure white colour, its fineness and lustre: just the three prime merits of the different breeds united together. How were the cocoons obtained? In 1836, Major Bronski reared separately the eggs of the three fundamental varieties. In 1837, he set apart cocoons of Syric and Novi; and on the exclusion of the imago, or perfect insect, he associated the males of the Novi with the females of the Syric: the hybrid ova being hatched in 1838. The operation was repeated in 1838 and 1839. In 1840, he associated the males excluded from the large cocoons of the black worms, with the females excluded from those of the white worms. In 1841, he associated the Sina males with the hybrid females obtained from the above crossings of the Novi and Syric breeds. He at length succeeded in obtaining a race of silk-worms not subject to disease, producing large and equal-sized cocoons of a pure white colour, the silk of which is equal in all its length, strong and lustrous, and presenting an average length of thread of 1,057 metres, or 1,156 yards.

A RETROSPECT OF THE LEADING FEATURES OF THE IMPLEMENT DEPARTMENT OF THE WARWICK SHOW, 1859.

No. III.

In noticing the novelties in the department now under consideration, namely, the cultural implements, we commence by giving a brief description of the patent plough of Messrs. Hornsby and Son, of Grantham. This plough, from the excellence of its construction, and the work performed by it, created quite a sensation amongst agriculturists present at the trial; and proved that a new plough was introduced which was likely to compete with every chance of success with the established implements of Howard or of Ransomes. The "beam frame" or "body," and the "stilts" or "handles," are all of solid wrought iron. The "share" and the "mould board" are carried by the "sole" or "slade," instead of being attached to the "frame," as in ordinary ploughs. The sole is thus the foundation of the plough. The front part of the sole is made hollow and of a spherical shape; this receives the hinder end of a lever. The lever passes through a conical opening, so that it is capable of adjustment. To the back part of the framing an adjusting stud is bolted; to this the back end of the lever is attached by a bolt and nut, by adjusting which the lever can be moved laterally from left to right or *vice versa*. This adjusting stud carrying the lever is itself capable of vertical adjustment in a curved slot made in the framing. The lever carrying the share is thus capable of two adjustments—one vertical, elevating or depressing the point of the share; and the other lateral, in a horizontal plane. This last gives an adjustment towards the land side of the plough, without raising the share above or below the level of front of mould-board. The coulters are fastened to the beams by simple wrought-iron clips; and the wheels are so adjusted as to run nearly opposite each other. The lines of the mould-board are beautifully laid down.

Mr. Law, of Shettleston, near Glasgow, exhibited "Delta's"

patent ploughs, "swing," "wheel," and "drill." In these the body is of cast-iron, of an I section. Mr. Snowden, of Longford, near Gloucester, exhibited Woofe's patent paring plough. This implement is gradually working its way into high repute from the precision with which it pares and cuts off the sod. The turf is cut longitudinally by means of a thin or knife-edged disc or wheel, the axle of which revolves horizontally in the front part of the framing. To this axle a cross-cutting knife is attached, revolving in a direction at right-angles to the length of strip of turf. As the strip is cut by the revolving disc, and raised up by the "share" of the plough, the cross-cutter at each revolution cuts the strip transversely at distances of 24 inches, while the mould-board lays over and reverses the strip of turf or sod at the side of the plough as it progresses. A continuous strip is thus laid over, cut into lengths; the "cut," however, is not quite through the turf, so that it can be lifted up for removal in any desired length. The face of the mould-board is kept clean from all adhering soil, by means of a "scraper," the point of which passes through an aperture in the face of the mould-board. The scraper has a reciprocating or backward and forward motion given to it by means of a small crank and connecting rod, deriving motion from the axis of hind wheel of plough.

Mr. Powell, of Ticehurst, Sussex, the agent of "Sigma" (whose "seed dibbling" apparatus is doubtless well-known to our readers), exhibited "Sigma's" cultivating implement, the "Multum in parvo." A variety of appliances are attached to the main frame, so that no fewer than *six* different implements can be obtained at pleasure—first, a drill-grubber of five tines; second, a sub-soil plough; third, a horse-hoe; fourth, a scuttler and horse-hoe; fifth, a double mould-board plough; and sixth, a broadshare or paring plough.

Considering the discussions of late years respecting two

points of considerable interest to agriculturists, namely, the substitution of an implement for the ordinary plough, and the relative merits of wheel and swing ploughs, it might have been expected that the results of the Warwick Show would exercise some practical bearing on these questions. But both have excited little or no attention; the plough remains master of the field, and no rotary rival has appeared to lay claim to its place; and wheel ploughs and swing ploughs have been tried in all amity, and little display made of the eager earnestness which bygone days have witnessed when their relative merits have been discussed.

With reference to the first of these points, namely, the substitution of an implement for the plough, which will make a better and a cheaper seed-bed, our readers are doubtless aware that much has been written. Possibly exaggerated views have been held by the advocates of a new implement, of the loss of labour, and the narrow limits by which the efficiency of the plough is bound; but it nevertheless appears to be a fact that the efficiency of the plough must be greatly increased if the system of deep culture is proved to be a sound one. Deep culture, such as we believe is desiderated not only to bring soil now nearly unproductive into use, but to greatly increase the productiveness of that already in fair heart, cannot, it is said, be economically effected by means of the plough as at present constructed. At all events it is firmly maintained by many whose experience gives them a right to express an opinion, that an implement may be invented which will do the work required cheaper and better than the ordinary plough. That the defects of the plough are serious all are agreed upon, but how to get rid of them is a point which has not been decided, nor, viewing the present position of affairs, is it likely soon to be. It is a difficult thing to get matters moved out of the groove in which they have long been running; and a vast deal of prejudice has yet to be overcome before many will be got to admit that the plough is not a perfect machine. For a full discussion of the matter, however, we refer the reader to an article by us in the Nov. 16th, Dec. 21st and 28th numbers of this journal for 1857.

With reference to the other point mooted above, namely, the vexed question of the wheel and swing ploughs, much has been written. It has however been, we think, argued upon too exclusively theoretical grounds. On this point we may, perhaps, be permitted to lay before the reader some remarks which we have elsewhere given ("Book of Farm Implements and Machines." Blackwood and Sons, Edinburgh and London). "The question," we there remark, "is not to be decided simply on theoretical grounds; considerations of economy and expediency must be taken into account." It seems to be conceded even by the most energetic advocate of the swing-plough, that the wheel-plough will enable an inexperienced workman to perform work of a tolerably useful character, while the swing-plough would be almost entirely useless; again, that while an experienced workman has "no great difficulty (we quote the words of a well-known Scotch agriculturist) in making straight furrow slices with a swing plough," he has "very great difficulty indeed in making them of uniform depth." With wheel-ploughs this uniformity of depth is insured.

Here then we have an obvious distinction between the two forms of ploughs; the swing having more the character of an implement; one wheel more of the character of a machine. The distinction here pointed out is important, and should not be lost sight of while attempting to decide which is the best form of plough. Let us pursue the matter a little further. A machine operating upon a substance which varies little from its normal condition, may be constructed so as to be nearly in all things self-acting, requiring from man little more attention than is necessary to supply it with the material upon which it is designed to operate. An implement, on the contrary, required in an agricultural operation, may, and often does, demand the exercise of skill on the part of the worker, to enable it to meet the peculiarities of a soil or crop constantly varying in character. The more completely, therefore, we can make a machine to do its own work, and adjust itself to its own requirements, the more completely are we freed from the necessity of employing skilled labour; and the cheaper, consequently, can we do our work.

We thus take it for granted, what doubtless will be by all conceded, that the "wheel" possesses more of the character-

istics of a machine than the swing-plough; and further, that in many districts—this holding more especially true of England—soils are met with possessing that uniformity of character which best aids the operation of a machine adjusted to do a specific kind of work. Such being the case, it is obvious that the work of ploughing will be more cheaply done when it can be performed by unskilled than by skilled labour; and with such a soil as we here suppose no one will deny that the work will be as well done as with the swing-plough. We find this consideration enforced very clearly by Mr. Handley in his "Essay on Swing and Wheel Ploughs" (in the Journal of the Royal Agricultural Society). "I cannot but consider," he says, "the fact of the wheel-plough demanding less skill in the ploughman to be a considerable advantage on its side, though it receives but little favour among first-rate swing-ploughmen, who are accustomed to estimate highly their own manual dexterity, from the circumstance of their work depending on dexterity alone. * * * It has been objected that they (wheel-ploughs) create a nursery of bad ploughmen, inasmuch as it is in the power of any one to make a good furrow with a wheel-plough; while it tests the abilities of a man to produce the same effect with a swing-plough. When, however, it is called to mind that boys can be instructed at an earlier age in the use of the plough, and enabled to come into better earnings than they could do otherwise; as well as that a boy at 10d. per diem wages, may benefit his master by making as good work with the one implement as a man at 2s. can execute with the other, and that the advantage shall be obtained of an even furrow throughout the field, rarely effected by a gang of swing-ploughs, with depth, width, and angle of inclination performed with almost mathematical precision, thereby producing an unvarying bed for the seed, and a regular edge for the harrows—the advantage of the wheel-plough can scarcely be estimated too highly, and marks a decided preference." As then there is a distinct difference of character between them, so there must necessarily be a class of soil in which one is better fitted to do the work than the other. This compromise of opinion must, we take it, be made by the advocates of the two forms. Whenever a soil approaches the character of uniformity (which we have shown is necessary for the operation of a machine), the more closely we can bring this machine to the condition in which it is self-adjusting, and requires little exercise of mind on the part of its attendant; the more economically, and *caelestis paribus*, the more perfectly will it do its work. In such cases the balance of circumstances is in favour of wheel-ploughs. On the other hand it must be conceded, that, in some districts, the soil is so crude, unsteady, and unequal, that some exercise of skill and forethought on the part of the attendant is imperatively demanded before the plough can do its work well: in such cases the balance of circumstances is in favour of the swing-plough.

Now it will be pretty generally admitted that, as a rule, the soil possessing a uniformity of character is more frequently met with in England than it is in Scotland, where an unequal soil is prevalent. May not this circumstance give us a clue to the reason why in England wheel-ploughs are such favourites, the swing an equal favourite in Scotland? * * * A statement may here be permitted, and one which is pregnant with meaning, namely, that the opinion of Scotch agriculturists, long and almost universally inimical to wheel-ploughs, is fast becoming modified, and that they are being introduced successfully into practice. May not this arise from the circumstance that some soils, through superior culture, have assumed that uniformity of character which enables the wheel-plough to be worked where, in times gone by, it would have been found almost inoperative? Indeed, we may state it without hesitation, that as long as the soil contains a large proportion of loose, though even small, stones, there the use of the wheel-plough is impracticable; and the swing-plough implement is required to wend its way through them by skill, not by mere force. On the other hand, smooth soils are just the medium for the exercise of the wheel-plough machine." Seeing then, what will be generally conceded, that there is a marked difference of character and mode of operation between the wheel-plough and the swing-plough, would it not be advisable hereafter to institute separate trials for the two classes? not huddling ploughs of all kinds, no matter how

diverse in character and construction they may be, under one class. The result of such mixed trials cannot be relied upon. Let "wheel" contest with "wheel," and "swing" with "swing." What we want to know is the best of its kind; that is, which form or make of wheel-plough is best, or which form of swing will do the most work. Nor will this trial of the different makes of *one class* preclude the competition of one class with another. After deciding which is the best form of "swing" and which of "wheel" a trial is still open to us, to see which will do quickest and most economically the same quantity of work. Just as we may race a "paddle steamer" against a "screw" along the measured mile to see which does it the quickest; but if we wish to ascertain the best form of "screw" we try different forms of "screw;" we would not try paddle and screw all together. This, however, is just what we do in our plough trials. True, it may be said, that what is wanted is the best plough, no matter whether wheel or swing; and although this is come-at-able by the present mode, still it is in a round-about unsatisfactory sort of way. It is more philosophical and will give the best results to know absolutely which is the best of its kind, just as we test in our show-yards, and by different rules, stationary and portable engines; and if steam engines, why should not wheel and swing ploughs be classed separately? It is just as easy, and a great deal more satisfactory in the long run, to do things the right way and according to a principle, than the wrong way guided by no system save that of wout and usage—mere red-tapeism.

Returning, after this long but not irrelevant discussion, to our notice of the novelties, or leading features of the show, we have to direct attention, under the department of cultural implements now under consideration, to Delta's harrows, exhibited by Mr. R. Law, of Shettleton, Glasgow. In one form, the central part which carries the "bulls" consists of two bars hinged together so that they can be closed exactly like the leaves of a book. Radiating from these bars, at an angle of 30 degrees, are the "bulls" which carry the tines. These form tracks two inches apart, and extending over a breadth of 4 feet 8 inches for the one-horse, and of 9½ feet for the two-horse harrow. The advantages claimed are first, steadiness in working, "holding on" to the land, not pitching and rolling as harrows generally do; and second, the ease with which the "tines" are relieved and prevented from "clogging;" and third, the small space which they take up, as one half can be folded over the other. Each harrow has two central bars and four "bulls;" this being used for one horse; two are coupled together for two horses.

In the department of *drills, manure distributors, &c.*, the most striking novelty exhibited was the patent machine for protecting the turnip crop from the ravages of the fly; this is attachable to any common manure drill, or distributor. The object of the invention is to sprinkle the young plants with finely diffused streams of water, to resemble as closely as possible the effect of dew, or the damp left on the leaves after rain. Thereafter the leaves are dusted with lime, grit, &c., &c. The water is so finely distributed that an acre of plants can be watered by means of so small a quantity of fluid as ten gallons. This is a most important feature of the invention, and is attained by the following means: To the body of the manure distributor, a cylindrical air-tight vessel of wrought-iron is attached; into this water is pumped by a force-pump, till it is half filled. The vessel being air-tight, the air in the upper part is so compressed that it presses upon the water with a force corresponding to the degree of compression—say with a force of two atmospheres, or 30 lbs. to the square inch. From the under part of the vessel a series of flexible tubes are led, these are passed through horizontal slots, or apertures made in a bar of wood in front of, and a little above the level of vessel. The tubes can be adjusted in these slots by means of screws, so as to suit any width of rows. The tubes are terminated by small brass taps, by which the flow of water can be shut off when desired. The taps discharge the water upon the upper surface of a piece of fine wire gauze placed horizontally beneath the taps, and stretching across the breadth of the machine. The water being forced out at high pressure is passed through the wire gauze, and distributed on the plants in a fine spray, which thoroughly damps the surface of the leaves at an expenditure of a small amount of water. The lime dust is applied immediately thereafter, adhering to the leaves.

Messrs. Reeves, of Bratton, Westbury, Wilts, exhibited, amongst other implements and machines, their recently introduced "manure distributor," which has some points worthy of notice. It is provided with a chest, in which the manure, as guano, soot, or artificial manure is placed; this is in length equal to the breadth of ground to be manured at one time. The bottom is not rectangular, but semicircular; and is provided with a curved metal slide, which fits the curved part, and which having a semicircular rack at one end, into which a small pinion gears, it is easily moved or slipped round the bottom of the manure chest, by working the lever attached to the axis of the pinion. By making this lever pass over a graduated plate, any desired amount of movement of the metal slide may be obtained. A series of apertures are made in the curved bottom of the manure-chest, which can be partially or wholly uncovered by the slide, or altogether closed. By the regulation of the slide, the amount of manure passing through the apertures can be adjusted. To keep the manure in the chest in a finely pulverized condition, so that it may easily pass through and not clog in the apertures, a horizontal shaft revolves in the interior, near the curved bottom; to this shaft a series of projecting fingers are provided; these project not at right, but at oblique angles to the shaft, and are placed in pairs, one pair projecting in one direction, the other pair in the opposite direction. By this arrangement they give, when in motion, a thorough mixing or pulverizing action to the manure, which passes out easily from the apertures, and is distributed on the ground. When the apparatus is used in conjunction with, or rather attached to a corn drill, funnels are connected with the apertures of the manure-chest, to lead the manure to the drills. The price of the implement is £10.

In the department of "horse hoes" a novelty was exhibited by Messrs. Burgess and Key, the invention of William A. Munn; this implement has revolving brushes attached to it, which as they rotate, sweep caterpillars and other noxious insects from the young plants. The brushes, made of coconut fibre, are fixed on horizontal barrels or drums, the length of which is in the direction of motion of the implement, or parallel to the line of drills. The drums also carry revolving hoes, which as they rotate, thin the crops; ordinary fixed hoes follow the revolving hoes, and raise the ground. The price of the implement is £8.

In haymaking machines and implements two novelties were exhibited—the first a hay-tedding machine, by Messrs. Brown and May, Devizes; and a horse-rake, by Mr. R. Law, of Shettleton, Glasgow. The improvement in the hay-tedder consists in the employment of a simple apparatus by which the bars carrying the tines are brought nearer to or raised further from the ground. Each tine-bar carries a small stud at each end: these studs go into curved grooves made in face-plates. These face-plates are partly, provided on their outward rim with teeth, with which small endless screws engage. As the screws are turned, the face-plates revolve on their axes; and as the grooves in them radiate from centre to circumference, the studs of the tine-bars move in the grooves either to or from the centre, according to the direction in which the face-plates are made to revolve. If to the centre, the tine-bars are brought further from, and if towards the circumference, nearer to, the ground.

Delta's horse-rake is provided with a "slide;" in this holes are made, corresponding in position to the teeth of the rake. The teeth being passed into these holes, and the slide being supposed to be close up to the bar in which the teeth are fixed, and the teeth then filled with hay, grass, &c., by pulling or pushing forward the slide the hay or grass is stripped off, as it were, and the teeth freed from their load. The slide is attached to the tine-bar by short chains, so that it cannot be pulled beyond a certain point. To points at the ends of the tine-bar ropes are attached. These are made to pass over pulleys, which are kept tight by the drag of the horse, and then finally fastened to the slide. In commencing operations, the resistance offered by the tine-bar and the slide is equal; but as the hay, &c., accumulates, the slide is pressed back, and the teeth become filled. To deliver the contents, a slight pressure is exercised upon the handles, detaining the forward motion of the rake. The strain is thus transferred to the ropes, which pull forward the slide, and free the teeth from the accumulated hay. The speed of the horse does not require to be altered. The pressure of the handle lifts the points of the rake-teeth, so that they pass easily over the discharged

bay. Again, when the rake meets any obstacle, the slide is dragged forward, and frees the teeth.

Mr. Samuelson, of Banbury, exhibited for the first time, at the Royal Society's Show, the "Automatic Reaper," the invention of Messrs. Seymour and Morgan, of America. In this machine the corn, as it is cut, is delivered at the side, in bundles or sheaves, ready for binding. This side-delivery is effected by an ingenious arrangement of mechanism, which gives motion to a "rake," which sweeps the cut corn off the platform. This platform is quadrantal in outline, the knives of the machine working in line with one of the radii of the quadrant, the other radius being in a line with the line of motion of the machine. The end of the rake describes at each movement a quarter of a circle, having alternate motion in opposite directions. But, in addition to this alternate movement, the rake has another motion given to it—namely, a motion of semi-rotation on its axis. This is necessitated for the following reason: On the rake sweeping the cut corn from the front of the platform to the side, the teeth of the rake are vertical, to take and retain hold of the corn; but if they were to remain so on the finish of its journey, the result would be that, on its return-journey from the side to the front of the platform, the corn would just be dragged back again. To prevent this being done, and to release the teeth of the rake from the corn as soon as the latter is delivered at the side of the platform, the rake has a quarter-revolution on its axis, which changes the position of the teeth from the vertical to the horizontal, thus completely releasing the teeth from the corn, which drops off the platform to the ground. Simultaneously with the change of position of teeth, the rake is lifted vertically upwards a short distance, so as to be above the level of face of platform. The rake then begins its return-journey over the platform, the teeth remaining still horizontal, so that they pass over without catching hold of any cut corn lying on the platform. On reaching the point above the knives, the rake drops down; and, simultaneously with this

dropping, the position of the teeth is changed from the horizontal to the vertical. The rake at the same instant begins its journey over the platform, sweeping all the cut corn to the side. Space prevents us from giving a full detail of the highly ingenious mechanism by which these automatic movements are obtained: suffice it to say that the alternate movement of the rake over the platform is obtained by connecting a pinion with the shaft of rake. This pinion gears with a curved rack, the curve of which is the same as the curve of platform, on the upper and under side of which teeth are placed. When the pinion gears with the teeth on the upper side of rack, the rake moves in an opposite direction from that in which it moves when the pinion gears with the teeth on the under side of the rack. The rise and fall of the rake, to which we have before alluded, is produced by the rise of the pinion from the lower to the upper side of the rack, and vice versa. It is from this rise and fall that the motion of part-rotation of the rake on its axis is obtained. To the pinion which traverses alternately the under and upper side of rack, as above stated, a short vertical rack is connected. This gears with a small pinion fixed on the end of the shaft of the rake. When the pinion falls or rises, the vertical rack also falls or rises, actuating at the same time the pinion upon the end of the rake, giving to it a part-rotation on its axis.

Although not forming a part of the regular prize list, "grass-mowing machines" were tried for a special prize. This was awarded to the machine (Allen's patent) exhibited by Messrs. Burgess and Key, of London. Nothing could exceed the precision and regularity with which this machine did its work, cutting as clean, sharp, and uniform as could be desired.

The other competing machines were those of Wood and of Mr. Harwood. The work done by the last did not stand comparison with that of Allen's—the cutting was irregular and patchy, and too high to be an economic mower.

R. S. B.

SUFFOLK AGRICULTURAL ASSOCIATION.

MEETING AT FRAMLINGHAM.

The Framlingham Show of the Suffolk Society would have been altogether the most satisfactory and successful of any yet held in the county—if it had not been held at Framlingham. As it was, the intrinsic merits of the meeting were of the very highest order. But the Association has now clearly outgrown the limited capabilities of so small a place, backed as these were by a run-in on a single line of rails, under that exquisite system of management for which the "Eastern Counties" is so deservedly famous. The selection of a fitting site will be a grave point for all future consideration; and we almost question whether it would not be better to go from Ipswich to Bury, and from Bury to Ipswich, rather than to hazard the inconveniences of less suitable localities. Even beyond this, although the ruins of the old Castle towered majestically on the scene, the show-ground itself was scarcely adapted for the purpose it was put to. The sharp side of a hill is hardly the place on which to group a number of well-conditioned horses. Let them be either in repose or in action, they can seldom exhibit themselves to advantage under such circumstances. And the Suffolk Show is, above all things, a show of horses. People just glance round at the few red Suffolk beasts, the still rarer Shorthorns, and the odd pens of sheep and pigs. Their full energies, however, they reserve for the horses—for the cart-horses more especially. Three gentlemen got easily through the duty of discriminating between the several swine, sheep, and cattle; while it took no less than eight—divided, and subdivided again—to determine, from out of so many good stallions,

mares, colts, fillies, and foals, which were really the best.

And even then this was no light labour. For example, there were no less than twenty aged chestnut Suffolk stallions entered; many so much of the same shape and colour, that a stranger to the breed would hardly identify one from the other. Then, amongst these were many celebrated horses, that made the task of deciding yet more delicate and difficult. Mr. Badham sent the handsome Chester Emperor, a winner at the Royal Agricultural Society, and in Essex and Suffolk, over and over again. Mr. Barthropp entered the nearly as famous Hero, and Mr. Crisp the useful Marquis, who beat a good field at Norwich the other day. Then Mr. Barnes had Champion, a first prize colt at Bury St. Edmund's the year before last; Mr. Frost the highly commended Sir Colin of Walden, a week or two back; while Mr. Stearn, Mr. Wilson, and others did much to the credit of the class. And from all these Messrs. Carter and Scott selected Crotingham Hero as the most worthy. He certainly never looked better; weighty, but still active; high in flesh, but firm in muscle, with a short leg, a good forehead, and yet finer quarter. The Hero had only one great drawback, and that was his temper. At least the stewards were somewhat alarmed at his reputation in this wise, and ordered him into solitary confinement in a field adjoining the show ground. But the horse never exhibited any decided signs of vice, although he has a wicked eye, that Mr. Rarey's lesson does not appear to have done much to subdue. The

character of The Hero, however, does not quite rest now on his own personal foibles, for he is fast filling the neighbourhood with some of the best stock ever seen here. Indeed, about the best animal that the Barthrops ever bred is the two-year old colt, which took the first prize, by The Hero, dam by Newcastle Captain. Amongst the other aged horses Mr. Barnes stood second, with a good compact powerful animal, qualified by a plain head, and more noticeable for one *black leg*—a distinguishing trait, it is said, of the Catlin blood. But The Emperor, on the other hand, was too small and too pretty, and altogether too good-looking for the judges to dwell upon, and they altogether passed him over. We know full well that many Suffolk men have a prejudice against this horse, that we cannot share. He has quality, symmetry, and appearance; while if there be any palpable failing, it is that he has improved too much on the standard points of a Suffolk Punch's excellence. None but those educated in the school could have ventured to ignore him. Mr. Crisp's two three-year old colts stood precisely as they did at Norwich; as did Mr. Barthropp's three-year-old and two-year-old fillies, although it was a nice question between the broken-kneed one, and Sir Edward Kerrison's, a prize mare from "the Royal," and purchased of Mr. Wrinch. Mr. Crisp showed a good-looking fine-sized yearling colt, but not standing very well before; while, as we have already intimated, by far the first of all the young things was Mr. Barthropp's colt. The Cretingham stable, in fact, came out in great force, and carried away four first prizes with only four entries. The Woodbridge and Wickham Market district is certainly the stronghold of the Suffolks, and this may have been one great reason for making the fixture where it was. Mr. Crisp went further to prove this with one of the great features of the meeting—a team of four beautiful mares, wonderfully well matched, and all of one look and character, with kind cheerful heads, clean legs, and good wholesome colours. They were shown in really working condition, and on every consideration to be admired; save, perhaps, by friends and neighbours, who said, "It's Crisp, you know; and of course he ought to be able to do it!"—Just as the stranger at Asley's refused to applaud the man who was riding half-a-dozen horses at once, when he found out it was Duerow. "Oh, if it is Duerow, you see it is nothing extraordinary for him!" And so the Framlingham folks declared of Mr. Crisp's team of horses, good as they were, it was nothing extraordinary for him. Mr. Gobbitt's four shown against him were made up of two geldings and two horses. One of the latter was a *bay Suffolk*, and this spoilt the uniformity of the thing. But they were all to be commended, and the outside gelding was one of the handsomest cart-horses we ever saw. It is seldom such a head or a forehead is to be found on a Suffolk. Of a verity they are crossing out of much of the orthodox plainness of points, notwithstanding that Emperor does not go down quite so well with them as he should do. The two prize *Gast mares*, both by Royal Duke, were in their way, even in such company, quite as good as anything; but it was hard to say which of the two should have the preference, although we hung over them no longer when we heard that the Judges had been almost equally puzzled. Defects tell against virtues, or had Mr. Hodgson's mare been as perfect in her heels as she was almost everywhere else, she would surely have justified the original decree, and have stood first of the two. Many of the mares and foals—a large entry—were very superior. Mr. Crisp's second prize was one out of the team, and Mr. Gobbitt's gelding had also the order of merit on his own account as the best of any age. Mr. Badham

was quite out of luck; and Matchet, too, attracted no attention from the authorities. But, as with the youth who had a passion for high society, if Mr. Badham was ruined at Framlingham it was in very good company.

Mr. Holmes, a Yorkshireman, and of course a judge of a horse, complained justly enough of the confusion that prevailed in the classification and general arrangement of the classes that came before him—some of the riding and coaching horses. Placed, indeed, as they were on the hill-side, it is seldom this always attractive section of the show was seen to less advantage; and we back the suggestion that "your intelligent Secretary should come and see how we do this in the North," with rings railed in for the horses to walk round, while the judges stand in the centre, and the public, who can watch the awards, on the outside of the circle. We have ourselves recommended this plan, from the success with which we have seen it practised at York, Malton, and elsewhere; and two or three years since it was tried with every success in Mr. Ponnereau's park at Ipswich. The competition for some of the premiums here offered was not great. Captain Barlow's neat nag, a little less lusty than at Norwich, was allowed to walk over for the thorough-bred hunter stallion prize, while the next, somewhat curiously worded, resulted in no entry. This was the best stallion for coaching purposes, also to be *thorough-bred*; but the general body of members would not have it in this wise, and the framers of the bill had to draw out another for coaching stallions *not thorough-bred*; although this, too, brought nothing of an entry. Saving the foals, and there were two or three wonderfully fine ones by Middlesex, the riding and driving young stock was in no ways extraordinary for its excellence.

Some of the cobs, however, were far better. Captain Barlow sent the Yorkshire horse, North Star again, that we spoke of so favourably at Norwich; and with him a bay hack that also took a first prize for the best hackney mare or gelding, though they would not have him in Norfolk. Oddly enough, too, the second hack—Mr. Brown's black cob—was entered in vain in his own county, notwithstanding he has a deal of the right character about him; where, too, Mr. Kersey Cooper's sweet little bay mare was also drafted out. But she was duly honoured at Framlingham, while Mr. Cooper backed her with another tracing to the Norfolk Shales, that was quite worthy of such companionship. The hunting prize mare was but in reality another hack, or Norfolk cob; as clever as could be, but a hunter on no showing whatever but that of the Suffolk Society, that, let a mare be what she may, only have her served by a thorough-bred horse, and she at once becomes eligible for cross-country purposes. Mr. Burch's entry certainly went some way to substantiate this doctrine, by throwing a great fine big-boned colt to Middlesex, that has only to grow on to his present promise to make a deal of money—and, moreover, for a hunter as the statute declares. But there are many different readings of what will make a hunter; and Messrs. Aylmer and Parsous selected one rather curious illustration of this very comprehensive theory. However, it was next to impossible to see a nag stand comfortably or go freely at Framlingham; and there might so be, according to the old dealer's adage, some a good deal better than they looked to be. But bear in mind the Yorkshireman and his rings, Mr. Bond; and the county may train on to make the riding-horses quite worthy of the draught-horses. It would be difficult to offer the Society a higher meed of praise.

The cattle, most inconveniently grouped, or rather scattered over the show-ground, included some nice kindly-looking Suffolks, better both to handle and otherwise examine than we ever yet saw them. Another

Mr. Crisp, of Chillesford, and the Messrs. Wolton, were the chief exhibitors of the home-breed; whilst Mr. Crisp, of Butley Abbey, and Sir Edward Kerrison had a few of the more fashionable Shorthorns. Sir Edward's second prize bull, with a most imposing pedigree, was bred by His Royal Highness the Prince Consort. Mr. Barthropp did not care to send his entries; indeed, we hear he is gradually "getting out" again, and crossing the Herd Book with something a little less distinguished. Major Parker sent a good roan of his own rearing, but the show of Shorthorns, as at Norwich, depended upon Lady Pigot. There was Lady Sarah, from Mr. Amblers's herd; Duchess the 8th, from Jonas Webb; the superb Empress of Hindostan, from Warlaby; and a couple of clever yearlings. But then, alas! beyond these there was the famous Stanley Rose, purchased only last year at Mr. Wetherell's sale for three hundred guineas, and now entered as a fat beast, too soon to be led to the shambles. Stanley Rose, like many more of the overdone, will not breed; and by the time she reaches the butcher will be about as dear a bargain as the Cochín China cock the worthy citizen gave "a pony" for, but which his wife had killed for dinner directly he was sent home. Mr. Rigden, who "threatens" strongly for Canterbury, was alike a Judge of beasts, sheep, and pigs; but they did not bring him much to look at in the way of a Southdown. The longwools were far better, headed as they were by Mr. Sexton's magnificent Cotswold, the first prize ram at Norwich; and backed by his other prize sheep of the Essex Meeting. He went further to uphold the excellence of his very rising flock with a pen of no less than twenty most promising useful lambs. Mr. Aylmer and Mr. Brown, from the adjoining county, had also some most creditable long-wools; and Mr. Dobito stood pre-eminent for the black-faces, according to the catalogue "now named the Suffolk." This gentleman's tups had size, shape, and quality to recommend them; at the same time it is no secret that to get this they are frequently crossed—with the Hampshire Downs more especially. The ewes, again, are readily bought up as a capital nick for the white-faced rams. But still the breed does not tell, and Mr. Dobito is almost alone the great champion of his order. At the dinner Sir Edward Kerrison once more entered his protest against them. He had tried an experiment with these sheep and some other varieties, and he found the black-faces quick in their growth, but with no fattening qualities whatever. In this respect they were "most abominable." When his other sorts "had long been sold-off to the butcher, the Suffolks were walking about showing their ribs and looking like scare-crows." Unfortunately for the debate, Sir Edward was in the chair, so that Mr. Dobito could not well rise to reply without being directly called upon. But surely the Suffolk Association cannot have given its name and patronage to a breed quite so bad as all this.

Mr. Stearn and his challenge were the great sensation amongst the pigs. A short time since Mr. Stearn offered, under the auspices of the Society, to show a sow and pigs against all the world for ten pounds aside; while the excitement was immensely increased by this being taken up in his own county. Mr. G. M. Sexton was willing to compare a black sow and her thirteen pigs against Mr. Stearn's white sow and her fourteen pigs, and so the wager was made. Great, then, was the preparation at Brandeston. As Mr. Austin, the Recorder of Ipswich, and Mr. Stearn's landlord, detailed at the dinner, for the last three weeks the two households, the masters, the men, the ladies, and the children, had been alternately in "the extacy of hope and the agony of apprehension." Every morning brought some fresh rumour. Every morning did the white sow and her

litter take their bath of suds, milk and sugar. And when they came to Framlingham, "the sow rode in her own private carriage, while I was on the point of offering a parasol a-piece for the little pigs." Mr. Stearn was in no ways behind his landlord in doing proper honour to "the most beautiful pigs under the sun," and had attendant swineherds in waiting round the roofed-in pen, appropriately and becomingly attired, in red jockey jackets, with blue caps and white trousers. It would have been hard, indeed, to have been beaten after this, although long did the judges deliberate. Mr. Sexton's sow was clearly the better of the two, and took the first prize of her class here, as she did at Norwich. But the white pigs were wonderful; and whether it was the milk, the suds, or the sugar, never was there such a litter for their age. So eventually the sweepstakes was decided in their favour, and "this torture of mind, these agonies of hope and despair in Brandeston," brought to a triumphant end. Mr. Sexton showed some other capital black pigs, which, with some equally good of Mr. Crisp's, will go on to Canterbury, to have the actual advantage still further adjusted. There were also one or two pretty white Suffolks from Butley; but none of those round-backed, long-headed, hungry-looking monsters we met with at Norwich, and never hope to meet with again.

When we consider that two such influential firms as those of Messrs. Garrett and Ransome reside in the county and support the Society, it is not surprising to find that the Suffolk Association has long since ceased to offer premiums for implements. But there were trials at Framlingham, or adjacent to Framlingham, where Fowler's steam plough was at work in the hands of the Ransomes, and Wood's American mower under the care of the Garretts. The Chairman spoke pointedly at the dinner to the efficiency of the latter, and the good work it had left. Prentice had also Harwood's combined mower and reaper in operation; but its performance was not so satisfactory. There was a goodly collection of machinery on the Show-ground, mainly contributed by such firms as Burrell of Thetford, Coleman of Chelmsford, Garrett of Leiston, Humphries of Pershore, Page and Girling, Ransomes and Sims, Smyth of Peasenhall, the Turners of Ipswich, and Woods of Stowmarket. A number of engines had their steam up, and there appeared to be a good deal of business going on. Let us take the opportunity of doing full justice here to one of these Suffolk Houses. In addition to Clayton and Shuttleworth, and the Ransomes, Mr. Garrett also sent his fifty to the Benevolent Institution. Indeed he was the first to set such an example to his fellows, whatever may come of it.

The dinner of the Society was well done. It was alike supported by the owners and occupiers, and between two and three hundred sat down in the Castle Hall. The speaking, too, was generally to the purpose, and Sir Edward Kerrison, in the absence of Lord Stradbroke, made a very efficient chairman. He has himself evidently a taste for the pursuit—breeds Suffolk horses and Shorthorns—offers prizes for draining work, and exhibits tiles—tries even black-faced sheep, and has a strong opinion as to Mr. Mechi's actual profits of farming. Of Mr. Austin's clever address we have already given a taste, while Major Parker, one of the members for the other division of the county, went well to one of the farmer's points in considering the scarcity of animal food: "There had been an agitation about the dearthness of meat, and people at public meetings had resolved that they would starve themselves in order to bring the price down; those people threw blame upon every quarter but the right,

and it struck him that the cause of the dearness of meat was partly to be found in the high price of food with which the cattle had to be fed, and if provisions for cattle could be cheapened, he thought this difficulty could be solved. He wanted the people to understand this, and he told them that malt was one of the best things for feeding purposes (loud cheers); and seeing that malt was so valuable to the farmer, he hoped in time to see the present restrictions removed, and he suggested that the Corn Laws having been repealed, it would be only fair to repeal the malt duty." The rounds of cheers with which this was received told plainly how strongly the Suffolk agriculturists feel on the question. The argument was certainly well put. Mr. Barthropp replied for the Royal Agricultural Society, regretting the absence of such firms as those of the Ransomes and Garretts—whose fame had so much increased through the influence of the Society—from its approaching meeting. Mr. J. M. Wilson gave the Judges in just that straightforward manner the toast should be offered, requesting them to let the meeting know something of the merits of what they had severally examined; and with Mr. Holmes' answer thereto a great majority of the company left.

PRIZE LIST.

HORSES

FOR AGRICULTURAL PURPOSES.

JUDGES.—J. Carter, Danbury, Essex.

R. Scott, Lavenham, Suffolk.

W. Leader, Sallows Hall, Norwich.

D. Sewell, Beaumont Hall, Suffolk.

The best Stallion, having served not less than twenty mares in the county, 10 sovs., N. G. Barthropp, Cretingham (Hero).
Second, 5 sovs., C. Barnes, Kettleboro' (Champion).
Highly commended.—J. Smith, Hasketon (Raglan).
Commended.—J. Chaplin, Sudbourne (Prince).
The best three years old colt, 6 sovs., T. Crisp, Butley.
Second, 5 sovs., T. Crisp.
The best two years old entire colt, 5 sovs., N. G. Barthropp.
Second, 4 sovs., S. Plowman, Earl Stonham.
Third, 3 sovs., T. Crisp.
The best one year old entire colt, 4 sovs., T. Crisp.
Second, 2 sovs., S. Plowman.
Highly commended.—S. Wrench, Armorton.
The best mare, with foal at foot, 6 sovs., J. Smith, Hasketon (Diamond).
Second, 4 sovs., T. Crisp.
The best foal of 1860, 6 sovs., R. Capon, Dennington (by Duke).
Second, 4 sovs., E. L. Gleed, Hoo (by Duke).
The best gast mare, 6 sovs., S. Wolton, sen., Newbourne (Moggy).

Second, 4 sovs., E. G. Hodgson, Charsfield (Smart).

The best three years old filly, 6 sovs., N. G. Barthropp.

Second, 4 sovs., Sir E. C. Kerrison, Bart., Broome Hall.

The best two years old filly, 5 sovs., N. G. Barthropp.

Second, 3 sovs., A. Freuer, Debenham.

The best one year old filly, 4 sovs., R. Capou.

Second, 3 sovs., S. Wolton, sen.

The best three years old cart gelding, 4 sovs., R. Capon.

The best four years old gelding, 4 sovs., T. Crisp.

The best gelding, of any age, 4 sovs., J. Gobbett, Sudbourne.

RIDING AND COACHING HORSES.

JUDGES.—G. Dobito, Lidgate, Newmarket

—Holmes, Beverley.

H. Aylmer, West Dereham, Norfolk.

G. F. Parsons, Waddingfield, Suffolk.

The best thorough-bred stallion for hunting purposes, having served not less than ten mares in the county, 5 sovs., Capt. Barlow, Hasketon (Revenge).

The best thorough-bred stallion for coaching purposes, having served not less than ten mares in the county.—No entry.

The best entire horse for coaching purposes, not thorough bred, 5 sovs., W. J. Burch, Campsey Ash.

The best entire cob for riding purposes, having served not less than ten mares in the county, 5 sovs., Capt. Barlow (North Star).

The best hunting mare, with foal at foot, 5 sovs., W. J. Burch.

Highly commended.—T. Clarkon, Playford.

The best coaching mare, with foal at foot, 5 sovs., T. Waller, Eye.

The best cob mare, with foal at foot, the foal to be by a cob horse not thorough-bred, 5 sovs., G. K. Cooper, Euston.

The best hunting foal, 4 sovs., W. J. Burch (by Middlesex).

The best coaching foal, 4 sovs., T. Waller (by Hero).

The best roadster foal, 4 sovs., J. Read, Laxfield (by Waterer).

The best foal by either of the Hasketon stallions, a silver cup, W. J. Burch (by Middlesex).

The best three years old weight-carrying mare or gelding, for hunting purposes, 4 sovs., E. G. Hodgson.

The best three years old mare or gelding, for coaching purposes, 4 sovs., N. Welton, Bredfield.

The best three years old roadster mare or gelding, 4 sovs., N. Welton.

The best two years old mare or gelding, for hunting purposes, 4 sovs., M. Mumford, Creething St. Peter.

The best two years old mare or gelding, for coaching purposes, 4 sovs., W. E. Burch.

The best two years old roadster mare or gelding, 4 sovs., W. E. Burch.

The best hackney mare or gelding under 7 years old, 5 sovs., Capt. Barlow (bay gelding).

Second, 3 sovs., T. Brown, Marham (black gelding).

The best pony not exceeding 13½ hands high and not under 12 hands, 3 sovs., N. Welton.

Second, 1 sovs., P. K. Blofield, Helmingham.

Commended.—E. G. Hodgson.

The best four years old hunting mare or gelding, by a thorough-bred horse, 5 sovs., G. K. Cooper (mare by Sebastopol).

The best gelding not exceeding six years old, and not under 16 hands high, suitable for van purpose, a silver cup, Capt. F. Barlow.

Highly commended.—Sir J. N. Blois, for Arab stallion.

Commended.—J. Whitmore, for half-bred stallion.

CATTLE.

JUDGES.—W. Bennett, Cambridge.

W. Ridden, Hove, Sussex.

The best suffolk bull, not under two years old, 6 sovs., A. W. Crisp, Chillesford.

Second, 3 sovs., Earl Stradbroke, Henham Hall.

Commended.—A. W. Crisp, for another.

The best Suffolk bull, under two years old, 4 sovs., A. W. Crisp.

Second, 2 sovs., A. W. Crisp.

The best bull of any other breed, not under two years old, 6 sovs., Major W. Parker, Clopton Hall (shorthorn).

Second, 3 sovs., Sir E. C. Kerrison (shorthorn, Prince Leopold).

The best bull of any other breed, under two years old, 4 sovs., T. Crisp (shorthorn).

Second, 2 sovs., T. Crisp (shorthorn).

The best Suffolk cow in milk or in calf, 5 sovs., S. Wolton, jun., Kesgrave.

Second, 3 sovs., J. Moseley, Great Glemham.

Commended.—S. Wolton, jun.

The best three years old Suffolk heifer in milk or in calf, 4 sovs., A. W. Crisp.

Second, 2 sovs., A. W. Crisp.

The best two years old Suffolk heifer in milk or in calf, 4 sovs., A. W. Crisp.

Second, 2 sovs., G. Gooderham, jun., Monewden.

The best one year old Suffolk heifer, 2 sovs., A. W. Crisp.

Second, 1 sovs., S. Wolton, jun.

Commended.—S. Wolton, sen.

The best cow of any other breed in milk or in calf, 5 sovs., Lady Pigot, Chippenham Park (shorthorn, Lady Sarah).

Second, 3 sovs., Sir E. C. Kerrison (shorthorn, Duchess 8th).

The best three years old heifer of any other breed in milk or in calf, 4 sovs., Lady Pigot (shorthorn, Second Duchess of Gloucester).

Second, 2 sows, T. Crisp (shorthorn):

The best two years old heifer of any other breed in milk or in calf, 4 sows, Lady Pigot (Empress of Hindostan).

Second, 2 sows, T. Crisp (shorthorn).

The best one year old heifer of any other breed, 2 sows, Lady Pigot (Magnolia).

Second, 1 sow, Lady Pigot (Pride of the Valley).

The best fat ox, not to exceed three years old, 3 sows, T. J. Capon, Daraham Hall (black Scot).

The best fat heifer, 2 sows, Lady Pigot (shorthorn, Stanley Rose).

SHEEP.

JUDGES.—W. Bennett.
W. Rigden.

The best Southdown tup of any age, 6 sows, T. Hawkins, Bentley.

The best shearing Southdown tup, 6 sows, G. Sexton, Wherstead.

Second, 2 sows, G. Sexton.

The best tup of any age, of the black-faced breed, now named "the Suffolk," 6 sows, G. Dobito, Lidgate.

The best shearing Suffolk, 6 sows, G. Dobito.

Second, 2 sows, G. Dobito.

The best long-woolled tup of any age, 6 sows, G. M. Sexton, Cockfield (Cotswold).

Highly commended.—H. Aylmer, for three tups; and G. M. Sexton, for another tup.

Commended.—F. Brown, for two tups, and H. Aylmer.

The best shearing long-woolled tup, 6 sows, T. Brown, Marham.

Second, 2 sows, H. Aylmer, West Dereham.

Highly commended.—W. Brown, for another.

Commended.—W. Brown, for a third tup, and H. Aylmer, for two.

The best pen of 5 Southdown shearing ewes, 6 sows, T. Hawkins, Bentley.

Second, 2 sows.—no competition.

The best pen of 5 shearing Suffolk ewes, 6 sows, J. M. Green, Stradishall.

Second, 2 sows, G. Dobito.

The best pen of 5 long-woolled shearing ewes, 6 sows, H. Aylmer.

Second, 2 sows, H. Aylmer.

The best pen of 20 lambs of any breed, 6 sows, G. M. Sexton (Cotswold).

Second, 2 sows, R. J. Cooper, Blyboro' (Down and Norfolk).

PIGS.

JUDGES.—E. Cook, Holton Hall, Suffolk.
W. Rigden, Hove, Sussex.

The best boar, 5 sows, T. Crisp (black).

Second, 3 sows, Sir E. C. Kerrison (white).

Highly commended.—T. Crisp, for two more black boars.

The best sow and pigs, the pigs not to exceed 12 weeks old, 4 sows, T. Crisp (white).

Second, 3 sows, T. Crisp (black).

The best breeding sow, 3 sows, G. M. Sexton (black).

Second, 2 sows, T. Crisp (black).

Highly commended.—Rev. O. Reynolds (white), and T. Crisp, for one white, and one black.

Commended.—Sir E. Kerrison (white), and W. B. Chandler (white).

The best pen of 3 young sows, pigged since 1st November, 3 sows, T. Crisp (black).

Second, 2 sows, G. M. Sexton (black).

Highly commended.—T. Crisp, for another pen; and G. M. Sexton, for another pen.

Commended.—H. Biddell, Playford (white).

SWEEPSTAKES.

Mr. G. Stearn, Brandeston (white), beat Mr. G. M. Sexton (black), for the best sow and pigs, 10 sows each.

Mr. T. Crisp, beat Mr. J. Gobbitt, for best team of horses, 5 sows each.

Mr. E. L. Glead, Hoo Hall, beat three others for the best foal, 1 sov. each.

Mr. A. Freuer, Debenham, beat three others for the best two years old cart filly, 1 sov. each.

Mr. N. Welton, Bredfield, beat two others for the best pony, 1 sov. each.

CHEESE.

JUDGES.—Messrs. C. Downing, G. Edwards, Garrard, and Hart, of Suffolk.

First, 3 sows, — Collins, Hunston.

Second, 2 sows, T. Sawyer, Twaite.

DRAINING.

JUDGES.—Messrs. W. Beckett, R. Crisp, T. Hawkins, and Symonds, of Suffolk.

First, 4 sows, G. Aldous, recommended by Mr. J. Howlett, Wissett.

Second, 3 sows, H. Watling, by Mr. H. M. Day, Langham.

Third, 2 sows, C. Nunn, by Mr. E. Glead, Hoo.

Fourth, 1 sow, W. Thurlow, by Mr. E. Freeman, Framsdon.

SALE OF SHORTHORNS

AT SPRINGFIELD, LANCASTER.

THE WATERLOO TRIBE.

The sale of a herd of shorthorn cattle is no longer a novelty in this country, but it is always an event. The importance of these sales, and the attention they command, may vary according to the fame of the breeder and the quality of the "blood" offered to the bids of anxious purchasers. But, let it be great or small, whole or partial, obscure or celebrated, a herd of pure shorthorns never fails to draw a numerous company when it is to be disposed of by auction, and especially when the sale is conducted by Mr. Strafford.

It is a remarkable feature in the history of shorthorns, that the esteem in which they are held by the agriculturists of all nations, far from being diminished from their large multiplication and dissemination, seems, on the contrary, to increase in the same ratio as they are more generally known and more extensively spread. No better proof of this fact can be adduced than the high price which good animals continue to command, both in public and private sales. Another feature of

the history of the shorthorn breed, and one which yields in importance to no other, is the attention paid by breeders to certain "strains" of blood. From the earliest records of the history of the shorthorns, it is a well-known fact that certain families, or "tribes," were remarkable for certain qualities which it was the earnest aim of the old breeders carefully to preserve and judiciously to improve. The lesson those shrewd pioneers in the art of breeding have thus taught by their example, more than by their precepts, has not been lost upon their successors, especially in our own times; and the unalloyed progeniture of those celebrated families are most eagerly sought after by anxious competitors regardless of cost or trouble.

Mr. Bolden's sale, on Thursday, July 5, affords another illustration of the value in which Bates's blood is held by the breeders of the whole world; and it is our pleasing duty to record one of the best and most remarkable sales to be found in the annals of

the shorthorn breed. This event is not only memorable from the success of its results in a pecuniary sense, but still more so from the excellence of the arrangements, the spirit exhibited by the bidders, the energy of the auctioneer, and the unmistakable tokens of the esteem and value in which the Kirkleavington blood continues to be held.

Before we proceed with the narrative let us pay a well-deserved compliment to Mr. Bolden for his hospitality, and the reception he gave to his numerous visitors. The refreshments were everything that could be desired, and were liberally provided for all comers, without stint or distinction, the only test of admission to the tables being a decent appearance and a respectable mien. Mr. Bolden himself, appeared almost possessed of the power of ubiquity, being always at hand when an explanation was asked, or the name and pedigree of an animal wanted. And there was no lack of enquiries among the admiring crowd that congregated, before and after the sale, in the reserved corner of the mansion, where the pure Duchesses—the unalloyed gems of Booth blood, and the felicitous results of a judicious blending of the Kirkleavington and Warlaby elements were gathered together. In that corner an assemblage was seen, such as can scarcely be contemplated anywhere else in England, or in the whole world. No expressions of ours could give an adequate idea of the magnificent animals that were gathered in that grassy nook under the shelter of the mansion; bounded on one side by the neat flower-borders, studding the lawn like fragrant gems, and on the other by a cluster of trees, under the sombre foliage of which stood, in conspicuous and dazzling relief, those far-famed Duchesses, the splendid moulds into which the “Grand Dukes” were cast and quickened.

From an early hour, a numerous company began to assemble, and appeared deeply engaged in the examination of the animals offered for sale. At certain intervals the 3rd Grand Duke, by which most of the cows and heifers were served, was paraded in the paddock; and a nobler animal, one more worthy of his lineage, and one more fully justifying the fame of his blood, could not be seen. His depth of frame, his quality of flesh, the harmony of his lines, the noble expression of his countenance, were the themes of universal admiration and eulogy.

But luncheon is over: the last batch of guests have satisfied their appetite, keenly whetted by that bracing air laden with moisture and enervating aroma that blows from the sandy expanse of Morecumb Bay; the thirteen-side polygon that forms the ring is already lined with an anxious crowd, among whom we notice the following well-known upholders of shorthorns: Messrs. Ambler, Torr, Bell, M'Intosh, Ellison, Hatherton, Taylor, Lampson, S. Jepherson, R. Jepherson, J. D. Jepherson, Heskett, Logan, J. Robinson, C. Howard, Barber, Gell, J. Culshaw, J. Knowles, the agent of the Duke of Devonshire, the agent of Harewood, Trehonnais, &c., &c.

At length the buzz of conversation is hushed. Mr. Strafford ascended his rostrum, and after the usual preliminary admonition and a few appropriate remarks, introduced Lot the 1st.

Our readers must know that the bulls of the sale were composed of the whole Waterloo tribe in the possession of Mr. Bolden. This tribe, the history of which has been already given in the *Farmer's Magazine*, was derived from the Kirkleavington herd; and therefore, chiefly crossed as it has been in the case under our notice with the bulls of pure “Bates's” blood, may be reckoned as belonging to one of the most valuable families of the shorthorn breed. That they were so held

by the bidders at the Springfield Hall sale on Thursday last is shown by the following result:—

Lot.	Names.	Bullied by	Price		Age.	Purchaser.
			Guas.	Yrs.		
1	Waterloo 12th.	3rd Grand Duke	56	11½		Logan.
2	Waterloo 13th.	Do.	98	11		Jepherson.
3	Garcia	Do.	73	8		Lampson.
4	Waterloo 15th.	Do.	71	6½		S. Jepherson
5	Waterloo 16th.	Prince Imperial	120	5		McIntosh.
6	Waterloo 18th.	Newly calved ..	100	4½		Heskett.
7	Waterloo 19th.	Doubtful breeder	41	4		Logan.
8	Waterloo 20th.	3rd Grand Duke	165	3½		Lampson.
9	Tarlatau	Do.	61	3½		Logan.
10	Rebecca 2nd	Newly calved ..	46	3		Reinder.
11	Waterloo 21st.	3rd Grand Duke	135	2½		Harrison.
12	Waterloo 22nd.	Do.	100	2		R. Jepherson
13	Waterloo 23rd.	Do.	105	2		Noakes.
14	Coax	Do.	103	21	mon.	Messenger.
15	Waterloo 24th.	Calf, not bullied.	125	18		McIntosh.
16	Graceful	Do.	71	16		Robinson.
17	Waterloo 25th.	Do.	61	15		Drury.
18	Waterloo 26th.	Do.	105	11		Messenger.
19	Waterloo 27th.	Do.	60	3		Logan.
20	Waterloo 28th.	Do.	70	3		Hales.
21	Waterloo 29th.	Do.	51	10	wks.	McIntosh.
22	Waterloo 30th.	Do.	41	9		Logan.
23	Waterloo 31st.	Do.	50	5		Heskett.

BULLS.

Lot.	Names.	Age.	Price		Purchaser.
			Guas.	Yrs.	
1	Prince Imperial	4 yrs. 4 mon.	160		Logan.
2	Cannon	14 months ..	81		Messenger.
3	Charger	6 do.	130		Bowly.
4	Rampant	5 do.	30		Dunn.
5	Rauter } twins . {	5 do.	85		J. D. Jepherson
6	Balm	10 do.	33		Gell.

The total amount of the sale is £2,548 7s., which gives a general average of £87 17s. 6d. for the twenty-nine animals sold. The average of the females, including the young calves, barren heifers, and the aged cows, reaches the sum of £87 3s. 11d. The average of the six bulls is £90 9s. 6d.

Out of the twenty-nine lots twenty belonged to the Waterloo tribe, viz., eighteen females and two males. The general average price obtained by the twenty Waterloo lots is £92 13s. 3d. The average of the eighteen females, eight of which were young calves, two aged cows, and one barren, is £90 10s. 6½d. The two bulls, lots 2 and 3, realized £221 11s., which gives an average of £110 15s. 6d.

It was a remarkable feature of this sale, that whenever a pure Bates was offered, the bids were as brisk and spirited as the most fastidious auctioneer could wish; whereas, when other blood was introduced into the ring, the offers were comparatively languid, and the auctioneer's exertions correspondingly great. Even the influence of the 3rd Grand Duke's bulling or paternity told with a manifest and unmistakable weight on the biddings; and, notwithstanding the individual merits of “Prince Imperial,” and the acknowledged excellence and well-deserved celebrity of the Warlaby herd, it must be admitted that it was the Kirkleavington blood that commanded the greatest eagerness on the part of the buyers, and, consequently, the highest prices.

The sale only lasted about an hour and a half. Whenever a “Waterloo” entered the ring, the biddings were rapid, spirited, and bold, sometimes commencing with a start of one hundred guineas; and towards the close of the contest, when the bids had reached their utmost limits, nothing can give an idea of the anxiety with which

the sand-glass, steadily held forward by Mr. Strafford, was watched by the seven or eight hundred bystanders who surrounded the ring. The breath of the multitude seemed to be suspended, as they gazed upon the tiny rope of sand quickly running from one cell to the other, until another bid, just as the last grain tumbled down the gullet, would cause a sudden reversal of the glass, and give a fresh impulse to the excitement of the scene.

The highest priced cow was Waterloo 20th, who fell to the lot of Mr. Lamplás. She is a noble animal, well worth the 165 guineas she cost her spirited purchaser. Previous to this Waterloo 17th (an aged cow), which sold for 98 guineas, and Waterloo 16th, which fetched 120 guineas, had already established the standard value of the tribe, and the prices for the subsequent lots quickly rose to the average we have stated.

There were only two Waterloo bulls in this sale; one of them (lot 3, "Charger"), a bull calf, of great promise, was purchased by Mr. Bowly, of Siddington House, for 130 guineas. It is to be regretted this excellent breeder did not purchase a female of that Waterloo tribe, which in his experienced hands might have perpetuated itself, with all its qualities and points. Were it not that the other Waterloo bull, lot 2nd, was purchased by Mr. Messenger, who had also been the successful breeder of Waterloo the 26th, not too closely related to that bull, although of identically the same blood, it might be feared that the tribe of the Waterloos might have lost its unalloyed quality, by being dispersed in distant districts, and crossed with bulls of different descent. As it is now, Mr. Messenger, so far as we know, is the only breeder who can lay the foundation of another Waterloo herd in all its integrity.

There is another circumstance of this sale which challenges our gratification and sincere satisfaction; and this is, that all the lots appear destined, for the present at least, to remain in the country. There were no foreigners nor Americans

to dispute with English breeders the possession of these valuable animals, and as we rejoice that there is in England a Captain Gunter and a Bolden, who still jealously preserve the *Duchess* and *Oxford* blood in their herds, so we may consider it as a matter of self-congratulation that the Waterloo tribe, second only to those we have just named, remain amongst us in its entirety.

This remarkable sale is another stone added to the monument of fame which succeeding generations are slowly but steadfastly erecting to the memory of Bates. The name of that great breeder will be handed down to posterity together with those of Bakewell and the Collings. It will be added to that cluster of shrewd and able men, who with no lofty ambition of their own, no extended aspiration after popular glory or public fame, those powerful incentives of high and memorable deeds, have concentrated their mental energies upon a peaceful, obscure may-be, but eminently useful pursuit, and achieved an improvement in the all-important industry of agriculture, the permanent usefulness of which will remain to the end of time, as a glorious testimony of their skill and of the indomitable perseverance of their efforts.

Surely the establishment of the renowned Shorthorn herd as a fixed and permanent race is as great an achievement as regards England's glory and prosperity as the taking of a fleet, the sacking of a town, or the slaughter of whole armies; and yet the most revered names in the annals of agriculture remain engraved only in the grateful memory of the agriculturists themselves. Our squares, our cathedrals, our public institutions are studded with busts, statues, and monuments erected to the memory of warriors, statesmen, and philanthropists; but so far as we are aware, let it be said to the shame of this country, generally so liberal of testimonials to the living, there is not an inscription, not even a statue, to tell future generations that these great agriculturists were honoured by those who so largely benefited by their labour. And yet nature will be able to show a glorious monument of their successful efforts; and pointing out the great Shorthorn breed, she will exclaim to grateful and admiring posterity, "*In vis monumentum, respice!*"

THE BABRAHAM RAM LETTING.

The Babrsham meeting has once more come and gone. Thursday, July 5, was the 34th anniversary of this celebrated gathering, which certainly, to use an appropriate expression of the Earl of Hardwicke, has become an "institution" in the agricultural world. Mr. Jonas Webb is one of the most notable instances of English *solidarite*. Dynasties have fallen abroad; but Mr. Webb has always contrived to hold his own, and to attract round him a goodly court of customers and friends; and year by year pilgrimages continue to be made to Babrsham by devout agriculturists from all quarters of the old and new world. This may seem to savour perhaps of exaggeration, but it is the simple fact. The Emperor Napoleon has more than once envied Mr. Webb's stock; a year or two since a spirited American expended 200 guineas in securing one of the rams; and on Thursday France, Germany, and the United States were again represented in person and by proxy. The agents of the Duke of Bedford, the Duke of Richmond, Lord Radnor, Lord Walsingham, and Lord Sondes were also in attendance, with a good sprinkling of visitors from Norfolk, Suffolk, Essex, Hertfordshire, and Buckinghamshire. The weather, which on the previous evening had been signalled by something very like a frost, was fine and sultry, and the wide plains of Cambridgeshire never looked more peacefully lovely. The ride from the Whittleford Station to Church Farm, on the very queer old vehicles which seem to start every year out of the ground for the special purpose of meeting the exigencies of the day, was delightful, and the crops, although backward, elicited frequent expressions of approval.

The morning was wiled away with the usual inspection of the rams; and some of Mr. Webb's fine shorthorns—several of which are to appear at Canterbury—also came in for a fair

share of notice. The foreign visitors appeared particularly pleased; and the "weight of wool," which was posted as usual, excited astonishment. The wool clipped ranged from 7 lbs. 12 oz. to 11 lbs. in the class of five-year-olds, from 8 lbs. to 10 lbs. in the four-year-olds, from 7 lbs. 8 oz. to 11 lbs. 4 oz. in the three-year-olds, from 7 lbs. 12 oz. to 10 lbs. 4 oz. in the two-year-olds, and from 6 lbs. 12 oz. to 11 lbs. in the yearlings. The number of rams offered for competition in each class was—Five-year-olds, 3; four ditto, 7; three ditto, 23; two ditto, 25; yearlings, 64—making a total of 122; and of these, as will be seen below, sixty, or nearly one half, were publicly let. Among the foreign gentlemen, who examined the rams with the greatest care, may be mentioned M. G. Mallett, a banker and amateur agriculturist of Paris. M. Mallett was accompanied by his bailiff and also by M. Gustave. M. Heuzé, professor at the Imperial School of Grignon. M. Heuzé was a veritable Frenchman in appearance, and the bailiff had a kind of *vieux moustache* air about him, which seemed to savour of his having known something about the conscription in his youth; but M. Mallett had the dress, air, and manners of a polished English gentleman. It will be observed in the course of our report that he did not visit Babraham in vain; but that the animated and vivacious discussions in which he and his satellites engaged over the rams resulted in his taking off one at a heavy price. One of the Germans present—Herr Zoefritz, from Wirttemberg, who was accompanied by another gentleman, named Reiglen, from the same district—was also a hirer at liberal rates. An intelligent German, from Wiesbaden, who confined himself, however, to the chief task of inspection, and who seemed to consider England by far too expensive a country altogether, stated in conversation that the South-downs do better in Germany than the Leicester when crossed

with the Merino. All these Germans had paid Norfolk a visit—that county having no doubt acquired a wide-spread reputation from the almost magic name of “Coke, of Holkham;” and Iler Zoeffritz has taken some sheep from Mr. Fulcher, the agent of Lord Sondes.

The auctioneer's hammer was again wielded by Mr. J. Carter Jonas, who, in commencing the business of the day, said he did not feel it necessary to trouble the company with any lengthened remarks. The fact that the present was the 34th anniversary of the Bahraham letting spoke volumes in favour of Mr. Webb and his splendid animals. The marked superiority in the younger animals proved that Mr. Webb continued to improve his justly celebrated flock. The prices fixed as a reserve were remarkably low, and he (Mr. Jonas) trusted that they would be considerably advanced upon. We had heard much lately of combinations for the purpose of keeping down the price of mutton, and although the gathering was not a meeting of that description, it was a combination for the production of that most important article of food. One of the great questions to be solved by the agriculturists of the day was an augmented production of beef and mutton to meet the vastly increased consumption of the country; and he knew of no means so likely to prove a useful step in that direction, as regards sheep, as the procuring the best-bred sires. The letting was then proceeded with. The first ram for which any competition took place was No. 103 (two-years-old), which was put up at 55 gs., and biddings for which advanced rapidly to 70 gs.—a price at which Sir Thomas Barrett Lemard, of Essex, was declared to be the hirer. No. 194 (a yearling) was taken at 55 gs. by Mr. Gurdon Rebow, of Wivenhoe, near Colchester; and No. 184 (also a yearling) was hired for 22 gs. by Mr. H. J. Adeane, M.P., Mr. Webb's landlord. For No. 189 (a yearling) there was a smart competition. The animal was put up at 35 gs., from which point the biddings advanced to 38, then to 40, then to 42, and finally to 51 gs., at which price Lord Radnor's agent was adjudged the hirer. Nos. 179 and 206 (both yearlings) brought respectively 25 gs. and 37 gs. But the great competition was for No. 93 (a two-years-old), which took the second prize offered for Southdown rams last year, at the Warwick Meeting of the Royal Agricultural Society. The biddings commenced at 75 gs., and advanced, guinea by guinea, with considerable rapidity, to 100 gs. Here there was a slight pause, but the auctioneer skilfully playing off the would-be hirers against each other succeeded in forcing up the biddings to 110 gs.; at this point there was a second fit of hesitation, broken by an advance to 111 gs., and a rather languid progress to 120 gs.; again a pause took place, but 2 gs. were adroitly added, and, after further delay, 4 gs. more. At 126 gs. it became evident that the spirit of competition could no further go, and the hirer was declared to be a gentleman representing Mr. J. C. Taylor, of Holmesdale, New Jersey, U. S. An interesting circumstance in connection with this lot was that its purchase was directed by written instructions from Mr. Taylor, who probably saw the ram when it was exhibited last year. Be this as it may, Mr. C. Taylor's *carte blanche* for the hire of the animal left all other competitors astern, and was not approached by any bidding for any of the other lots. No. 201 (yearling), however, provoked a respectable competition; it was offered at 40 gs., and a bid of 41 gs. was followed by a bound to 45 gs., from which point an advance was made at a guinea a bid to 60 gs., M. Mallett, of Paris, being the hirer on those terms. No. 97 (a two-years-old), put up at 35 gs., was taken at 42 gs., by Mr. Clarke, for the Duke of Richmond. No. 133 (yearling), offered at 10 gs., was taken at 15 gs. by Herr Zoeffritz, and No. 210 (yearling), by the same gentleman, at 17 gs., the biddings having commenced at 13 gs. No. 70 (two-years-old) and No. 63 (three-years-old) were hired by Mr. Fulcher for Lord Sondes, the biddings having advanced from 15 gs. to 19 gs. in the former case, and from 16 gs. to 21 gs. in the latter. Mr. Woods, on the part of Lord Walsingham, hired No. 17 (a four-years-old) for 25 gs., an advance of 7 gs. on the opening price. The remaining lots offered call for no particular observation, and did not excite much competition; but particulars of each and of the whole number of rams let publicly will be found below. After some 50 lots had been called into the ring, the selections began to flag; and when 60 rams had been hired, it became evident that no more business would be done. The result of the letting was tolerably satisfactory, the 60 lots realizing (as officially stated at the dinner) £1,382, or within a fraction of £23 each.

The business done at the lettings for the last nine years will be seen by the annexed table:

YEAR.	RAMS PUBLICLY LET.	AVERAGE PRICE.
1852	69	£22 3 1
1853	71	22 6 3
1854	75	25 4 3
1855	77	25 15 2
1856	77	33 1 4
1857	65	27 17 7
1858	61	20 19 3
1859	54	25 9 10
1860	60	23 0 8

The following shows the order in which the rams were called into the ring, the weight of wool clipped off each, the price at which it was put up, and the price at which it was hired. It should be observed that all numbers above 5 were six-year-olds; all numbers above 22, three-year-olds; all numbers above 63, two-year-olds; and all numbers above 104, yearlings:

No.	WEIGHT OF WOOL.		PUTTING-UP		LETTING	
	lbs.	oz.	gs.	PRICE.	PRICE.	PRICE.
46	9	0	9	....	9	....
103	8	0	55	....	70	....
26	9	0	13	....	13	....
30	7	12	13	....	13	....
191	9	3	18	....	20	....
209	11	0	17	....	22	....
194	10	0	55	....	55	....
123	8	0	11	....	11	....
114	10	0	15	....	16	....
184	8	4	20	....	22	....
189	9	4	35	....	51	....
147	8	0	12	....	12	....
179	8	4	17	....	25	....
206	8	0	25	....	37	....
85	10	0	16	....	17	....
101	8	3	23	....	23	....
3	7	12	50	....	50	....
52	11	4	9	....	11	....
98	8	8	75	....	126	....
43	10	0	8	....	12	....
172	8	3	15	....	15	....
201	10	0	40	....	60	....
79	10	4	18	....	18	....
60	9	0	10	....	10	....
150	8	3	14	....	14	....
45	7	8	13	....	16	....
185	8	0	20	....	29	....
86	9	3	23	....	25	....
97	9	0	35	....	42	....
133	8	8	10	....	15	....
115	8	0	6	....	6	....
70	8	8	15	....	19	....
195	10	0	20	....	26	....
17	8	8	18	....	25	....
28	9	12	10	....	11	....
198	9	0	15	....	15	....
49	8	3	20	....	22	....
183	9	0	35	....	40	....
65	8	0	11	....	11	....
210	9	0	13	....	17	....
39	8	0	10	....	11	....
52	11	4	10	....	15	....
63	8	12	16	....	21	....
66	7	12	12	....	12	....
178	8	4	25	....	26	....
121	9	0	11	....	12	....
199	9	0	23	....	23	....
135	7	0	9	....	9	....
118	8	0	7	....	7	....
100	8	8	17	....	18	....
137	9	0	7	....	7	....
44	10	0	13	....	13	....
120	8	0	8	....	10	....
154	10	0	9	....	9	....
9	9	4	7	....	9	....
149	9	4	8	....	8	....
49	9	0	11	....	11	....
94	8	12	15	....	15	....
95	10	0	11	....	11	....
96	8	0	12	....	12	....

The biddings having ceased, the company left the sale ring at the invitation of Mr. Webb, and adjourned to dinner, which was laid out in a style of liberal hospitality, in a large marquise at the back of the house. The Earl of Hardwicke occupied the chair, appearing in the capacity of president for the first time since 1853 or 1854; and his lordship discharged the duties of his position with the readiness and fluency which has generally characterised the members of the York family from the founder of the house downwards. The noble lord was supported by Mr. C. Barnett, M. Mallet, of Paris, Major Huddlestone, Sir T. B. Lennard, Mr. Eastnor, Mr. G. Norman, Mr. R. Houslon, Mr. W. T. Copeland, Mr. W. Hurrell, Mr. S. Jonas, &c. Three tables extended down the tent, and at the extreme end might be described the goodly form of the worthy host, in the vice-chair, Mr. Rigden as usual occupying a seat on his right.

The CHAIRMAN, in giving the usual introductory toasts, expressed his satisfaction at the improved tone which was now observable in public feeling with regard to the national defence. The noble lord also referred to the volunteer movement, which, he argued, must be left to develop itself naturally without undue excitement, while he deprecated arming the working classes, of whose intelligence and respectability he spoke in high terms, just as the franchise was now refused to the million.

Mr. WEBB proposed the health of the chairman in his double capacity of president of the meeting, and Lord Lieutenant of the County. If proof were wanted of a good understanding between landlord and tenant, it would be found in the fact that Lord Hardwicke had attended the meeting at much personal inconvenience, thus placing him (Mr. Webb) under a still deeper obligation to him. The name of Hardwicke was too well known, not only in the county of Cambridge, but throughout the country, to require any eulogy; and he (Mr. Webb) might mention that a fourth generation of his family was now living on the Hardwicke estates, a fact which spoke well for all parties (Hear, hear). Meetings like the present, which tended to bring together landlords and tenants, were of great benefit to the latter, because if they had not good landlords, the land of the country would be scarcely worth cultivating. In the last few years farmers had been compelled to grow wheat at extremely low rates, and had they not obtained of late a better price for their meat, the times would have been very hard for them. He was rather astonished to find that a good many consumers had come to the conclusion not to eat any more butcher's meat till the price was reduced to 7d. per pound. This was a monstrous thing, because the farmers had had to go through an eight months' winter, which, commencing in October, destroyed the root crop by wholesale, and caused stock to be kept at an enormous expense and serious loss. For people under these circumstances to say that they ought not to pay more than 7d. per pound for meat was really, he thought, perfect nonsense (Hear, hear).

The CHAIRMAN in responding said: In England, whatever might be our professions, we were all volunteers, and he was that day a volunteer in the service of Mr. Webb, who had rendered his annual meeting a positive "institution," not only to every Englishman, Scotchman, Irishman, and Welshman, but also to the agricultural interest of Europe and America (cheers.) The noble lord, after a short interval, proceeded to propose "the health of Mr. Webb," describing it as the toast of the evening. He remembered hearing a story of a gentleman who visited England from America, and who on his return to that great country was asked what he had seen in the old country. "Well," he said, "I saw the Archbishop of Canterbury." "What else?" "Mr. Webb's tups" (laughter). The gentleman had seen everything else in this country—its edifices, its institutions, its army, its navy, and its manufactures; but what struck him most after the Archbishop of Canterbury was Mr. Webb's flock. This was a greater eulogy upon the man whose exertion had produced such a result than any remarks which he (Lord Hardwicke) could make upon the subject (laughter and cheers). That Mr. Webb's flock had been extremely useful to the agriculturists of the world admitted of no doubt; and he trusted that Mr. Webb would be enabled by the profits he made to continue the process which had been attended with such valuable results. The amount realized on the sale-day might seem considerable; but if any gentleman conversant with the affairs of agriculture considered the expense, anxiety, and constant labour attending

the feeding and rearing of the rams, independent of the occasional loss of animals, he would not say that the profits were too large. From what he had observed, although he did not consider himself a very high authority in such matters, he believed that Mr. Webb's sheep exhibited a progressive improvement. The ingenious contrivances formerly practised in regard to the clipping of the wool no longer continued; for if anybody would measure with his fingers the sides and backs of the sheep, he would find that wool had now nothing to do with their shape. Mr. Webb, by his tenderness, his ingenuity, and the care with which he crossed his breeds, produced animals of the highest class. There was no sort of deception in the manner in which the wool was clipped; and the step thus gained in the improvement of the animals was of the highest importance, because it did away with any false ideas in regard to their condition and character (Hear, hear).

Mr. WEBB, in reply, confined himself to a simple expression of his thanks.

The CHAIRMAN called attention to the presence of several French gentlemen who took a deep interest in the science of agriculture, and who had come over for the purpose of observing the proceedings of their neighbours across the water. The noble lord briefly alluded to the recent visit of the Orphnôtistes, and observed that he felt sure that he only stated the feeling which prevailed in the breast of everyone, when he said that we were most happy to see Frenchmen in England, whether they came as agriculturists, commercial men, or as friends (cheers.)

M. MALLET, who spoke English with considerable fluency, was loudly cheered on rising to respond. M. Mallet observed that he was greatly moved by what Lord Hardwicke had said. What he had seen of England and English habits, manners, and institutions, deserved deep admiration and sincere sympathy. He was but slightly connected with agriculture; in fact, he was but a volunteer in the pursuit, but volunteers were the order of the day (cheers). He heard it said very often, that any new step in the improvement of instruments of warfare and international destruction tended greatly to the maintenance of peace; it might be true, but he could not help thinking that any improvement in agriculture and the arts of peace would do a great deal more in that direction. Comparisons were invidious, and he ought not perhaps to mention names; but he could not help thinking that such instruments as Horsbys's, Garrett's, and other makers whose productions were imported into foreign lands, would do a great deal more to create a good feeling among nations than any instrument of war (cheers). Personal intercourse would do a great deal more still. He had no doubt that if his friends over the water were witnesses of such a convivial meeting as the present, and could see the good feeling among all classes of English agriculturists, they would be greatly stimulated in their future endeavours. New laws might be established, tariffs might be changed, things might come to pass which would differ greatly from those which prevailed in former times; and he trusted that there would be increased intercourse between the people of various countries, and that every day they would feel less opposed to each other. He granted that people must be masters at home, that Englishmen must provide against any emergency, and that they were quite justified in doing all they could to consolidate the wooden walls of Old England (cheers). He could not find fault with that; it was the right of self-defence, and it was a striking feature in the British character that Englishmen had maintained that right through thick and thin (cheers). In conclusion, M. Mallet observed that he had had sufficient experience of Englishmen to know that they were exceedingly hospitable and kind; "and," he exclaimed in conclusion, "I drink their healths with all my heart" (loud cheers).

The CHAIRMAN gave the "Health of the hirer of the highest-priced tup, Mr. J. C. Taylor, of the United States" (applause).

M. MALLET again rose, and said that he esteemed it a privilege to be permitted to toast the Royal Agricultural Society of England. He did not mean to enter into all the details of that institution, with which those present were much more familiar than himself; but he regarded the Society as a union representing that great agricultural interest of England, of which Englishmen had so many reasons to be proud, and with which everybody who came over to see what was going on in England must be astonished. He did not know how the

Royal Agricultural Society stood in relation to this particular district of England, but he knew that it was worthy to represent the Royal Agricultural Society (cheers).

Mr. BARNETT, in replying to the toast, said the Council of the Royal Society deeply regretted that anything should have arisen to interrupt the good feeling which had existed so long between them and the leading implement-makers of the country; and for his own part he could not but feel this regret all the more deeply after what had fallen from his esteemed foreign friend in regard to the implement manufacturers. He had been a steward of implements at the Society's meetings for the last four years, and from the extreme courtesy, good feeling, and kindness which had been shown him by the implement-makers at large, he was all the more astonished that the dissension should have arisen which had caused them to withdraw from the show at Canterbury. He had tried, by reading and asking questions, to find out what had induced them to take this step, but he had not been able to make the discovery. The word "definition" had been made use of, and he had been told that the Society's definitions were not sufficiently explicit, and that consequently the implement-makers could not send their implements to Canterbury. The word "definition" was an extensive one; for Plato's definition of a man was, that he was a two-legged animal without feathers. Diogenes, a very jocosse individual in his day, threw a cock stripped of his feathers into Plato's school, to show the vagueness of such a general definition. He (Mr. Barnett) was not going to say that by stripping the implements of their feathers some of their imperfections might be shown, but really he thought that if some implements were stripped of their feathers they would not exhibit quite so large a body as Diogenes' cock (laughter and cheers). Should any implement-makers see the words he had uttered, he trusted they would take them in good part, and that the kindly feeling which had always existed between them and the Society would return. He only hoped it would not be prevented returning by one small circumstance, viz., that those for whom certain makers made room this year would not trip up their heels, and exhibit implements which would be considered by

the farmers of England equal if not superior to those shown on former occasions.

Mr. WEBB begged to propose the healths of the other foreign gentlemen who had honoured him with their company, and to associate with the toast the name of Herr Zoeffritz, who had distinguished himself very much in every part of the world in which he had travelled (cheers.)

Herr ZOEFRITZ, in responding, said he believed the Continent, and his own country especially, would be more and more adapted to English farming. He had been in England for the last six months: he had seen many things which would be most useful to his countrymen; and he was quite sure that every one who came to England would be as much pleased as himself, and would take away with him the conviction that no farming in Europe was more prominent than that of Great Britain. He especially admired the English stock, which was much superior to any he had ever seen on the Continent. He had seen nearly all continental farming, but he had never met with any stock which for fattening and milking qualities could be compared with the English. "And besides this," added the speaker, "I never found such a noble race of men as the English farmers. I therefore beg to give you the health of Old England and Old England's farmers" (loud cheers).

The CHAIRMAN gave, as a concluding sentiment, "The health of the wife of our host;" and "May every man present be in the enjoyment of health, good spirits, and everything that constitutes happiness in this life, to enable him to assist Mr. Webb on a future occasion." The toast having been received with rapturous cheers, the Noble Lord quitted the chair.

The party was a very jolly one. The "three times threes" which followed almost every toast were given with a power of lungs such as one might anticipate from men living for the most part in a breezy campaign country like Cambridgeshire. The foreigners must have been astonished at what they heard and saw, and furthermore bewildered with the "fraternization" experienced, and that towards the close of the proceedings assumed more than one ludicrous phase.

ROYAL AGRICULTURAL SOCIETY OF ENGLAND. MEETING AT CANTERBURY.

The Royal Agricultural Society has now completed its first cycle. And yet, strangely enough, the rounding point in its career has been regarded more as an anxious experiment than perhaps any of the preceding anniversaries. The best friends of the Society were more than curious to see how the Canterbury Meeting would pass off. It was an out-of-the-way, one-sided site. The railway accommodation was neither liberal nor complete. The very county of Kent was somewhat divided as to the welcome it should offer; while the leading implement manufacturers foredoomed the gathering, by announcing their intention to have nothing to do with it. Even further than this, the weather cleared up, and hay-making came on just about the same time as the show week. Never before has a fine day done so little to help out a public occasion. If anything, the effect was more damaging than otherwise.

The result then of all these concomitant causes was a short meeting. There was a short entry of stock. There was a short show of implements, and there was a short attendance of visitors. The chief of these reasons were the situation and the inconveniences attending the transition of animals—the long-looked-for

"seasonable" weather—and the apathy of the Kentish people themselves. The presence or absence of certain machinists had little or nothing to do with it, and the full proof of this will be afforded us next year. Whether they go or whether they do not go, we expect to see the Leeds Meeting as successful a one as that at Canterbury was the reverse. But the Canterbury "failure," if such it must be called, can in no way be attributable to the conduct of the Society. There was no spot left on the map which hangs in the Council room in Hanover-square, that so directly called for a visit. Well-to-do as Kent may be, there is no county that has shared so little in the agricultural progression of the last few years. It is the very bidding-place of prejudice, and Romney Marsh sheep, Kentish ploughs, and Sussex cattle here still constitute the ideal standard of excellence. Even the offer of a lesson was not very gratefully received. Maidstone has never forgiven the slight, when the Society passed over her claims and went to Lewes. The more Eastern Division did not appear to care much about it; and it was said there were better sheep and cattle in the county than were exhibited under the auspices of the Royal Agricultural Society. In fact, to the City, the Mayor, and Corporation, with a few of

the more spirited agriculturists of the neighbourhood, the duty of doing the honours of the occasion was calmly entrusted by those who should have taken a more active interest in the proceedings.

What the locality failed to supply in this wise was certainly not made up for from amongst the general supporters of the meeting; and many a regular visitor will blot out Canterbury from his list. In the well-arranged and admirably-adapted Show-ground such absenteeism was very remarkable. Scant even were the authorities and enthusiasts that hung over Royal Butterfly or the twin Duchesses. Fewer still the sworn advocates of the neat little Devons, and ample ever the opportunity for a fair view of the Babraham shearing or the prize pig. Comparatively small though the entries might be, the character of much of the stock was never better; and so, if the Kentish men or the men of Kent wished for a profitable "study," there was nothing to prevent them. It is seldom that such a sight has to be seen at so little inconvenience; and the Shorthorns alone were a sight in themselves. If anything, indeed, will break through the established line and rule of the district, it will be this deservedly fashionable breed of animals. Men like Mr. Noakes, Mr. Wells, Mr. Hales, Mr. Betts, and a few more, have already their carefully-selected herds, and others will follow. It is evident, too, from the specimens these gentlemen sent, that the Durhams do well here, and thus the splendid array of them was anything but thrown away even at Canterbury. We should say, rather, that it was by far the most impressive chapter of the whole history.

There was plenty to look at. Amongst the bulls, for instance, it was not merely Royal Butterfly first, and the rest nowhere. Mr. Shepherd sent Cherry Duke, the prize bull of the Highland Society's Show at Edinburgh; Mr. Dickinson brought on Prince of Prussia, who, of all others, had the credit last season of running Butterfly very close. Mr. Ambler had the handsome Prince Talleyrand; Mr. Noakes his massive Prince Alfred, and Lord Feversham the useful Prince Imperial. But of all these, as we said by telegraph last week, Royal Butterfly is still the pride of the entry. Never has so good a looking young bull, to begin with, continued to improve so much, and he is now very nearly perfect. With really a "line of beauty" running along him, a splendid forehead, great girth, and size, and true symmetry, he unites in the highest degree the yet more innate advantages of quality and pedigree. He has, too, a grand massive head, kindly in expression, but still with all the attributes of a male animal, while his condition was admirable. The Colonel's herd do not live on London porter, and Royal Butterfly for one certainly did not look over-pampered. The very fastidious might say that he did not finish quite even over the quarter, but there has rarely been a bull over which the critic could find less legitimate cause of complaint than with Royal Butterfly. His last year's opponent, the Prince of Prussia, has not gone on so well, but he is said to have been in strong use, and looked a little hurried in his preparation. He, too, is a famous handler, though with rather a "cowy" head, and a little slack over the loin. He has, however, a capital quarter; and more than one good judge was on the nibble for him. The third-prize bull, rather coarser-looking than his quality itself inferred, was sold outright, during the week, to go to Tasmania. Prince Talleyrand, but for a hollow in the back, might have stood higher. Still at Selby on only the Friday before the meeting, the Prince beat fifteen very good bulls of all ages for the Londesborough Cup. Amongst the remainder, Mr. Shepherd's bull, showing much of the fine character he inherits from the Old

Cherry tribe, should certainly have been up with the other commendations.

The class of young bulls reached twenty-eight entries, with many promising animals amongst them, but nothing of extraordinary excellence. Mr. Jonathan Peel, the owner of the first prize, is a new name in the catalogue; and his bull is a handsome, well-grown beast, of a nice colour, fine hair, and good flesh, but not altogether "complete" in his points. Mr. Fawkes had three to show against him—Reformer, Gardoni, and Election. Of these the selected one is so good, in so many ways—hair, flesh, and symmetry—that he is sure to be heard of again. Sir Charles Tempest's third prize, otherwise a lengthy, serviceable animal, lacked that important essential—a good head. It was a very bad, sour-looking countenance, with the horns thrown quite back. The judges were liberal enough in their commendations, but these were seldom as signally deserved as amongst the older bulls; and Colonel Towneley was here in no great form, while Mr. Stratton was from the first over-paced. By the line of what he had to send, the company at Canterbury was a little too good for him.

Striking a still lower note, the bull calves of the short-horn classes would not compare with either of the two divisions that preceded them: and this, notwithstanding that the Towneley herd furnished four or five of the twenty exhibited. Two of these were twins—Romulus and Remus, as anybody else might have christened them; but Romulus and Remus *Butterfly*, as they call everything at Towneley, whether it be a shorthorn calf, an Oaks filly, or a pointer puppy. It is, indeed, whispered that the clergyman of the parish is just now in somewhat of a dilemma as to whether Butterfly be an orthodox name for a baby they have brought before him. The twin Butterflies are not much alike, and the better of the two is somewhat deficient in substance, but of a good quality and fine coat. Even in these recommendations, however, he was far surpassed by the first prize, Mr. Marjoribank's Harkaway, a young bull, with the best and softest hair we ever handled. He takes this directly from his sire the Great Mogul; while the highly commended heifer-calf Joyful, also by the Mogul, is almost equally commendable in this respect. Harkaway has a magnificent quarter, and many other recommendations in his favour; so highly, indeed, do they think of him, that he will not come under the hammer at the Bushy sale, on Wednesday. In colour this calf is a rich roan, and that no doubt was another strong point in his favour; for with the Canterbury judges it clearly went a long way. Almost in every case where it was anything like a race between a roan and a white, the latter got the worst of it. So went the decisions with the twin Duchesses, and so more especially the premium for the heifer calves. It was not until Colonel Pennant's heifer was "out," that you came to fancy her at all, when she improved wonderfully on the eye. She then showed a deal more style and fashion, and went away with quite the walk of a race-horse. Still the "roan" must have had much to do with it, and the white well-grown calf from Bushy was clearly the favourite of the two. Neither of the Colonel's commended Butterflies handled quite kindly after Joyful; and the seventeen entries as a whole did not argue much for this new class. It is a question whether, like two-year-old stakes on the turf, the forcing of very young stock for public display will not result in more harm than good.

The yearling and older heifers, on the contrary, made up two extraordinarily good classes. It is seldom that we remember them so strong. Pre-eminent amongst

these were Captain Gunter's twin Duchesses, clearly, from their duplicate attractions, the talk of the show-ground. They are really very much alike in everything but colour, and have just the same-shaped heads and sweet expression of countenance. Continual was the discussion as to which was really the better of the two, although the pretty general opinion was the judges had not gone wrong. The white has the advantage in size, but the other was the better in quality, and her colour no doubt settled the point. But it has been a moot one for some time; and at Liverpool last autumn "79" was the winning number. They are alike extraordinary heifers, very well to look on, but better in the flesh than the hair. Bred for it, their success in preserving the Duchess character is in its way quite perfect. Another new man, Mr. Robinson, a Buckinghamshire yeoman, who only came out last year at Warwick, was placed third in this lot, with a compact heifer, very excellent in her forehead, although falling away a little behind. But she is sure to grow into something; and there were good judges who even preferred her at her age to either of the two placed above her. Jonas Webb's Miss Tanqueray, a winner in the Eastern Counties, Booth's Soldier's Daughter, as successful in the North, and Stratton's Queen of the Harem, renowned in the West, could get no higher than well-merited commendations, shared as these were by Mr. Noel Hill and Mr. Marjoribanks.

Another Duchess was the theme of the three-year-olds, and whether she was better than Wood Rose, an argument that rose again and again as people came to her. If you could only shut your eyes and be led up to them, the quality of the Bates' blood no doubt would convince one. But to look at, the award is correct enough. Mr. Ambler's heifer begins better. She has a good cow's head, while Duchess has but an indifferent frontispiece. Then, again, Wood Rose has a long way the advantage on that nice place, the point of the shoulder. She is the levelled and straighter of the two, the back of the Duchess rising in lumps, and falling in dips, from sheer fat. Indeed, unless quality went for everything, the decision could scarcely have been otherwise. In the other dozen of heifers were Faith, the first prize yearling at Warwick, and especially deserving of her commendation here; Mr. Noel Hill's Preserve, distinguished, as at Warwick, by a high commendation; two of Mr. Booth's, and two from the Duke of Montrose. The Judges, in fact, commended everything brought before them; while they awarded the third honours to Lady Pigot's heavily-fleshed, handsome-looking Empress of Hindostan. Her ladyship was on the ground to witness her triumph; and so, to our astonishment, was another of her heifers. Stanley Rose, shown at Framlingham as a fat animal, or butcher's beast, is sent on to Canterbury as a breeding one; and we are now assured that she is in-calf. We had hoped this abuse had gone far enough, when the worst of sinners were beginning to cry out against it. There is no matter of doubt or question but some of the finest Shorthorns ever bred have been rendered utterly useless by being over-fed; and animals have been pampered up to "show," as Peter Pindar's razors were to "sell," until they really became fit for nothing else. We fear Lady Pigot is but badly advised when her Shorthorn cows come to pass alike as commendable at the Royal Society or the Smithfield Club.

Another lamentable example of this system was offered by an old offender, Mr. Booth of Warlaby, who showed the really elegant Queen Mab disfigured with lumps and patches of fat. There she lay, the greater part of the time, for stand she would or could not, stretching out her sweet heifer head and fine thorough-bred neck in too evident distress. And so one could

only mark her grand expansive back and rare hips and loins, the very points of a cow if kept to her purpose. On this showing as a cow in milk and calf, Rosette fairly beat her. She looked like a milker; and has fined in her appearance from the rather coarse animal she once threatened to become. Clean, handsome, big, and lively-looking, Rosette goes on again to Ireland, with every prospect of standing the trip and repeating her last year's victory. Lady Pigot was here again third, with a cow of Jonas Webb's breeding, also a little overdone with the oilcake; while Daisy, grown into a very fine heifer, went only the further to contradict the absurd abuse levelled last year at the Warwick judges. Sixteen cows were entered, but Colonel Towneley's Fidelity did not come; and Mr. Eastwood's Souvenir, in the next class, was also an absentee, having just calved. There were, however, many very good ones to make up a show, quite worthy of the companion bulls; and the names of many of which are given in the numerous commendations appended to the organized decree. In the few other eyesores amongst them was Woodbine, the dam of the first prize three-year-old heifer, but herself now grown into a very vulgar-looking animal, with a gaudy, staring, lumpy quarter, that should surely be a warning to people who fancy that fat, like charity, covers a multitude of sins. The judges evidently begin to think the other way; and there was one remarkable instance at Canterbury where such a mistaken ambition has at last o'erleapt itself. "Oh, then I see Queen Mab hath been with you!"

The "short" show in reality began with the Herefords, of which there was a marked decrease in the entry. One or two of the best, moreover, were not sent, and amongst those left at home were Mr. James' splendid heifer, the best beast of the recent West of England Meeting. Her place, however, was well filled by a beautiful yearling of Lord Bateman's, a very perfect specimen of what a Hereford should be. With a wonderful quality of flesh, and a good coat, Hebe ran as true as a die from end to end. The evenness of her outline was something especially noticeable, and she finished off famously, take her from almost anywhere you pleased. She is by Lord Bateman's favourite bull Carlisle, which, with the whole of his Lordship's herd, will come to the hammer in September. The stock includes no less than sixty breeding cows with their calves, a hundred heifers and steers, and twenty young bulls of different ages. It will, of course, be the sale of the season. Hebe had a companion from Shobdon in her class, and the two figured as the prize pair at Dorchester, but there was nothing alongside fit to compare with her. The new class of heifer calves, although generally commended, led off with a bad handler, and were altogether scarcely worth the compliment paid them; while only one cow was entered, the second prize at Dorchester, although the judges deemed her good enough to take the first here. As a lot the three-year-old heifers were the evenest and best of the Herefords, and the judges, with more showing, here, too, commended everyone of the half-dozen they ran to. Both the prize bulls came with high characters as winners in the West, and at "the Royal," over and over again, but this is the first time they have been directly pitted against each other. Of the two the young one had deservedly the call; for Sir Colin is growing more and more out of his good looks, and will "never do" to get behind. Neither is he quite right in his touch, while Leominster's great, if not only fault, is his thin thigh. Beyond this he is a very clever young bull, with a clear lead of his class, notwithstanding another general commendation. The yearlings were headed, as at Dorchester, by Mr. Perry's Cowan; but they were not so

superior, although six out of ten entries came in for some sort of distinction. In fact, judges were never more liberal in this way than Messrs. Baker, Franklin, and Higgins, and by their return the exhibition of Herefords was a very grand one. But, if anything, they rather over-colour it. The sort, however, is unmistakably coming again into prominent repute; and the Devons almost as palpably going out. The entry was even less than usual; and never did we hear the pretty little things so terribly abused. "Look at his prime roast beef," argued one of their staunchest admirers, "and reckon how much that is worth a pound." "How much a pound?" sneered his opponent in reply; "how much a h'ounce, you mean!" They certainly do look delicate, and change of air into Somerset, Dorset, Essex, Norfolk, or anywhere to make a little more of them, should at once be advised. But this, above all things, the Devon men themselves have a dread of, and they go about selecting the smallest and finest animals they can find. It is all hair and quality; and really many of the awards at Canterbury would seem to have been made by men with their eyes shut, at least, to anything like the merits of size and symmetry. There was one extraordinary illustration of this in the two "off" heifers. There were only four shown, of which by far the handsomest, biggest, and best was his Royal Highness the Prince Consort's Lovelia, and so of course she was utterly passed over. They gave a first prize to one pretty little one, the second to another by no means so perfect, and the third to the only other left. But the odd man could stand this no longer, and fairly washed his hands of anything more to do with them. It appears that one of the Devon judges—Mr. Trethewy—could not attend, and so Mr. Ladds, who was acting in "the other breeds," was pressed into his place. With his aid the Prince's heifer was, it is said, at one time actually put first, but this award was afterwards reversed, and Mr. Ladds at once withdrew. Mr. Charles Barnatt subsequently joined the two Devon men, who, however, seemed to agree pretty well in what they were doing. The matter made a deal of talk during the week; and at one time it was rumoured that an official inquiry was to be instituted. Mr. Quartly, Mr. Turner, Mr. Hole, and others, showed some very neat little animals; and Mr. Pope and Mr. Farthing, with more size, came in for third and fourth-rate honours, a degree they must by this be pretty well accustomed to. Let the Devon breeders only duly persevere, and they may soon show with very good grace against the Kerrys and Bretonnes; for with the "points" they so curiously uphold as a standard, their herds will really be fit for nothing else. The only plan we can see, to bring about a better system, will be for the Society not to be so submissively content with home judges. Henceforth let one be a Devon, one a Somerset, and one a Dorset or Norfolk breeder, and then all the several varieties will have something like fair play. If a Sussex Down grows into something more when he gets into Cambridgeshire, and yet still retains his legitimate character, why should not a North Devon thicken and spread on the fat lands of Somerset?

And never did the Babraham Southdowns evince more purity and usefulness combined than at Canterbury. Although the two-shear sheep righted themselves at last, and rams never noticed in Warwickshire took prizes in Kent, it was the class of shearlings that constituted the strength of the show. With beautiful heads, tinted to a shade, broad backs, and rare quarters, there was joined a roundness and compactness of form that spoke directly to the Down's original purposes. To our eye Mr. Jonas Webb has never previously given us so correct an illustration of

what the Southdown should be. They may have been bigger, but there was now the united excellence of size and style, and neither the Duke, Mr. Rigden, nor Lord Walsingham could stand before them. The Babraham flock took six prizes and six commendations, the only other special commendation in the two classes going to Lord Walsingham. Mr. Webb knows better than to show ewes, and the President of the Society was thought to stand well for first honours. But his lordship's pen was badly matched, one ewe being vastly superior to the others; and so the first prize was awarded to a new exhibitor, Mr. Heasman, who, though in Sussex, breeds directly from Babraham. The award, however, was much canvassed, and many "short-wools" declared that they could not understand it. Lord Walsingham's ewes were more substantially appreciated by the public, and sold to go to France for 60 guineas the pen.

With the Leicesters Mr. Sanday was equally effective, while the best of his competitors were those breeding directly from his own flock. His second and third aged rams occupied precisely the same positions as shearlings at Warwick; and the only comparison against his sort of sheep was that offered by Mr. Valentine Barford. Each one of the Foscoe flock had a legend attached to his number, and a notice to the effect that "the sheep were bare-shorn in order that the public might have every opportunity of seeing what they really were." The public did not seem to be much convinced by such evidence, but were more inclined to look on it as "proving a negative." As with the local committee, who selected an awkward bit of ground to demonstrate what the Kentish plough *could* do, when the result was only to show what it *could not* do, Mr. Barford's close shaving came to something of the same indifferent conclusion.

Two wonderfully good rams, *vis-à-vis* with each other, were the heroes of the new class of Shropshire Downs, and a very good class too. We honestly admit this grant has worked, even thus early, far better than we expected. It has brought out men who did not care to send fat things to Birmingham and Smithfield, and the world never knew how many good flocks there are of Shropshires till now. Mr. Holland, the member for Worcestershire, who has some good sheep of his own, gave the stiff price of £126 for Mr. Byrd's first-prize ram, while, by polling *all* the good ones, Mr. Horton and the Cranes had the best of it. There were over forty shearing rams, and twenty others; but the pens of ewes, here, too, do not fill. The mere fact that such established and well-known breeders of Shropshires as Mr. Orme Foster, Mr. Smith, of Sutton Maddock, and Mr. Sheldon, of Brailes, could get no nearer than a commendation, will go to show how excellent was the entry, and how strong the competition.

The other short-wools—each with time no doubt aspiring to a distinct rank of its own—numbered up Hampshire Downs, Pure Hampshire Downs, Improved Hampshire Downs, Suffolk Downs, Oxford Downs, East Downs, and Merinos. Of all these many mixtures Mr. Humphreys' useful Hampshires were pre-eminent, the Oxfordshires standing well for commendations, and Mr. Sturgeon's Merinos, with their fine fleeces and thin carcases, being the curiosities of the occasion. However they may answer elsewhere, they do not tell much in the way of public exhibition. In contradistinction to these, on the score of attraction, were Mr. Canning's well matched pen of Hampshire Down ewes. They showed a deal of breeding, with great length and really beautiful heads and necks. If the Hampshires can run back to such a foundation as this, they are bound to go on. But we shall see no more of these five

Canterbury ewes, as they were sold during the week at something near twenty pounds a-piece, to go to New Zealand.

Save but for the Romney Marsh, or "Kent's own," the sheep show would have been generally an excellent one, and in no way more so than in the "other long-wools"—or in other words, the Cotswolds. There has rarely been a finer display of them, taken collectively, or with grander specimens to examine, number after number. We fancy they told more than any other on the local breeders; and if Shorthorns will hereafter improve their herds, the Cotswolds will do as much for their flocks. Mr. Garne was again signally successful, but all the best Gloucestershire roen will be found to the fore, with, as was admitted, better sheep than they had ever yet sent out. Indeed, if anything, a Cotswold prize ram only looks, as he lives, a little too well. He is terribly pampered and trimmed and touched up for the show week, and like many an overdone dandy, often fit for little more than to look at. Unfortunately, this trimming has its effect on the judges, and they put out one of Garne's best sheep, chiefly, as it would seem, from his having been more in use than the full-blown exquisites alongside him.

It is useless attempting to disguise the fact that the Romney Marsh sheep and the turn-rist ploughs furnished the great fund for amusement in the somewhat dull and desolate show week. With their long ugly heads and lop jackass ears, their bad shoulders, hollow backs, and heavy gut, their thin thighs, flat sides, and narrow ends, the stranger wondered what they could be there for! Nevertheless the Kents have their advantages: they stand rough weather—the wind and the rain and the cold—better than any other breeds, while even a West-end butcher will tell you that they die well, and have capital flesh. But surely something more may be done with them, or the Royal Agricultural Society's visit has been made, and its three thousand pounds out of pocket expended altogether in vain. If Mr. Sanday can show us what the Improved Leicester is compared with Mr. Barford's illustration of him as he was—if a Babraham Down can improve so much on the limited proportions of a Sussex sheep—and if the rough, ragged, uncultivated long-wool can develop into the magnificent Cotswold—will they tell us that nothing more, or rather nothing at all, can be done for the Kent sheep? We should be loath to say they are not the sheep for the district, but we are quite ready to maintain that so consistent a defiance of all the advantages of quality and symmetry is not a type of the age we live in, or a land-mark of the progression at which agriculture has arrived.

So far we have had to record a short show, hut, on the whole, a very admirable one; and this was in no way qualified by the pens of pigs. Never were these so well classified, and scarcely ever have they been better. There was hardly an indifferent pig on the ground, while many great winners of last season had, like Mr. Mangles' boar and sow, to be content with second places. The small pigs, blacks and whites, were very admirable; and foremost among these the improved black Suffolks are making great way. Messrs. Crisp and Sexton brought on their best from Norwich and Framlingham, and only an echo of their previous successes. These were backed by a number of the Yorkshire whites and spotted pigs, but the clear choice from so strong a show was to be found in the pen of three sows of a large breed. Mr. Hlewer brought two lots of Berkshires, and every one, including his own immediate opponents, confessed that two such perfect and even pens had never before been sent out. Their identity of character, handsome heads, rare length, and fine flesh, put a stamp of excellence on them that is not often equalled; and one had but to dwell over them and compare one pen with the other to readily determine there was "no pig like the Berkshire."

If, as was really the case, we say that the local classes were only intended to please local people, and so put the scarce, big-boned Sussex beasts in the same category with the Kent sheep and ploughs, then the one weak place of the meeting was the horses. Never have these been so generally indifferent. Rarely have there been so few "exceptions" to save it. Indeed, the horses deputed altogether upon the Suffolks, and the Reports we have been giving of late about Norwich and Framlingham had all kinds of confirmation at Canterbury. From amongst these, again, the two-year-old colt we spoke of at Framlingham as "the best

the Barthropp's ever bred," was, despite the rough company he was in, indisputably one of the "stars" of the whole entry. Whether we went to Towneley's Shorthorns, Webb's sheep, or Hlewer's pigs, there was nothing better in his way. If the Suffolks can continue to show such substance, power, and style, there will be nothing hereafter to excel them. The Pilgrim is something more than a cart-horse. With his fine arm running into a clean flat leg, his blood-like quarter finishing off in rare muscular thighs and sound hocks—his good middle and already well-developed crest—this colt has only to further furnish to be something extraordinary. He is a little Roman-nosed, and the head is not quite a handsome one, but he betrays nothing of that vice for which his sire is so notorious; and we never went up to an apparently better-tempered animal. Mr. Barthropp sold his prize filly on the ground for 120*l.* to Sir Thomas Lennard, but the price of The Pilgrim was almost anything he liked to ask. The first prize agricultural stallion was a bay Shire horse, said to have been commended as a colt at Salisbury. He is a coarse horse, with good action, very carefully got up, and his legs "pulled" and fined to a nicety. Neither the second or third were in anything like such trim. Mr. Clayden's stallion was second best at Warwick, and he has now been four times a winner at the Society's shows. Jonas Webb's third prize, another Suffolk, was but little liked, but he has been doing a deal of work of all sorts, and may show better in better form. Amongst the utterly passed over were Hare's Goliath, and Barnes' Champion. The veterinary inspector pronounced the latter to have a five-year-old mouth, and disqualified a number of the best-looking horses, on the ground of unsoundness. With these went a long way the best-looking dray horse—almost the only one of his class with the character of a dray horse. The judges of course selected him, but the veterinarian condemned him as a whistler. The best agricultural horse we have had for some years—the famous "Nonpareil"—was once declared by the inspector to be ineligible as "a whistler"; but one of the judges insisted upon his being re-examined, and eventually he was passed. Still, nothing can be more supreme in its way than the verdict of Professor Spooner; and his very manner to unhappy exhibitors is a thorough study of "hedged-in" dignity. But he has a good deal to answer for, nevertheless. Roaring, constitutional ophthalmia, cataract, and chronic foot lameness are amongst the causes of so many disqualifications: and yet the horses were thought to be a sounder lot than those sent to Warwick! The awards in reality rested more with the Professor than the judges themselves, and he took immense pains that nothing doubtful should bear their mark. Old Mr. Tattersall was wont to say there was no such thing as a sound horse, and the Canterbury Show went far to confirm his opinion.

If the agricultural horses were a ragged uneven lot, what shall we say of the hacks and hunters? Let us just ave the first thorough-bred stallion and Mr. Burch's Norfolk hack mare that we noticed in Suffolk, and pass the rest as beneath notice. The hunting mares were a common vulgar lot; the second prize for hunter stallions ought never to have been awarded, and the rips and half-bred animals that made up the entry might well have been disqualified ere they came to the judges at all. Dagobert is a well-topped, short-backed, compact horse, that really looks like getting hunters. He has rather twisted fore-legs, but is far from a bad one, and came here with the recommendation of having been the first prize horse of the same order at the Yorkshire Show a year or two since. His nomination in the catalogue was not altogether correct; for Dagobert was not bred by the Duke of Richmond, but by Mr. Bennett, of Chieveley, near Newmarket. Mr. Kersey Cooper sent his clever stallion pony; and the first prize galloway mare, by no means extraordinary, took the stewards and veterinary inspectors something like an hour and a-half to determine whether she was over fourteen hands or not! There was Mr. Gibbs as director, and Mr. Hobbs and Mr. Cavendish and Mr. Pain and Mr. Pope to "see fair" as afterwards; and Mr. Spooner and Mr. Simonds to set the standard—which they eventually accomplished by the aid of a hammer, a knife, a bit of string, and a little "spittle and perseverance." Judging by such an onerous duty as this, official life in Canterbury must have been hard indeed. However, the galloway was at last declared "all right," and sold forthwith for sixty pounds.

Amongst the accompanying proceedings were the Dinner and the General Meeting, reports of which are given. Although the Music Hall was well filled, the entertainment scarcely conveyed the idea of being the great dinner of the national Society. Such, in fact, it was not, although many of the more notable members supported it with their presence. The speech-making was altogether rather heavy; by far the best address being that of the Dean of Canterbury, who dwelt very happily and effectively on the improved condition of the working-man, and the inevitable rise in the social scale of the agricultural labourer. The President's point was the steam plough, and a series of calculations for which, however, his Lordship declined to stand answerable. We must ask the like immunity, as the Hall was not the best to hear in, and the different items not over clearly put. But figures in after-dinner speeches rarely tell, and they certainly did not at Canterbury. Lord Winchelsea, who was by no means so good as we have heard him, very naturally took the horse as his text-word; while the display of these animals at the meeting must have had immense weight with his lordship. Few of those who have read what he has said so recently in the House, or written in *Bell's Life*, would suppose that this was the same Earl of Winchelsea we found addressing the yeomen of Kent on the terrible deterioration in our breed of horses! The General Meeting went off rather tamely, although Major Munn protested, in the name of the agriculturists of the county, against the extraordinary determination of certain implement-makers. It appears that a counter-resolve has already been adopted, and that farmers have agreed to deal with no firms which do not come under the countenance of the Society. Whatever may have been the inducement, there is no doubt but the adoption of this step was a grievous error. It was generally so regarded at Canterbury, although few cared to speak out in that vigorous language adopted by Major Munn. Still, the great Houses did not altogether ignore the Meeting, despite their announcement not to exhibit. Many of them stood by implements of their own manufacture, while their catalogues were in circulation, and orders taken as usual. Surely this is scarcely consistent with the avowal, more or less direct, that they wished to have nothing to do with the Meeting.

THE IMPLEMENTS.

The site of the Show-yard was north of the city, in front and in the grounds of a pleasing mansion called "Hale's Place," at a somewhat inconvenient distance from the most populated part of the town; but it had a decided advantage in the proximity of the trial-grounds for the mowers, reapers, and steam cultivators. Its contiguity to the railway, also, was another great counterbalance against a prolonged walk; so that, upon the whole, it was well-chosen. The implement-stands and trial-yards were, as usual, in one division of the field, with the cattle-sheds on the opposite side. The trial-grounds were on Folly Farm, adjoining the yard; and those for Kentish ploughs and heavy steam cultivation on the higher ground above.

The trial of implements and machinery which commenced on the Wednesday morning previous to the opening, was confined to the following departments:—"The application of steam-power to the cultivation of the soil," thrashing machines, chaff-cutters, mills, crushers, oilcake-breakers, bone-mills, turnip-cutters, hand-tools, field-gates, and miscellaneous awards. There were also many local prizes, consisting of prizes or ploughs, ploughmen, hop cultivators, grass-mowers,

reaping machines, hop-pressers, building designs, and apparatus for drying hops: samples of hops of various kinds, and of wool of various kinds; altogether forming a long list of prizes.

The annexed table will give some approximate view of the implements shown; for, notwithstanding the absence of some of the leading firms, the exhibition was altogether a good one. Still, from the subjoined table of implements and machinery exhibited, it will be seen that the falling-off since last year is very considerable:—

ARTICLES EXHIBITED.	No. of Exhibitors, and in Articles as below						
	Lincoln, 1854.	Carlisle, 1855.	Cheshamstead, 1856.	Salisbury, 1857.	Gloucester, 1858.	Warwick, 1859.	Canterbury, 1860.
Steam-ploughs or cultivators (<i>i. e.</i> , draining-ploughs) ..	1	4	6	8	13	16	14
Steam-engines	24	18	31	28	43	121	83
Steam traction engines ..	—	1	1	4	2	5	—
Drills	30	14	18	23	47	108	58
Manure distributors .. .	9	3	5	13	11	7	4
Horse-hoes	21	10	24	25	34	67	46
Hay machines	4	6	10	11	12	16	14
Horse-rakes	14	8	17	22	24	44	36
Reaping and mowing machines	12	9	5	12	17	15	66
Carts (34) and waggons (13) ..	25	14	33	34	28	72	47
Ploughs	27	1	—	—	—	225	127
Subsoilers	17	8	10	8	12	32	7
Cultivators, &c.	25	23	28	20	15	92	37
Cider-crushers and rollers ..	24	17	25	18	24	115	38
Harrow	16	9	17	19	32	108	72
Draining tools, and in sets ..	4	1	8	7	8	43	19
Thrashing machines	46	21	33	21	87	73	63
Corn-dressing machines .. .	24	18	31	31	29	61	43
Chaff-cutters	33	22	46	37	53	168	48
Linseed-crushers, or mills ..	20	14	25	15	22	41	62
Turnip-cutters, &c.	18	20	32	20	27	58	35
Oilcake-breakers	20	12	23	16	32	54	34
Churns	12	7	10	10	20	92	87
Brick and tile machines ..	11	7	9	5	6	25	—
Mills	—	—	—	—	—	4	56
Bone-mills	2	—	2	—	7	9	10
Cheese-making apparatus ..	—	—	—	—	5	16	13
Cheese-presses	4	5	5	—	22	23	43
Root-pulpers	—	—	—	—	28	63	30
Screening machines	3	—	—	—	16	15	22
Gates (46) and field-gates (56) ..	..	..	..	..	..	..	102
Horse-powers .. .. .	..	..	..	..	..	..	20
Washing machines .. .. .	..	..	..	..	..	..	85
Water-casks, tanks, &c .. .. .	..	..	..	..	..	..	18

On Wednesday and Thursday, when the business commenced, the machines for hand-power were worked through Mr. Amos's dynamometer, and those for steam-power were driven through a revolving dynamometer; thus the amount of force consumed by each machine was accurately measured and registered. The hand oilcake-breakers were tried five minutes each, the quality of the product being examined and weighed by the judges. In this test some most remarkable results were elicited, well showing the importance and value of the Society's annual engineering proof of the capabilities of agricultural machinery. One breaker of precisely similar construction to another took twelve times more power to do the same work, the difference arising from the perfection of workmanship in the one case, and the imperfect finish and setting of the other. In another instance, one machine took twenty times as much power as another to do the same work, the difference being in the number of working parts and the principle of action. The hand oilcake-breakers tested were—One of Dray, Taylor, and Co., invented and manufactured by Nicholson, of Newark, in which the moveable roller is driven by an internal cog-wheel, thus simply obtaining an unusually great variation in the sizes broken, and avoiding much friction—one of E. R. and F.

Turner, having an extra barrel, which turned in one direction breaks for beasts, and in the other for sheep—one of Picksley, Sims, and Co., breaking four different sizes of cake, and having two screen-boxes for receiving the cake and dust—one of T. W. Ashby's compact machines—one of Hunt and Pickering's—one of Bental's iron breakers, making six different sizes—one of Smith Brothers—one of Johnson and Whittaker's, which turns off four different samples by simply reversing a handle. The hand root-pulpers comprised some new minor features, but some very successful ones. The manner of trial was to serve out 108lbs. of roots, and examine the product made by the machine. They were of the following makers—Barnard, Bishop, and Barnard's, the cutting parts made of cast-iron rasps, which sharpen themselves; Hunt and Pickering, a disc pulper; Picksley, Sims, and Co., a new machine, with the knives fixed on a disc; Mellard, a Martin's machine, shaped like Gardner's, but with the knives on the outside and the roots inside; Bental's well-known pulper; Woods and Son, Phillips' pulper; and Johnson and Whittaker's, with four toothed rollers on the screw principle. The hand root-cutters and slicers were from the subjoined firms:—Barnard, Bishop, and Barnard's grater, which cuts turnips into strips; Carson's Moody's gauge cutter; Picksley, Sims, and Co., with sickle-shaped knives, and the hopper furrowed, to prevent roots wedging together; Bental's Gardner, with improvements for separating dirt and small chippings from the clean cut roots; Mellard's, Martin's cutter; Johnson and Whittaker's double-action slicer; the trustees of Crosskill, root-cutter; Bental's Gardner, with improvements.

The following power machines were tried three minutes each:—The pulpers of Barnard, Bishop, and Barnard, of the Trustees of W. Crosskill, of Hunt and Pickering, of Picksley and Sims, of Bental, and of Woods. The cakebreakers of Smith Brothers, of Bental, of Dray, Taylor, and Co. The chaffcutters of Picksley, Sims, and Co., of Page and Son, of J. Cornes, of Hill and Smith, of Bental, of Alcock, of J. Cornes and Sons, of Johnson and Whittaker, of Plenty and Pain, of Ashby & Co., of Gardner, of Richmond & Chandler, and Carson. The corn and linsed crushers were tried on Friday, the power machines being run two or three minutes each, first with oats, and then with linsed; the power consumed being observed, and the produce examined and weighed. The machines were those of Turner, Amies and Barford (late Stanley), Bental, Woods, and other makers. The hand-power chaffcutters were tried with barley straw, this forming a better proof for the knives. The makers were J. Gardner, H. Carson, Richmond and Chandler, E. Page and Co., Picksley, Sims, and Co., Johnson and Whittaker, Bental, Ashby and Co., James Cornes, T. Alcock, Snowden, Cornes and Sons, and others.

Those rather out-of-date pieces of mechanism—horse-power thrashing machines—were tried by the necessary number of horses required; a certain quantity of wheat and of barley being served out to each machine. They belonged to Haslam, Tasker, Hensman, and Woods—the latter machine met with an accident during the trial. The steam-power combined machines were tried each with 100 sheaves of wheat, and then further (unless ineffective in the first performance) with fifty sheaves of barley. They were driven by one of Cambridge's eight-horse portable engines. The makers whose machines were tested were Foster, Nalder, Humphries, Savory, Holmes, Gibbons, Gilbert, Tasker, Ellis, Cambridge, Ruston, Procter, and Co., Plenty and Pain, Wilkinson, Wright, and Co. Wedlake and Co., Kirby, Ashby, Turner, and others.

The trials of the steam ploughs took place on what would be called light land; but the hardness of the ground,

not so much in the clover lea half of the field, as at the pea stubble end, also sloping abruptly up hill, made six-inch deep ploughing to be hard pair-horse work. Various operations were performed on the earlier days of trial, such as Mr. Fowler's ploughing, grubbing with the ploughshares and small-pronged breasts, and ploughing with the Kentish rist plough; Mr. Coleman's working his new scarifier, which has a set of tines at each end of a frame mounted upon four storage wheels; Messrs. Chandler and Oliver's ploughing with their combined winding engine; Mr. Beard's ploughing and grubbing with a new windlass attached behind an engine; and Mr. Eddington's ploughing with his two engines mounted upon windlass frames. On Friday morning, a test was applied to each machine by the judges, Professor Wilson, Mr. Wallis, and Mr. Owen. Mr. Fowler's twelve-horse engine, with many improvements in the attachment and driving of the drum, and his newest four-furrow plough, turned over two roods thirty-eight perches in forty minutes, the depth six to seven inches. This is at the rate of one acre and seventeen perches per hour; and the work by horse-plough was certainly strong pulling for two horses, turning a furrow of equal breadth and depth, that is, ten inches wide by six or seven inches deep—one of Busby's ploughs being tried by dynamometer in various parts of the field to ascertain the draught. The quantity of coal burnt in the forty minutes was 137 lbs.; the number of hands engaged was two men and two or three boys. Messrs. Chandler and Oliver, with their patent three-furrow plough and ten-horse engine, ploughed at similar breadth and depth one acre one rood and eight perches, in two hours and sixteen minutes, with 224 lbs. of coal; the number of hands engaged being four men and two boys. Mr. Beard, with an eight-horse double-cylinder engine and two-furrow plough, ploughed to the same depth one rood and thirty-eight perches in one hour and twenty-eight minutes, or at the rate of one and one-third roods per hour, with ninety-one pounds of coal, employing six men. Mr. Eddington, with two eight-horse single-cylinder engines, and two three-furrow ploughs, turned over one acre and twenty-six perches in one hour and eight minutes, with 201lbs. of coal, nine men being engaged in working the apparatus. This work is at the rate of one acre per hour; but unfortunately the new engines which the inventor entered did not arrive in time, and thus the whole trial was under the disadvantage of having two old engines of smaller capability.

A clever little French drill, with clock-work seed-delivery, was in action; as also Mr. Hancock's pulverizer plough, which, slicing the soil it turns into three pieces, effectually subdivides it, and makes a fine tillage.

In the trial yard are to be seen Chaplin's locomotive with upright boiler; Aveling's portable engine, made self-travelling by a pitch-chain, and ingenious steering in the shape of a disc wheel attached to the shafts in front, thus dispensing with the horse; Ward and Burman's bone-mill; the massive and powerful bone-mill of Crosskill's trustees; the portable engine of Bond and Robinson; the thrashing-machines of Maggs and Co., in a shed thatched by the aid of their thatch-making machine; Oldham and Booth's bone-mill; Wall and Haslam's straw-elevator; Parkins' bone-grater; and many other machines.

As usual at these great gatherings of implements, there were many of very doubtful utility. The Show of this year we think has produced some singular applications of the agricultural mind in providing for modern improvements. One of the most infelicitous of all infelicitous inventions was shewn in model by Mr. Banks, and is thus described—"Patent portable suspension railway mounted on wheels. Upon the

portable way is a travelling carriage, to which is attached the cultivating machine. This carriage is hauled backwards over the land by steam power, and hauling tackle fixed at each end of the portable railway. The wheels of the portable way travel on strips of land." On these wheels also rest two engine-houses and engines, besides the curious balance power to keep the suspension chains extended. The whole is designed to plough the land into fifty-yard stretches, passing the weighty apparatus along grooves made in the soil, and ploughing transversely as the machine progresses. The strips of land are intended to be converted into grass, and depastured or mown, as the inventor suggests. Price £650. Another invention, not quite so ridiculous, is the weed-exterminator of Mr. Evens, an implement really manufactured, and to be purchased at the low sum of thirty-five pounds. It begins its work with an array of cultivating tines, closely arranged, passing about two inches into the soil, and collecting the weeds, which it professes to pass up to a set of revolving teeth, which take them up to an endless web, by which they are conducted into a furnace, there to be burnt or charred, and at length deposited upon the ground as a most useful manure. We regret to say these absurdities are not all; and we merely name them as rare specimens of unprofitable elaboration.

Powis, James, and Co.'s tenoning and mortising machines; Robey and Co.'s portable engines; Haywood's portable engines; Wilkinson, Wright, and Co.'s engines; Ashby's 4-horse power portable engine, with improvements simplifying and strengthening the parts, and a flour-mill adapted to it; also a small thrashing-machine, by the same maker, driven by a 2½-horse power engine, capable of thrashing out twenty quarters per day. In this machine springs are employed in place of slings, and many bearings are thus dispensed with. Morton and Co.'s strained hoop-iron and wire fencing; Child's suction dressing-machine, and many other articles and machines were also shown in the trial-yard. Some interest was created on Friday afternoon by the testing of Ericsson's calorific engine, a new motive-power, claiming to save two-thirds in fuel, besides possessing many great advantages over the steam-engine, as doing without water, being safe from explosion, being so light and simple, &c. The price of this single-action engine is £130, the power professedly about 2-horse; however, a leading implement-firm have worked some for ten months, with the alleged result of 4-horse fuel being consumed for effecting only ½ a horse work. The friction-break, in the present trial, showed the power to be no more than ¼ of a horse power. The engine exhibits remarkable ingenuity in the simple manner by which intricate differential motions are obtained.

The reaping-machines were been tried upon a piece of exceedingly light unripe rye, which presented no obstacle to easy delivery, though the profusion of wild camomile and other weeds on hard rough ground proved the capability of the cutter. The following were worked with results more or less satisfactory: Burgess and Key's reaper, with its self-delivering screw platform, but without the conical dividing roller, which is so effective in a heavy and tangled crop; Prentice's combined reaper and grass-mower, with peculiar and excellent contrivances for self-adjustments to all irregularities of surface, and endless belt delivery; Dray's champion reaper, with tipping platform for back delivery; also his improved machine, with curved platform for side delivery; Woods' American machine, which has proved itself also valuable as a grass-mower; Woods' worked also a new reaper with automaton raker-off. This clever contrivance consists of a rake made to sweep across the platform horizontally, by the fore end

being attached to an endless pitch chain travelling in a groove round the entire platform; the action is that the rake is projected forward along one side of the platform, then passes sideways, gathering the cut corn into a bunch at the other side of the platform, and then drawing back with its load, and depositing it in a neat square heap ready for binding. Nothing can exceed the neatness and regularity of the delivery; but some further alterations of this new piece of mechanism, the whole weight of which is very trifling, are required before it can cope successfully with the weight of a bulky crop. There is a freedom from intermittent and rattling movements, which promises for its principle a complete success after it has been adequately developed in the harvest field. Hellard's reaper, which is also a grass-mower, is distinguished by its creeper finger-guards over and in advance of the cutter, for lifting up laid corn; the process being assisted also by a revolving swing roller immediately behind the cutter-bar, an endless web delivering either in swathe or sheaf. This machine is interesting to those farmers whose heavy and lodged crops defy the clean cutting of many other reapers. Cuthbert's improved Hussey, with the connecting-rod end of the cutter-bar hung on a pendulum sling (thus reducing friction), is worked by one horse, a man raking off. The opinion of farmers present appeared to be, that the self-delivery machines have not altogether supplanted the simple and cheaper ones, requiring a man to rake off; but we believe there are crops and circumstances adapted for both classes of machine.

The trial of grass-mowers was very satisfactory, the crop being sufficiently heavy, and the ground presenting every variety of impediment likely to be found in ordinary meadows. Prentice's machine did its work well. Dray's did far better on the clover which was afterwards cut. Hellard's attempted to tedd as well as cut, by means of a revolving apparatus behind the cutters; but trying to do too much, fell short of performing either process perfectly. Cranston's new Woods' mower, which won the great medal at the Paris show, cut beautifully, close and regularly; this light, easy, and wonderfully simple piece of machinery being much admired. The breadth cut is 4 feet 4 inches. The price for the one-horse machine £20; for the two-horse mower, £22. The machine has two driving or carriage wheels; the flexible steel cutter-bar clings closely to the surface of the field, and being placed in advance of the workman, who holds the reins like a coachman on his box, the cutting is always under his eye, and the knives are instantly raised by a lever-motion, in case of any obstacle. When his task is done, the driver can take up his knife, and trot away to another field. The Allen's grass-mower of Messrs. Burgess and Key, price £30, is well known; and as a further testimony to its efficacy, we may add that the Duke of Beaufort has this year cut 200 acres of hay with two machines, with the most complete satisfaction, the rate of work for each mower being about an acre per hour. The peculiarities in the machine are as follows—the height of the framing above the ground is found indispensable in a very weighty crop of close grass, the cutters are backward instead of in the front, so that in case of an obstacle arresting the machine, the cutter-bar is lifted by the very impediment itself, and so passes safely over, instead of being forced into the ground by downward pressure from behind, and so causing accidents. The driver regulates the pressure upon the cutter by shifting his seat to either side of the box. The 3½ feet driving-wheel is in the middle of the frame, which is balanced as it were upon it, while a travelling wheel on a spring bracket at the near side preserves the equilibrium of the whole machine, while it allowing to accom-

moderate its position to every shape of ground. By a lever handle the driver can instantly raise the knives out of reach of a large obstacle, and by another lever and ratchet-motion, can back for the purpose of getting an impetus when required after a stoppage. The pole is at liberty vertically, so that the machine is not dependent upon the horses for the regulation of the pitch or elevation of the cutter above the ground. The triangular scissor-edged knife-blades are hollowed underneath, so that bits of tough bent-grass, &c., instead of jamming in between the knife and the fingers, or left far beneath, are received into the hollow cell, and gradually rubbed or cut to pieces and expelled. The breadth cut is 4 feet, and the fingers of wrought iron can be renewed separately by screws.

Burgess and Key's new machine, first brought out at the present meeting, is a very clever and valuable improvement. The main driving-wheel, in a central position in the frame, is hung in an inner frame, which being hinged to the main frame at its forward end, has a free lever movement, like the coulter of a drill. This enables the wheel to traverse the bottom of a furrow, or mount a ridge without ceasing to drive the cutters, and without interfering with the level of the cutters. The driver's-seat is erected upon the inner frame, so as to give weight enough on the ground for the bite of the wheel periphery, and a steel-yard and weight can be added at pleasure, in case of a very hard-cutting crop. The wheel is lifted up off the ground for travelling; the main frame riding always upon two large travelling-wheels. The cutter-bar is attached to the frame by a hinge-joint, so that it follows the conformation of the surface it sweeps over, no matter what may be the relative position of the frame, so that the frame may travel on one side of either a ridge or furrow, and the knives will cut perfectly close on the other. To pack up for removal, nothing is necessary but to lift up the cutters, and raise the main driving-wheel. This principle of leaving the cutter-bar at perfect liberty vertically, rising or sinking of its own accord at either end, without the slightest concern being necessary on the part of the workman, is of great merit, and will be ultimately found applicable, we have no doubt, to the corn reaper as well as to the grass mower. In fact, this beautiful arrangement makes a mowing-machine almost as accommodative to the hollows and protuberances of meadow land as a chain-harrow is; yet in spite of the universal-joint action of the combined play of the frame and cutter-bar, the accurate working of the spur-gear and crank, the connecting-rod, and slide, is in no respect interfered with.

The final contest for the thrashing-machine prize lay between the four following makers: Turner of Ipswich, Humphries of Pershore, Gibbons, and Sawny. The time given was half-an-hour; with these results: Gibbons took rather the most power, and did most work, thrashing 11 cwt. 3 qrs. 14 lbs. of corn; Humphries thrashed 11 cwt. and 17 lbs., but with a clearer sample of wheat—more free from white-heads than that produced by the former machine; Sawny knocked out 10 cwt. 1 qr.; and Turner, with a small-sized machine, thrashed 5 cwt. 1 qr. and 3 lbs. The prize list shows the decision of the Judges.

The so-called light land performances described above have been made still better in favour of steam tillage, by a comparative testing of a Busby plough with the dynamometer. A furrow ten inches wide and seven inches deep gave a draught of fully six cwt.; so that instead of being pair-horse work, worth 8s. an acre, it is in reality three-horse work at 10s., or as some value it, 12s. per acre. Fowler ploughed this ground at the rate of 11 acres per day of 10 hours, with 18 cwt. of coal, and the labour of two men and two boys; to the expense of which must be added the cost of water carting, removal, oil, &c., making a total of about 40s. a day, or 3s. 8d. per acre. The prime cost of this twelve-

horse power-hauling apparatus, with 800 yards of best steel wire rope, is £699; the four-furrow instrument, with scarifier hearts, £81, altogether £780. Twenty per cent. annually (an excessive estimate) for interest, wear and tear, and contingencies, will be £156, say 15s. per day for 200 days in the year, brings up the daily outlay to 55s., or a total outside cost of only 5s. per acre. While by horses the ploughing would cost 10s. or 12s.; and indeed, if we follow the *Journal of the Royal Agricultural Society* on "horse power," which in the data from numerous tables, of 2s. per cwt. drawn ten miles (in ploughing an acre) as the cost of horse work, we get just 12s. per acre as the price of the ploughing. The cost of Robey's machinery, including ten-horse hauling machine, 1,200 yards of steel wire rope, and three-furrow plough, with scarifier breasts, is £606; the hands required are four men and two boys; and the extent of land ploughed was about half that done by the former machine; that is, it was at the rate of between five and six acres in ten hours. The day's expenses being about 36s., and twenty per cent. more on first cost for 200 days in a year, making altogether 48s. per day, or a total of 8s. to 9s. per acre.

Eddington's machinery, including two steam-engines, two windlasses, ropes, and two four-furrow ploughs, costs £1,198, and employs six men and two boys (not nine, as elsewhere stated). The prize engines had not come to hand in time for this trial, and, allowing for their superiority to the common single-cylinder engines obliged to be employed on this occasion, the rate of work is about $1\frac{1}{4}$ acre per hour, or 12 acres a day. The expenses are over 54s. per day; add 20 per cent. as before, or 23s. per day, and the whole cost is more than 77s. per day, or say 6s. 6d. per acre. The apparatus of Mr. Beard, of Stowe, near Buckingham, is not a manufacturer's, but a farmer's contrivance. The principal merit of it is in the price—only £357, including eight-horse engine, 900 yards of steel rope, and double-furrow plough. The amount of work done is very small, and the cost for all high.

The Judgea took great pains to ascertain the merits of the steam-ploughs: they have tested the amount of work done per hour and per cwt. of coal, the time requisite for shifting the apparatus; and, besides seeking the value of the ploughing by means of the dynamometer, and measuring the sorts of ground, have also taken the levels of the surface operated upon. The trial in the heavy-land field, where the draught of a Busby plough, with a furrow ten by seven inches, averages along a fifteen-chain length of field no less than 12 hundredweight, and in some places where never ploughed so deep before, much more is the most extraordinary ever witnessed in steam culture. The average incline of the field is 100 feet rise in the fifteen chains length, but nearly half the distance actually has a slope of one in four-and-a-half. Of course horses would never attempt to draw a plough up at all; but on the level the draught shows that at 2s. per cwt. (as before taken), the cost per acre by horse labour would be 21s. per acre; but as six extra good powerful horses must necessarily be yoked at a disadvantage for pulling, as compared with a team of two or four, many practical men consider that 36s. per acre is the most proper estimate. Now, how much of this tremendous ploughing did Fowler accomplish? Taking three furrows uphill and four furrows down, he turned over eleven-sixteenths of an acre in one hour, or at the rate of nearly six and three-quarter acres per day. The day's expenses and per-centage being £2 17s. (with an extra man on the plough) the total cost per acre is 8s. 6d.—that is only one-fourth to one-third the price of horse labour.

It now remains only to walk through the stands, and chronicle remarkable or meritorious articles. But what a sad gap in the attractions of the yard is opened by the absenteeism of the great firms whose extraordinary exhibitions of multiform machinery and world-famed implements, and whose interesting arrangements of farm mechanism in motion, used to draw so many spectators and constitute so grand a feature of the show! Still we have had an excellent collection of the useful and beautiful, in wood and metal, for supplying every mechanical want of the husbandman, or

indeed of his wife. And this, be it remembered, is triumphantly accomplished without the aid of such men as Clayton and Shuttleworth, of Lincoln; Ransomes and Sims, of Ipswich; J. and F. Howard, of Bedford; R. Hornsby and Sons, of Grantham; Tuxford and Sons, of Boston; Garrett and Sons, of Saxmundham; Barrett, Exall, and Andrewes, of Reading; B. Samuelson, of Banbury; and E. Crosskill, of Beverley; H. Clayton, of London; Whitehead, of Preston; Nicholson, of Newark; and Smyth and Sons, of Peasehall.

Commencing at the first shed, we find on the stand of S. and E. Ransome and Co., Long's apparatus for sheep-dressing; and amid a variety of articles, the new mouse-trap of Mr. Colin Pullinger, which deserves the immediate attention of all anxious to rid their premises of the inveterate little vermin. Lord Leigh's prize field gate; Warner and Sons' pumps for all purposes and of all capacities. Thos. Bradford, of Manchester, exhibits his novel and excellent combined washing, wringing, and mangling machine, able to wash twenty shirts at once with perfection of cleansing and without injury. In the prize thrashing-machines of Gibbons and Co., of Wantage, we have a high-class workmanship and efficient straw-shaker, new cross-grooved riddle, and cross blast, by which the chaff is blown out at the side instead of underneath the machine, and the corn is elevated and put through a barley-horner. Bigg, of Southwark, exhibits his sheep-dipping apparatus. Lyon, of Pinsbury, has a large assortment of sausage and mincing machines. The Trustees of W. Crosskill, of Beverley, have a very fine stand, comprising their thrashing-machines, compound-action mills, bone-mills, Lambert's new root-pulper, clod-crusher, patent wheels and axles, harvest carts, and market carts. Humphries, of Pershore, shows his first-class thrashing-machines, noted for effective work and portability. B. Fowler and Co., of Whitefriars, have a great variety of pumps, hose and pipes. Coleman and Sons, a collection of their unsurpassed cultivators, and a new lever hoe. Clay, of Wakefield, exhibits his clever cultivator, with teeth which withdraw from the land backwards, like those of a horse-rake. Ruston, Proctor, and Co., of Lincoln, show their portable and fixed engines, their combined and finishing thrashing-machines, grinding mills, and saw-benches. Coultas, of Grantham, has a show of his well-made drills. Barnard, Bishop, and Barnard, of Norwich, bring root-pulpers, troughs, garden tables, ornamental chairs, and galvanized wire netting. On the extensive stand of Richmond and Chandler, of Manchester, represented as usual by Mr. Norton, we find bean and oat-mills, linseed-crushers, and the celebrated chaff-cutters, with recent improvements and simplifications in the manner of driving the feed-rollers at different speeds for varying lengths of chaff. Bobby, of Bury St. Edmunds, exhibits his noted corn-screen, with its parallel wires and ingenious cleaning action. Eaton, of Kettering, has a new revolving turnip-thinner of considerable merit, adapted to work on rows 12 to 30 inches apart, and leaving bunches of plants 9 to 18 inches asunder. The Agricultural Engineers' Company, of Swan-lane, London, have a very large collection of machinery and implements, the list of which fills 17 pages of the catalogue. Here we discover specimens from the works of several of the nonconformist firms, such as the engines and thrashing-machines of Barrett and Exall; the ploughs and corn-dressing machines of Hornsby, and Garrett; Howards' and Ransome and Sims' ploughs; the drills of Smyth, of Peasehall; the turnip-cutters of Samuelson; the liquid manure cart of Crosskill; the pipe and tile machine of Whitehead; and so on. Of course the makers themselves were present in the yard,

and could be heard of at their friend so-and-so's stand; and while by a little importunity one of their business catalogues might be forthcoming, you were by no means obliged to tender an order furtively, or consider the absentee manufacturer as not present for any purpose beyond taking a gentleman's glance at the show. Smith, of Kettering, exhibited his excellent and simply-worked steerage horse-hoe, and his winning-machine. Bond and Robinson, of Halesworth, showed their steam-engine, horse drag-rake, with jointed lever-rod, allowing the teeth to fall into furrows, and their exceedingly cheap and effective little horse-hoe, having its knives all in one piece, and cutting up every weed without chance of missing. Turner and Co., of Ipswich, send their superior metallic mills, small portable engines, and bean-cutters. Ashby and Co., of Stamford, show their portable two-and-a-half-horse and four-horse engines, their thrashing machine, and prize portable flour-mill, adapted to these engines; their hay-maker, horse-rake, chaff-cutter, and new rotating harrows, which as they advance revolve from the greater pressure upon the soil given to one side by means of a weighted arm. The action of these novel implements is very complete, pulverizing the ground, and tearing and shaking out weeds free from earth at a rapid rate; the price also is moderate. Mr. Aveling, of Rochester, shows a portable engine, made locomotive by a pitch-chain from an intermediate motion, geared from the crank-shaft. This wheel can be shifted in a quadrant for tightening the chain as it wears. The steerage is well obtained without any horse, by fixing a cutting disc-wheel to the fore end of the shafts, and having a man to sit on the back of the shafts to steer by a handle.

On the stand of Maggs and Hindley, of Bourton, Dorset, is a machine which ought to be brought more fully into notice, and that might be practically improved in detail, by some intelligent farmer taking and working it with a view to testing and developing its merits. There is no estimating how great a loss the farmer frequently suffers in a wet harvest, from his inability to cover in quickly the ricks which he builds with so much haste and anxiety. Thatching is a slow operation, and hence in many parts of the kingdom the bolting thrashing-machine, which does not break the straw like the ordinary drum, is employed to make a straight straw for "boltings" or bunches tied up as the straw comes from the machine. These being stored are readily and quickly fixed as a rain-proof covering upon stacks directly the roof is completed. In Devonshire they defy showers by a still better system. On wet days labourers are employed in the wheat barns to draw out corn from the mow, the straw thus coming out straight. The ears are cut off, the straw combed so as to remove the flabby portions which hold the wet, and under the name of "reed," is stored in readiness for covering-down ricks in harvest. Now Maggs and Hindley's machine, invented by Mr. Moody, is intended for weaving as it were a quantity of portable thatch, so that with a roll of this straw matting a large rick may be covered, and the thatch secured by pegs, in an hour's time, or even less. The length of the straw is the breadth of the fabric made; the warp, which may run to any length whatever, consists of galvanized incorrosive iron wire. With the straw previously prepared, and the reels of wire already on the machine, the work proceeds at the rate of 30 yards' length per hour, with the labour of only one man and a boy; and the manufacturers reckon the cost for labour and wire, and putting on the rick, at 7d. per "square," or 100 square feet. It is usual to estimate common wet-straw thatching at 1d. per square yard, that is, 11d. per 100 square feet; so that the machine, at any rate, will be less expensive to work, and the cost price of the

apparatus is only that of a ton of oilcake or guano. A somewhat similar machine was exhibited at the Paris agricultural show, but the work is more rapid and easy in the present one, and the fabric is of a superior description when made. In the French loom, two wires embrace the handfuls of straw introduced between them, by simply crossing each other; the result being that the fabric is a succession of small bundles, with a thin partition between which can almost be seen through; whereas in this machine one stout wire runs along one side of the fabric, preserving a flat and even face, while the other wire, being much finer, is passed round the stronger one, and ties the straw to it, the fabric being ribbed only on one side—this makes a fabric of continuous thickness without apertures for rain to penetrate through. There should be the facility of being able to set the rows of wire at a closer or wider distance apart, to suit different lengths of straw. The inventor declares that water will not soak or drive through this thatch; but it may be made of several inches' thickness, and in placing upon the rick the "lap" may be made so great as to give two or more thicknesses, like "courses" of ordinary thatch. More space, however, should be made between the two intervening wires, so that a much thicker and coarser fabric might be made. Still, some of the thatch has served admirably during one year, and is now stored up, and in good order for being used a second time in the coming harvest. Of course the applications of such a fabric are very numerous, and brick-makers, poultry-keepers, sheep-folders, gardeners, and wall-fruit growers, will find the value of such a cheap and effective shelter or shade. Messrs. Picksley and Sims, of Manchester, exhibit chaff-cutting machines, grinding-mills, and lawn-mowers. Page and Co., of Bedford, show their new chaff-cutter, their "Eclipse" iron plough, horse-hoes, scufflers, diagonal iron harrows, and their brick and tile machine, calculated to make, by hand-power, 20,000 two-inch pipes, or 14,000 bricks per day, or by steam-power 40,000 pipes, or 30,000 bricks per day. The price is low for so efficient a machine. On the stand of Messrs. Brown and May, of Deizes, we see models of Romaine's forthcoming rotary steam-cultivator, and of the endless railway, which is to support its weight over soft ground, a great improvement upon the shoes of Mr. Boydell's engine. Hill and Smith, of Dudley, have a very extensive stand, comprising an immense assortment of their implements, fencing, and gates. Mr. Bentall, of Heybridge, shows, in addition to his broadshare pulpers and harrows, a new and improved chaff-cutter, with fly-wheel, made with stiffer arms, to preserve truth of cut when in rapid motion, a simple arrangement of the change-wheels for different speeds of the feed-rollers, with an internal toothed wheel, which is thus its own case; he has also a new and extremely simple and cheap, yet strong, efficient, and durable bean-cutter. Messrs. Mapplebeck and Lowe, of Birmingham, have a great variety of machines, implements, and articles indispensable to the farmer, and also to the gardener and the housekeeper. Woods and Son, of Stowmarket, have an extensive show of mills, pulpers, root-cutters, corn-crushers, carts, thrashing-machines, and rollers. Mr. Ball, of Kettering, shows his iron ploughs, scarifiers, and waggons and carts. Mr. Ferrabee, of Stroud, exhibits chaff-cutters, and mowing-machines. Hensman and Son, of Leighton-Buzzard, show thrashing machines, drills, steerage corn-drills, and iron ploughs. Messrs. Newton, Wilson, and Co., of Holborn, enter the sewing-machine for all purposes, and of all patterns, for ladies or sempstresses. These marvellous little machines are now offered at an extremely low price, so that even the "cottage" is expected to avail itself of the rapid stitch, which in an hour performs about a day's old-fashioned labour.

Priest and Woolnough, of Kingston-on-Thames, show drills and horse-hoes, and the turnip-duster and fly-destroyer. Dray and Taylor, of London-bridge, have a large assortment of first-class implements and machines. Mr. Thompson, of Lewes, shows his horse-rake, hay-making machine, pumps, and levers. Mr. Weir, of Oxford-street, sends models of Mr. Halkett's method of guideway steam agriculture. Cottam & Co., of Oxford-street, show stable-fittings, and an immense variety of articles, useful in farm-buildings and gentlemen's premises. Messrs. Drury & Bigglestone, of Canterbury, have the largest stand in the yard, filled with machinery and implements of their own and of most of the first-class manufacturers. Messrs. Hancock, of Gloucester, show their pulverizer plough, a valuable implement for slicing up the furrow instead of turning it over in a solid piece; also their new butter-making machine, which cools the butter and extracts the butter-milk even in the hottest weather without the dairy maid touching the butter with her hands. Messrs. Howard, Riches, and Watts, of Norwich, have a very simple, strong, and durable grist mill; Child's American grain separator, operating by an "exhaust," which subjects every grain to the test of gravity; and also Child's clever little machine for broadcasting seed, consisting of a bag and hopper carried in front of the operator, having a rapidly revolving small cone beneath, which flings out the seed in a conical shower—a most ingenious little instrument. Messrs. Thomas Gibbs and Co., of Half-moon-street, the seedsmen to the Society, exhibit their usually splendid collection of specimens in the ear, grasses, enormous roots of fine quality, and samples of pasture seeds. Mr. Thorley, of Newgate-street, offers his cattle-food; and Messrs. Lawson and Son, of Edinburgh, a beautiful collection of seeds, samples and specimens of grains, and roots.

On Wednesday morning came off the event expected with such thrilling interest by the Kentish farmers and their men—the grand occasion when the whole world of scientific implement-manufacturers were to be struck dumb in presence of the inimitable feats of the genuine Kentish plough. Twenty-six Kentish turn-risters, with four horses and two men each—one of these being an iron turn-rist of the same Kentish pattern, and newly introduced as an improvement upon the primeval implement of wood—forced their way to the trial field. This proved to be a field of terrible trial and tribulation. There was also with them one of Lowcock's turnrest ploughs, as manufactured by Mr. Eddy, of Exeter, which won the prize at Warwick last year. The piece was a complete take-in to the bold ploughmen, being an old pasture with a heavy though dry soil, and a subsoil of stones and gravel concreted in clay. Certainly a good iron plough would make fair work even in such an untoward situation; but unfortunately, none came up to show what might be done with a proper tool, for the terms of competition precluded all but ploughs performing their work "on the Kentish system." Now, what this system is, nobody seemed to know, and even half-a-dozen Kentish farmers give as many different opinions as to the points required in good ploughing. However, we believe the preference is for a furrow cut and turned abruptly so as to shatter and break it. The stubble or sward surface is to be completely turned over and buried with its face downwards, and the furrow slice left in a round form. A ploughed field consequently looks like a number of brown rope cables lying side by side, with creases between. Thus the original surface is perfectly buried, yet the top is left not flat or with sharp angular harrow edges, but corrugated, so that there is plenty of mould for harrows to catch and spread. To effect this object, the Kent ploughs have a

small knife severing the furrow-slice, so as to make room for the next to fall flat. Mr. Eddy had his first furrow taken out of the way by hand, and then the succeeding furrows all fell completely over, burying the sward face downwards, and leaving a surface as flat as if rolled after ploughing. This was a mistake, as he left no creases. But his was the only work (and it was six inches deep) which was turned over at all. Not a single one of the Kentish ploughs turned their furrows save and excepting in odd places. No. 7 was turned over in many parts, but then it could not help lying flat if turned at all, being only four inches deep. No. 3 was the best work of the Kentish ploughs, No. 9 was a trifle better than the average, and the remainder so abominable, that the question arises, what will the farmer do with the ground? Some people recommend that the furrows should be replaced right way upwards by hand labour! The majority of the furrow-slices stood straight up on edge, so that the grass was visible, and could be felt of, to the bottom. The local judges appeared struck with shame and horror at the work, after all the amount of boasting which had been so long put forth. The men crest-fallen, and completely baffled by the ground, were ordered to give up, and retire to a more favourable arena. Now, these were not chance ploughs and men brought forward in a hurry, but the best implements, the picked men, and the crack teams of the county—Champions of matches, and winners of prizes! And yet the upshot of this ludicrous exhibition was, that

“Six-and-twenty Kentish teams, and twice six-and-twenty Kentish men,
Went up a hill—and then went down again!”

The field was bad work to be sure, but we have often seen as difficult a soil turned well by the iron ploughs of our first-class makers. If Hornsby or Howard had been competing, we undertake to say that their ploughs, constructed with long mouldboards, cut away beneath, and with a knife on the heel to prepare a place for the next furrow to fall in, would have performed the work in style—and on the very Kentish system itself, with the exception that the ploughing would be in wide flat stretches, instead of all thrown one way. On a lower field of lighter clover lea the Kent ploughs certainly performed some beautiful work, pulverizing the furrow-slices in a very effective manner, while burying the upper sward. But a good skim-coupler plough would do as well, with one or two horses, and one man less. The Kentish team of four horses, however, is not so preposterous as to work in length. They do walk in pairs abreast, and for certain purposes on clay land it is very likely that the action of the spud-shaped share, conical-barrel breast, and straight rist, shatter the soil and make more profitable work than our solid-furrow cutting ploughs can accomplish. As, however, the prize list will show all the premiums for ploughs were gravely awarded, and to these lists we must now turn.

PRIZES FOR CATTLE.

SHORTHORNS.

JUDGES.—G. Atkinson, Seaham.
C. Barnett, Stratton Park, Biggleswade.
J. Parkinson, Ley Fields, Newark.

Bulls calved on or before the 1st of July, 1858, and not exceeding six years old.

First prize of £30, Lieutenant-Colonel Towneley, Towneley, Burnley, Lancaster (Royal Butterfly).

Second of £15, J. Dickinson, Balcony Farm, Upholland, Wigan, Lancaster (Prince of Prussia).

Third of £5, Lord Fevershaw, Duncombe Park, Helmsley, Yorkshire (Prince Imperial).

Highly commended.—J. Hanbury Bradburne, Pipe-plate,

Lichfield (Sir Coliu); H. Ambler, Watkinson Hall, Halifax, Yorkshire (Prince Talleyrand).

Commended.—The Hon. Col. Pennant, M.P. (Sir Colin Campbell); J. Lynn, Church Farm, Stroxtun, Grantham, Lincoln (Great Comet); J. T. Noakes, Brockley House, Lewis-ham, Kent (Prince Alfred 2nd).

Bulls calved since the 1st of July, 1858, and more than one year old.

First prize of £25, J. Peel, Knowlmerc Manor, Clitheroe, Yorkshire (Malachite).

Second of £15, F. H. Fawkes, Farnley Hall, Otley, Yorkshire (Reformer).

Third of £5, Sir Charles Tempest, Bart., Broughton Hall, Skipton, Yorkshire (Prince Frederick).

Highly commended.—H. Ambler (Great Eastern); F. H. Fawkes (Election).

Commended.—F. H. Fawkes (Gardoni); J. Dickinson (Royal Duke); Col. Towneley (Box-bearer).

Bull-calves, above six and under twelve months old.

First prize of £10, Stewart Marjoribanks, Bushey Grove, Watford, Herts (Harkaway).

Second of £5, Col. Towneley (Romulus Butterfly).

Highly commended.—Jonas Webb, Babraham, Cambridge (Englishman); Col. Towneley (Royal Butterfly 4th).

Commended.—J. Robinson (Norman Duke).

Cows, in milk or in calf, above three years old.

First prize of £20, R. Eastwood, Swinshaw House, Burnley (Rosette).

Second of £10, R. Booth, Warlaby, Northallerton (Queen Mab).

Third of £5, Lady Pigot, Branches Park, Newmarket (2nd Duchess of Gloucester).

Highly commended.—W. Wells, Redleaf, Penshurst (Tweedside Lass); S. Marjoribanks (Vesta); F. Fowler, Henlow, Biggleswade, Beds (Daisy); J. Price, Featherstone, Wolverhampton (Queen Anne).

Commended.—E. Bowly, Siddington House, Cirencester (Songstress); H. Ambler (Woodbine).

Heifers, in milk or in calf, not exceeding three years old.

First prize of £15, H. Ambler (Wood Rose).

Second of £10, Captain Gunter, The Grange, Wetherby (Duchess 77th).

Third of £5, Lady Pigot (Empress of Hindostan).

Highly commended.—J. Grundy, The Dales, Stand, Manchester (Faith); Hon. and Rev. T. H. N. Hill, Berrington, Shrewsbury (Orange Preserve); Lady Pigot (Stanley Rose); Duke of Montrose, Buchanau, Glasgow (Lydia); J. Price (Princess Royal).

Commended.—R. Booth (Queen of the Vale); R. Booth (The Soldier's Nurse); Col. Pennant (La Cantatrice); E. Bowly (Warbler); Duke of Montrose (Hawthorn); J. Price (Honey Flower).

Yearling Heifers.

First prize of £15, Captain Gunter (Duchess 75).

Second of £10, Captain Gunter (Duchess 79).

Third of £5, J. Robinson, Clifton Pastures, Newport Pagnell (Claret).

Highly commended.—The Hon. and Rev. T. H. N. Hill (Lady Magdalen); S. Marjoribanks (Lady Butterfly); Jonas Webb (Duchess of Gloucester).

Commended.—R. Booth (The Soldier's Bride); Jonas Webb (Miss Tanqueray); R. Stratton (Queen of the Harem).

Heifer-calves, above six and under twelve months old.

The prize of £10, The Hon. Col. Pennant, M.P., Pearlyn Castle, Bangor, Carnarvon (Jessamine).

Highly commended.—S. Marjoribanks (Joyful); Col. Towneley (Young Butterfly); Col. Towneley (Young Butterfly's Cousin).

Commended.—J. Pain, Manor Farm, Crayford (Lily-white); Col. Pennant (Darlington); E. L. Betts (Preston Pride).

HEREFORDS.

JUDGES.—G. W. Baker, Parkenhook, Quarndon, Derby.

E. I. Frankliu, Ascot, Wallingford.

H. Higgins, Woolston, Lydney.

Bulls calved on or before the 1st of July, 1858, and not exceeding six years old.

First prize of £30, T. Edwards, Wintercote, Leominster (Leominster).

Second of £15, J. Williams, St. Mary's Kingsland, Leominster (Sir Colin).

Third of £5, T. Rea, Westonbury, Pembridge, Hereford (Silvius).

Highly commended.—Lord Berwick (Will o' the Wisp).

The Class generally highly commended.

Bulls calved since the 1st of July, 1858, and more than one year old.

First prize of £25, W. Perry, Cholstrey, Leominster (Cowarn).

Second of £15, T. Rea (Sir Richard).

Third of £5, Lord Berwick, Cronkhill, Shrewsbury (Thicket).

Highly commended.—Lord Bateman (Golden Horn).

Commended.—W. Taylor, Showle Court, Ledbury (Treasurer); W. Taylor, (Thicket).

Bull-calves above six and under twelve months old.

First prize of £10, J. Monkhouse, The Stowe, Hereford (Nicholas).

Second of £5, T. Edwards (Leominster 2nd).

Cows, in milk or in calf, above three years old.

First prize of £20, J. Taylor, Stretford Court, Leominster (Fancy Leominster).

Second of £10, and third of £5—no competition.

Heifers, in milk or in calf, not exceeding three years old.

First prize of £15, J. Rea, Mounaughty, Knighton, Radnor (Diadem).

Second of £10, J. Williams (Barmaid).

Third of £5, Lord Berwick (Agnes).

Highly commended.—J. Williams (Gay Lass).

The Class generally highly commended.

Yearling Heifers.

First prize of £15, Lord Bateman, Shobdon Court, Shobdon, Hereford (Hebe).

Second of £10, E. Wright, Halston Hall, Oswestry, (Fauny).

Third of £5, Philip Turner, Leen, Pembridge (Ruby).

Heifer Calves above six and under twelve months old.

The prize of £10, J. Williams.

The Class generally commended.

DEVONS.

JUDGES.—J. Anstey, Coomblaney, Saudford.

T. Potter, Thorverton, Devon.

Bulls calved on or before the 1st of July, 1858, and not exceeding six years old.

First prize of £30, T. and J. Palmer, Norton, Stoke Climsland, Callington, Cornwall (Warrior).

Second of £15, George Turner, Barton, Exeter (Prince Frederick).

Third of £5, J. Bodley, Stockley Pomeroy, Crediton, Devon (Perfection).

Bulls calved since the 1st of July, 1858, and more than one year old.

First prize of £25, J. Quartly, Molland House, South Molton.

Second of £15, J. Quartly.

Third of £5, George Turner (Earl of Warwick).

Commended.—W. Hole.

Bull-calves above six and under twelve months old.

First prize of £10, George Turner.

Second of £5, W. Hole, Hannaford, Barnstable (Zemindar).

Cows, in milk or in calf, above three years old.

First prize of £20, J. Quartly (Bertha).

Second of £10, George Turner (Vaudine).

Third of £5, George Turner (Piccolomini).

Commended.—Walter Farthing, Stowey Court, Bridgwater (Rose); John Quartly (Brown).

Heifers, in milk or in calf, not exceeding three years old.

First prize of £15, George Turner (Beeswing).

Second of £10, J. Mildon, Woodington Farm, Witheridge, Devon (Jenny Lind).

Third of £5, John Quartly, Champeon Molland, South Molton (Handsome).

Yearling Heifers.

First prize of £15, Philip Halse, Molland, South Molton, (Duchess).

Second of £10, Philip Halse (Beauty).

Third of £5, E. Pope, Great Toller, Maiden Newton, Dorset (Fancy 4th).

Heifer Calves, above six and under twelve months old.

The prize £10, to George Turner.

OTHER ESTABLISHED BREEDS

(Not including the Shorthorn, Hereford, or Devon).

JUDGES.—A. Denman, London.

W. Ladds, Ellington, Louth.

B. Swafield, Pilsbury, Ashbourne.

Bulls calved on or before the 1st of July, 1858, and not exceeding six years old.

The prize of £10, E. Cane, Berwick Court, Berwick, Lewes (Sussex, South Western).

Bulls calved since the 1st of July, 1858, and more than one year old.

The prize of £10, Lord Sondes, Elmham Hall, Thetford (Norfolk Polled, Oakley 2nd).

Cows in-milk or in-calf, above three years old.

The prize of £10, E. Cane (Sussex, Pera).

Heifers in-milk or in-calf, not exceeding three years old.

The prize of £10, Lord Sondes (Norfolk Polled, Miss Julia). Yearling Heifers.

The prize of £5, Lord Sondes (Norfolk Polled, Hetty).

HORSES.

AGRICULTURAL HORSES GENERALLY.

JUDGES.—J. Atkinson, Charlton, Salisbury.

W. Bartholomew, Goltho, Wragby.

E. Greene, Bury St. Edmunds.

Stallions foaled on or before the 1st of January, 1858.

First prize of £25, Rev. S. Terry, Dummer, Basingstoke (Bay, Wanderer).

Second of £15, S. Clayden, Little Liuton, Cambridge (Suffolk, Royal George).

Third of £5, Jonas Webb (Suffolk, The Rising Star).

Highly commended.—W. Laws, Little Clacton, Essex (Suffolk, Captain).

Commended.—C. Frost, Wherstead (Suffolk, Sir Colin).

Stallions foaled in the year 1858.

First prize of £20, N. G. Barthropp, Cretingham Rookery, Wickham Market (Suffolk, The Pilgrim).

Second of £10, W. Wells, Redleaf, Penhurst (Suffolk).

Highly commended.—W. Sanday (Shire).

Commended.—J. Foster (Shire).

Mares with foals.

First prize of £20, I. Rist, Tattingstone, Ipswich (Bay Suffolk, Darby).

Second of £10, G. Carter, Danbury, Chelmsford (Suffolk, Daisy).

Two-year-old fillies.

First prize of £15, N. G. Barthropp (Suffolk).

Second of £10, J. Clayden (Suffolk, Queen of Diamonds).

Highly commended.—C. Frost (Suffolk).

Commended.—S. Wriuch Great Holland, Colchester (Suffolk).

Several good-looking animals in this division were rejected for unsoundness.

DRAY HORSES.

JUDGES.—J. Atkinson, W. Bartholomew, and E. Greene.

Stallions foaled on or before the 1st of January, 1858.

First prize of £25, E. Olding, Ratfin, Amesbury (Cheanut, Major).

Second of £10, G. Brown, Little Hinton, Shrivernham (Roan, Wroughton).

Commended.—J. Shepherd, Cock Farm, Stoginaey, Bridgwater (Brown, Champion).

Stallions foaled in the year 1858.

First prize of £15, W. Root, Chipping Warden, Banbury (Bay, Confidence).

Second of £5, J. Brown, Compton, Newbury (Roan, Magenta).

Mares with foal at foot.

No entry.

Fillies foaled in the year 1858.

No entry.

OTHER HORSES.

JUDGES.—Hon. Colonel Cotton, Cherry Hall, Malpas.

H. Thurnall, Royston.

J. E. Welby, Allington Hall, Grantham.

Thorough-bred Stallions for getting hunters.

First prize of £25, E. Marjoribanka, Greenlands, Henley-on-Thames (Dagobert, by Ion).

Second of £15, G. Trumper, Horton, Slough, Bucks (Comet, late Mars, by Planet).

Brood Mares, with foal at foot, or in-foal, for breeding hunters.

First prize of £20, John Deuchfield, Aston Abbots, Aylesbury (Jenny Lind, by Young Phenomenon).

Second of £10, Robertson Ruse, Jealotte Hall, Warfield, Berks (Kitty, by Why-Not).

Brood Mares for breeding hackneys.

First prize of £15, W. J. Eurch, Campsey Ash, Wickham Market (by Prickwillow).

Second of £5— withheld.

SHEEP.

LEICESTERS.

JUDGES.—R. B. Aylmer, Westacre, Swaffham.
T. Harris, Stony-lane, Bromsgrove.
R. Hewitt, Dodford, Weedon.

Shearing Rams.

First prize of £20, W. Sanday, Holme Pierrepont, Notts.

Second of £10, W. Sanday.

Third of £5, W. Sanday.

Highly commended.—Lieut.-Col. Inge, Thorpe Constantine, Tamworth.

Rams of any other age.

First prize of £20, W. Sanday.

Second of £10, W. Sanday.

Third of £5, W. Sanday.

Highly commended.—W. Sanday.

Commended.—John Borton, Barton House, Malton, York;
T. Bird, Bilton, Rugby.

Pen of Five Shearing Ewes, of the same flock.

First prize of £20, W. Sanday.

Second of £10, Lieut.-Col. Inge.

Third of £5, George Turner, Barton.

SOUTHDOWNS.

JUDGES.—J. G. Homer, Martin's Town, Dorchester.
H. Lugar, Hengrave, Bury St. Edmunds.
P. Purves, The Grove, Brampton, Huntingdon.

Shearing Rams.

First prize of £20, Jonas Webb, Babraham, Cambridge.

Second of £10, Jonas Webb.

Third of £5, Jonas Webb.

Highly commended.—Jonas Webb.

Commended.—Jonas Webb for three other rams.

The class generally commended.

Rams of any other age.

First prize of £20, Jonas Webb.

Second of £10, Jonas Webb.

Third of £5, Jonas Webb.

Highly commended.—Jonas Webb.

Commended.—Lord Walsingham; and Jonas Webb, for two other rams.

Pen of Five Shearing Ewes, of the same flock.

First prize of £20, J. and A. Heasman, Angmering, Arundel.

Second of £10, Lord Walsingham, Merton Hall, Thetford.

Third of £5, the Duke of Richmond, Goodwood, Chichester.

Highly commended.—The Duke of Richmond.

Commended.—W. Rigden, Hove, Brighton; and the Earl of Radnor, Colehill House, Highworth.

KENTISH OR ROMSEY MARSH BREED.

JUDGES.—J. Abbott, Aspringe, Faversham.
H. Beavor, Blythe, Worksop.
T. Brown, Marham, Downham Market.

Shearing Rams.

First prize of £15, F. Murton, Smeeth, Ashford.

Second of £5, F. Murton.

Third of £5, F. Murton.

Rams of any other age.

First prize of £15, F. Murton.

Second of £5, F. Murton.

Third of £5, F. Murton.

Commended.—W. Gascoyne; T. Blake.

Pens of five Shearing Ewes, of the same flock.

First prize of £15, W. Gascoyne, Bapchild, Sittingbourne.

Second of £5, C. Neve, Shepway Court, Maidstone.

Third of £5, F. Murton

LONGWOOLS.

(Not qualified to compete as Leicesters, or Kentish and Romney Marsh.)

JUDGES.—J. Abbott, H. Beavor, T. Brown.

[All the Prize and Commended Sheep in this section were Cutswoolds.]

Shearing Rams.

First prize of £20, J. Walker, Northleach.

Second of £10, R. Garne, Aldsworth, Northleach.

Third of £5, R. Garne.

Highly Commended.—G. Fletcher, for two rams; W. Lane, for three rams; R. Garne, for another ram; T. Porter; E. Handy, Sierford, Cheltenham.

Commended.—J. K. Tombs, Langford, Lechdale; G. Fletcher; T. Porter, Baunton, Cirencester; E. Handy; and W. Lane, for two rams.

The Class generally Commended.

Rams of any other age.

First prize of £20, R. Garne.

Second of £10, R. Garne.

Third of £5, G. Fletcher, Sipton Sollars, Cheltenham.

Highly Commended.—T. Porter, for two rams; W. Lane, for two rams.

Commended.—E. Handy; W. Lane.

The Class generally Commended.

Pens of five Shearing Ewes, of the same flock.

First prize of £20, W. Lane, Broadfield Farm, Northleach.

Second of £10, W. Lane.

Third of £5, W. Lane.

Highly Commended.—J. K. Tombs, for two pens.

Commended.—T. B. Browne, Salperton Park, Andoversford, for two pens.

SHROPSHIRE DOWNS.

JUDGES.—W. K. Bourne, Fisherwick, Lichfield.
C. Randall, Chadbury, Evesham.
E. Trumper, Nuneaton, Oxford.

Shearing Rams.

First prize of £15, T. Horton, Harnage Grange, Shrewsbury.

Second of £5, J. and E. Crane, Shrawardine, Shrewsbury.

Highly Commended.—J. and E. Crane.

Commended.—J. and E. Crane.

Rams of any other age.

First prize of £15, Sampson Byrd, Lees Farm, Stafford.

Second of £5, T. Horton.

Highly Commended.—E. Holland, Dumbleton Hall, Evesham; C. R. Keeling, Yew Tree Farm, Penkridge, Staffordshire; W. G. Preece, Shrewsbury.

Commended.—H. J. Sheldon, Brailers, Shipston-on-Stour; T. Mansell, Adcott Hall, Shrewsbury.

Pens of five Shearing Ewes, of the same flock.

First prize of £15, J. and E. Crane.

Second of £5, J. and E. Crane.

Highly Commended.—E. Holland.

Commended.—The Earl of Dartmouth, Patshull, Albrington, Wolverhampton; J. Evans, Uppington, Shrewsbury; H. Matthews, Montford, Shrewsbury; H. Smith, Sutton Mad-dock, Shiffnall.

SHORTWOOLLED SHEEP.

(Not qualified to compete as Southdowns or Shropshire Sheep.)

JUDGES.—H. Beauford, Bedford.

G. Brown, Avebury, Chippenham.

J. Rawlence, Bulbridge, Wilts.

Shearing Rams.

First prize of £20, S. King, Old Hayward Farm, Hungerford (West Country Down).

Second of £10, W. Humfrey, Oak Ash, Chaddleworth, Wantage (West Country Down).

Third of £5, W. Humfrey (West Country Down).

Highly commended.—C. Howard, Biddenham, Bedford (Oxford Down); J. Bryan, Southleigh, Witney, for two rams (Oxford Down); J. Druce, Eynsham (Oxford Down); W. Humfrey (West Country Down).

Commended.—S. King (West Country Down); C. Howard (Oxford Down).

Rams of any other age.

First prize of £20, W. Humfrey (West Country Down),

Second of £10, W. Humfrey (West Country Down).

Third of £5, W. Humfrey (West Country Down).
Highly commended.—W. F. Bennett (Oxford Down); J. Bryan, for two rams (Oxford Down); the Duke of Marlborough, Blenheim (Oxford Down); W. Humfrey (West Country Down).

Commended.—The Duke of Marlborough (Oxford Down),
Pens of five Shearling Ewes, of the same flock.
First prize of £20, W. B. Canning, Chisleton, Swindon (West Country Down).

Second of £10, S. King (West Country Down).
Third of £5, W. F. Bennett, Chilmark, Salisbury (Improved Hampshire Down).

Highly commended.—J. W. Brown, Uffcott, Swindon (Hampshire Down).

P I G S .

JUDGES.—W. Cattle, Dormout Grange, Lockerbie, N.B.
Rev. E. Elmshirst, Shawell Rectory, Rugby.
T. Unthank, Netheerscales, Penrith.

Boars of a large breed, of any colour.

First prize of £10, J. Harrison, jun., Heaton Norris, Stockport (white, with spots).

Second of £5, J. Dyaon, Adelphi Hotel, Leeds (white).

Commended.—W. B. Wainman (white).

Boars of a small white breed.

First prize of £10, J. Harrison, jun.

Second of £5, G. Mangles, Givendale, Ripon.

Highly commended.—J. Hindson, Barton House, Everton, Liverpool.

Boars of a small black breed.

First prize of £10, T. Crisp, Butley Abbey, Wickham Ket (Suffolk).

Second of £5, T. Crisp (Suffolk).

Commended.—T. Crisp (Suffolk).

Boars, of a breed not eligible for the preceding classes.

First prize of £10, W. B. Wainman, Carhead, Cross Hills (Yorkshire, white).

Second of £5, H. Endeacott, Norfolk-street, Innslett-lane, Leeds (white).

Commended.—G. B. Moorland, Chilton Farm, Harwell, Berkshire.

Breeding Sows of a large breed, of any colour.

First prize of £10, J. Clayton, Midway Farm, Poynton, Stockport (Cheashire, white).

Second of £5, W. B. Wainman (Yorkshire, white).

Highly commended.—J. K. Tombs (Berkshire); M. Gavins, Fox Inn, Woodhouse, Carr, Leeds (Yorkshire, white).

Commended.—W. Hewer (Berkshire).

Breeding Sows, of a small white breed.

First prize of £10, W. Hatton, Addingham, Leeds.

Second of £5, E. L. Betts, Preston Hall, Maidstone (Suffolk).

Highly commended.—W. Hatton.

Commended.—G. Mangles.

Breeding Sows of a small black breed.

First prize of £10, G. M. Sexton, Earls Hall, Cockfield, Sudbury (Suffolk).

Second of £5, T. Crisp (Suffolk).

Highly commended.—T. Crisp (Suffolk).

Commended.—G. Turner (Improved Essex).

Breeding Sows, of a breed not eligible for the preceding classes.

First prize of £10, J. Harrison, jun. (white, with spots).

Second of £5, G. Mangles (white).

Commended.—W. B. Wainman (white).

Pens of three breeding Sow Pigs, of any colour, of the same litter, above four and under eight months old.

First prize of £10, W. Hewer, Sevenhampton, Highworth Berkshire).

Second of £5, W. Hewer (Berkshire).

Commended.—W. J. Sadler, Bentham Calcute, Cricklade (Berkshire).

Pens of three breeding Sow Pigs, of a small white breed, of the same litter, above four and under eight months old.

First prize of £10, T. Crisp (Suffolk).

Second of £5, S. Wiley, Brandsby (Yorkshire).

Highly commended.—S. Wiley (Yorkshire).

Pens of three breeding Sows, of a small black breed, of the same litter, above four and under eight months old.

First prize of £10, G. M. Sexton (Suffolk).

Second of £5, T. Crisp (Suffolk).

Highly commended.—G. B. Morland, Chilton Farm, Harwell (Chilton).

Pens of three breeding Sow Pigs, of a breed not eligible for the preceding classes, of the same litter, above four and under eight months old.

First prize of £10, E. L. Betts, Preston Hall, Maidstone (black and white).

Second of £5, E. Davies, jun., Harrington, Shiffnal (white).

S P E C I A L P R I Z E S ,

OFFERED BY THE CANTERBURY LOCAL COMMITTEE.
SUSSEX CATTLE.

JUDGES.—A. Denman, W. Ladds, B. Swaffield.

Bulls calved on or before the 1st of July, 1858, and not exceeding six years old.

First prize of £30, W. Botting, Westmeston Place, Hurst-perpoint.

Second of £15, G. Buss, Boughton Aluph, Ashford.

Third of £6, S. Hart, Aldington Court, Hythe.

Bulls calved since the 1st of July, 1858, and more than one year old.

First prize of £25, W. Dunk, Horton Priory, Hythe.

Second of £15, Tilden Smith, Beckley, Staplehurst.

Third of £5, no competition.

CLASS III.—No entry.

Cows in milk or in calf, above three years old.

First prize of £20, Tilden Smith.

Second of £10, J. Jenner, Paragonage House, Udimore, Rye.

Third of £5, T. H. Gregson, Woodsend, Hawkhurst, Kent.

Heifers in milk or in calf, not exceeding three years old.

First prize of £15, J. A. Heasman.

Second of £10, T. H. Gregson.

Third of £5, P. Gorringe, Selmeston, Lewes.

Yearling Heifers,

First prize of £15, R. Neame, Fairbrook, Faversham.

Second of £10, J. and A. Heasman.

Third of £5, P. Gorringe.

Yearling Calves, above six and under twelve months.

The prize of £10 to R. Neame.

PONIES OF ANY BREED.

JUDGES.—Hon. Col. Cotton, J. E. Welby, H. Thurnall.

Stallion Ponies, not exceeding 14 hands.

First prize, of £20, G. K. Cooper, Euston, Thetford (Welsh Galloway).

Second.—Withheld.

Mare Ponies, not exceeding 14 hands.

First prize of £15, T. Neve, Benenden, Staplehurst (Norfolk Galloway).

Second of £5, Rev. W. H. Beavor, Cowbridge, Glamorgan-shire (Welsh).

KENTISH OR ROMNEY MARSH SHEEP.

JUDGES.—J. Abbott, H. Beavor, T. Brown.

Pens of Five two-years-old Ewes.

First prize of £10, F. Murton.

Second of £5, E. Kinganor, Orlestone, Ham-street, Kent.

Pens of five three-year-old Ewes.

First prize of £10, C. Collard, Wickhambreux-court, Wingham, Kent.

Second of £5, F. Murton.

STEWARDS OF LIVE STOCK.—

R. Milward, Thurgarton Priory, Notts.

W. Fisher Hobbs, Boxted Lodge, Essex.

Hon. W. G. Cavendish, M.P., Latimers, Bucks.

VETERINARY INSPECTORS.

Professor Simonds, London.

Professor Spooner, London.

R. L. Hunt, Birmingham.

P R I Z E S F O R I M P L E M E N T S .

APPLICATION OF STEAM POWER TO CULTIVATION OF THE SOIL.

JUDGES.—William Owen, C.E., Rotherham.

Owen Wallis, Overstone Grange, Northampton,

Professor John Wilson, Iver, Bucks.

First prize, £90, Fowler, jun., Cornhill, London, twelve-horse set of Steam Cultivating Apparatus.

Second of £10, Robey and Co., Lincoln, a complete set of Patent Steam Ploughing Tackle.

THRASHING MACHINES.

JUDGES.—John Brasnett, Hilboro', Brandon.
Joseph Druce, Eusham, Oxon.

Portable Thrashing Machines to be worked by horse-power, not exceeding that of six horses.

Prize, £20, Wallis and Haslam, Basingstoke, four-horse power.

Portable Thrashing Machines, not exceeding eight-horse power, to be worked by steam power, including any variety that does not profess to do more than prepare the corn for the finishing dressing machine.

First prize, £30, P. and H. P. Gibbons, Wantage.
Second of £20, E. Humphries, Pershore, Worcester.
Third of £10, J. Savory, Tewkesbury.

CHIAFF-CUTTERS.

JUDGES (and for Mills and Bone Mill Crushers).—
Hand Power. Steam Power.

J. Hicken, Bourton, Dun-	Fielder King, Buriton, Peters-
church.	field.
G. M. Hipwell, Cheam, Sur-	E. Whittle, Toller Fratrum,
rey.	Dorchester.

Chaff-Cutters to be worked by steam or horse-power.
Prize, £10, H. Carson, Warmminster, by steam.

Chaff-Cutters to be worked by hand power.
First prize, £5, J. Cornes, Barbridge, Nantwich.
Second of £3, E. H. Bentall, Heybridge, Maldon.
Third of £2, Richmond and Chandler, Manchester.
Highly commended.—Page and Co., Bedford.
Commended.—H. Carson.

MILLS.

Grinding Mills with stone grinders for grinding agricultural produce into meal by steam or horse power.

A prize, £5, T. W. Ashby and Co., Stamford.

Another prize, £5, J. Tye, Lincoln.

Grinding Mills with steel grinders for grinding agricultural produce by steam or horse power.

Prize, £8, Hunt and Pickering, Leicester.

Grinding Mills with steel grinders for grinding agricultural produce for feeding purposes by hand power, £5.

No award.

Grinding Mills with stone or steel grinders for producing fine meal by hand-power, £7.

No award.

Commended.—Oldham and Booth, Kingstou-upon-Hull, for six-horse power Bone Mill; and for four-horse power Bone Dust Mill.

CRUSHERS.

Linseed and Corn Crushers by steam or horse power.

The prize, £5, E. R. and F. Turner, Ipswich, by steam power.

Linseed and Corn Crushers by hand power.

First prize, £3, E. H. Bentall.

Second of £2, E. R. and F. Turner.

OILCAKE BREAKERS.

Oilcake Breakers for large and small cake, to be worked by steam or horse power.

First Prize, £7, E. H. Bentall, by steam power.

Second of £3, Dray, Taylor, and Co., Adelaide-place, London Bridge, by steam power.

Oilcake Breakers for common cake.

First Prize £3, E. H. Bentall, by hand power.

Second of £2, Hunt and Pickering, by hand power.

Highly commended.—Ashby and Co., by hand power.

BONE MILLS.

Bone Mills to be worked by steam or other power.

A prize, £5, Trustees of W. Crosskill, Beverley, by steam or other power.

Another prize, £5, Trustees of W. Crosskill.

Bone-dust Mills to be worked by steam or other power.

Prize, £10, Trustees of W. Crosskill.

Highly commended.—Picksley, Sims, and Co., one-horse.

TURNIP-CUTTERS.

Turnip and Root Cutters.

Prize, £4, Picksley, Sims, and Co., Leigh, Manchester.

Prize, £4, E. H. Bentall, hand power.

Third of £2, H. Carson, hand power.

Root Pulpers.

First prize, £4, E. H. Bentall.

Second of £2 10s., E. H. Bentall.

Third of £2, Barnard, Bishop, and Co., Norwich.

Fourth of £1 10s., Hunt and Pickering.

Commended.—Barnard, Bishop, and Barnard.

MISCELLANEOUS.

JUDGES.—J. Clarke, Long Sutton.

W. Tindall, Whetstley, Doncaster.

For any New Implement, such sum as the Council (on the report of the Judges) may think proper to award, No award.

HAND TOOLS.

Hand Tools used in hop-grounds and hand fillage,

Prize, £5, Spear and Jackson, Sheffield.

FIELD GATES.

Field Gates with suitable hangings and fastenings, not to exceed £1 5s. in value.

Prize, £5, Lord Leigh, Stoneleigh Abbey, Kenilworth.

Highly commended.—Busby Implement Company.

SILVER MEDALS.

To E. R. and F. Turner, for steam power portable thrashing machine.

W. Weeks, Maidstone, for hop dressing apparatus.

HIGHLY COMMENDED.

Hill and Smith, Brierley Hill, Dudley, for iron vermin-proof rick stand.

G. Poord, Ashford, Kent, for Rusthall school desk.

The Trustees of W. Crosskill, for carts and waggons (general collection).

John Warner and Sons, Crescent, Jewin-street, London, for hydraulic pump.

COMMENDED.

E. H. Bentall, for root slicer for hand power.

W. M. Craunton, King William-street, London Bridge, for Wood's improved grass mowing machine.

Thomas Beards, Stowe, Bucks, for steam engine with windlass attached.

Kennan and Son, Dublin, for wire strainer.

St. Pancras Iron Works, for stable fittings.

Cottam and Co., Winsley-street, Oxford-street, London, for stable fittings.

R. H. Crisp, Lincoln, for gutta percha and India rubber straps.

T. Bradford, Manchester, for washing machine.

Howard, Riches, and Co., Norwich, for American grist mill.

STEWARDS OF IMPLEMENTS.

H. B. Caldwell, Lackham House, Chippenham.

E. Pope, Great Toller, Dorset.

Lord Leigh, Stoneleigh Abbey, Warwickshire.

CONSULTING ENGINEERS.

Easton and Amos, Grove, Great Guildford-street.

GENERAL DIRECTOR OF THE SHOW.

B. T. BRANDETH GIBBS.

LOCAL PRIZES.

(OFFERED BY THE CANTERBURY LOCAL COMMITTEE.)

JUDGES.—T. Abbott, Burham Court, Maidstone.

H. G. Austin, Canterbury.

F. Murton, Smeeth, Ashford.

P. S. Punnett, Chard, Staplehurst.

G. Rammell, Sturry, Canterbury.

The Plough on the turnrise principle, or otherwise, best adapted to turn the furrow-slice according to the Kentish system of ploughing; the depth of the furrow not to be less than eight inches.

First prize of £30, to J. B. Elvey, Frindsbury, Maidstone.

Second of £20, to J. Wildash, Davington, Faversham.

Third of £10, to J. Simmons, Rainham, Sittingbourne.

Prizes of £6, £4, and £2 to the Ploughmen.

The implement best adapted for the general cultivation of

Hop Lands.

Not sufficient merit.

The machine best adapted for Mowing Grass and Clover for agricultural purposes.

The prize of £20, to Burgess and Key, Newgate-street, London.

The machine best adapted for Reaping agricultural crops, £10.

[The final trial of Reaping Machines deferred until Harvest, when the prizes will be awarded.]

The machine best adapted for Pressing Hops (in cloth) for the home market, £10.

The prize of £10, William Weeks, Maidstone, Kent pattern hop-pressing machine.

The Design for the most economical building the best adapted for drying hops, to be illustrated either by plans or models, accompanied with a specification and estimate in detail of the cost.

Prize of £30—not sufficient merit.

The Apparatus best adapted for drying Hops.

Prize of £20—not sufficient merit.

HOPS.

JUDGES.—F. Felton, London.

W. White, London.

Samples of Golding Hops.

First prize of £10, to Robert Berriman, Langrish Manor Farm, Petersfield, Hants.

Second of £5, Earl Darnley, Thong, near Gravesend.

Samples of any other kind of Hops.

First prize of £10, Matthew Bell, Bourne Park, near Canterbury (Golden Grape).

Second of £5, George Eley, Tong, Sittingbourne, (Jones' Hop).

The best managed sample of Golding Hops.

First prize of £7, Thomas White Collard, Westgate, Canterbury.

Second of £5, Robert Berriman.

Third of £3, Hope Theobalds, Godmersham, Canterbury.

Best managed samples of any other kind of Hops.

First prize of £7, George Eley (Jones').

Second of £5, Matthew Bell (Golden Grape).

Third of £3—no competition.

WOOL.

JUDGES.—B. Chaffey, Yeovil.

T. Jobus, Chelmsford.

Six Kent Fleeces, combining quality and quantity, of One Year's growth.

The prize of £10, Charles Collard, Wickham Court, Wingham, Kent.

Highly commended.—George Neve, Sissinghurst Castle, Staplehurst, Kent.

Six Long-wool Fleeces, Kent or otherwise, combining quality and quantity.

The prize of £10, Frederick Murton, Smeeth, Ashford (Kent).

Six Short-wool Fleeces, combining quality and quantity.

The prize of £10, Lord Walsingham (Southdown).

Commended.—Thomas Horton (Shropshire).

The following Local Societies contribute from their funds towards the Local Prizes:—The Kent Cattle and Implement Association, and the Faversham, Deal and Dover, Ashford, Nonington and Wingham, Sittingbourne, Chatham, Isle of Thanet, Gravesend, and Rochester Agricultural Associations.

THE DINNER

Took place on the Tuesday, when nearly all the four hundred seats provided were occupied. In fact, the Music Hall was very well filled. Lord Walsingham, as President of the year, of course occupied the chair, and he was supported by Lord Powis (the President elect), Lord Berners (a past President), Lord Winchelsea (the President of the Kent County Agricultural Society), Sir Courtnay Honeywood (the High Sheriff of the County), Lord Leigh, Lord Cunningham, Lord Sondes, Lord Nelson, Lord Darnley, Lord Camden, Lord Erroll, Lord Sheffield, Sir Brooke Bridges, Sir Watkyn Wynne, the Hon. Colonel Hood, the Mayor of Canterbury, and the Dean of

Canterbury. There were also present Messrs. T. Dyke Aeland, Neville Grenville, Wren Hoskyns, C. Barnett, Jonas Webb, R. Milward, T. Pain, W. Fisher Hobbs, E. Pope, N. G. Barthropp, W. Ridgen, J. Druce, J. Clayden, T. Crisp, E. Green, T. Murton, R. W. Baker, J. T. Noakes, Wilson, Clayton, Shuttleworth, Ransome, G. P. Tuxford, H. Corbett, Hall Dare, and the Abbots, Lakes, Neames, Murtons, and a number of other local gentlemen connected with the city and county.

After the chairman had given the customary loyal and patriotic toasts—which, however, were received with no great explosion of Kentish fire—

The Earl of WINCHILSEA rose to propose "Success to the Royal Agricultural Society." In doing so, he said: I have no doubt but that many of the gentlemen I now have the honour of addressing were among those who first joined round the council-table of the infant society. To these I would address myself, and their reply to the one question I have to put to them will, more than anything I could say, attest the successful career of this great society. I ask, then, whether, upon a review, they do not find that the society has far exceeded all that its first promoters ever contemplated? It is impossible for one who has been at the show during this week, and witnessed the ingenious implements, and the fine cattle that were in exhibition there, not to feel strongly impressed with an idea both of the usefulness of this society, and of the disposition of the agricultural class to do what they can for the improvement of their science. It is said sometimes that they are a slow set: gentlemen, I think it is a slander upon them, and the show of to-day proves it. It proves that there is not any class, business, or profession, that has more at heart the advancement of their art than the cultivators of the soil. It proves, also, that agriculture has made an unparalleled stride during the last few years. I will tell you how I prove this. The greater part of the implements exhibited in the yard are, with the exception of the steam-plough, articles of luxury rather than necessity; and that the agriculturists are willing to assist and encourage the invention of such instruments, is a striking indication of their earnest interest in the science. In other respects improvements have taken place. In the management of certain soils chemistry has come to our help, and dissipated the ignorance that once prevailed. Our cattle, too, are no longer exhibited in that state of gross fatness they were once famous for (laughter); on the contrary, some of them to-day seemed rather too lean. But I am intruding on subjects on which I speak with the vagueness that comes of imperfect knowledge, and I leave to Lord Leigh a province which he is so much better acquainted with. Suffice it to say that, for the improvements in all the particulars I have mentioned, we are chiefly indebted to the Royal Agricultural Society of England; because it has given rise and play to that spirit of competition and healthy rivalry which is the cause of every useful invention and of most grand discoveries. The benefit that this exhibition will confer upon the farmers of East Kent are too many for enumeration; but one of them is this, that it will introduce them to the best breeds of cattle; and when they have once found what their best breeds are, they will not very easily fall back to the propagation of inferior sorts. The British farmer may be hardly moved, and his improvement may be slow, but he does not retrograde. When he has got hold of a good thing, he keeps to it. The advantage of machinery over hand-labour was at first, to many people, and perhaps especially to farmers, doubtful: it is no longer so. To this circumstance I attribute that extraordinary and unequalled stride which during the last few years we have made in the discovery of every kind of implements. We have pointed out the way in this respect to the rest of the world. Not only in England have we minor associations springing up, but in foreign parts societies of the same kind have come into existence, the offspring of this great primary and parent society. The inhabitants of other lands have come to witness our annual meetings. They see what we have done during the year; they inspect the newest implements, and inform themselves about the latest discoveries. The knowledge thus gained they carry home with them, and there it takes root and expands, and sometimes brings forth fruit more valuable than the tree which gave it birth. In fact, we open our market to all the world, and doing so we act wisely. There is nothing lost, but rather much gained in the end by this system. For

the time a loss may seem to be sustained, but before the lamentations called forth by it have ceased, the loss is changed into a profit. For instance, a short time ago America was our largest customer for breeding stock. She bought up for home purposes the best that we produced, sparing no expense in the prosecution of her object. What was the consequence? Did it finally impoverish England? No. The stock we sent out came back to us improved and superior to what we had before. I will give you a particular case—that of our horses. They took away some of our best animals; and now I believe that, for reasons I will presently mention, they beat us in their horses. (No.) They manage things in this respect on more intelligent principles. I can speak on this subject at least with some degree of confidence, because, though I am ashamed to confess that my acquaintance with Southdowns and Cotswolds, Herefords and Devons is very much more limited than it ought to be, I do know something about horses. When I see a fine beast, a cow or a sheep, I naturally admire it, but want the skill to discover its peculiar points; but of horses I think I may give a critical opinion with tolerable safety. Well, then, I can assure you that in consequence of our short courses, the English breed has degenerated. We no more get animals that will go a long distance; whereas America sends us horses sixteen hands high, useful and strong, with great staying powers. This is just the sort we want; not a horse that is done up after running a mile or two, but one capable of lasting and being fit to work (which at present most of our English breed are not) after it is two or three years old. But America has only improved upon us by means of that free competition into which we entered with all the world; and this instance will show you how beneficial such a competition is. (Hear.) As for the show of this week, I think nothing can be better than the display of agricultural implements, and of cattle generally; but the horses are mostly a poor lot. I wonder why it is that this country always sends such an indifferent collection of horses to these shows—animals that no real judge would care to look at twice. I cannot account for it in any other way than by supposing that the risk of the journey, and the great loss that must follow any accident with horses, make people shy of sending them a long distance. They cannot, like cattle, be sent to the butchers in case of a mishap; and this, no doubt, hinders many who would otherwise be exhibitors. I certainly very much regret this, and wish that in some way or other the difficulty could be surmounted. For the life of me, I cannot understand why there should be capital shows of horses in Flanders and France, as I have seen there, and such poor ones in England. It is not that we are without the right sort of animal; only we fail to induce the exhibition of them. I fear I have intruded on your time already too much. A word about the society to which you are now invited to drink success: I am ashamed to own that till recently I did not belong to it; but I hope to make up for this my deficiency by taking every pains in future years for the promotion of its success and welfare. I also hope that we in Kent shall all derive good from its visit to our county. Kent was once called "the garden of England." It was a cultivated and productive spot when lands, since reclaimed and now its rivals in fertility, lay waste and desolate. Her old and natural superiority she no longer possesses; it is time, therefore, for her to bestir herself, lest she be outstripped in the race of agricultural improvement. In the hope that the visit of the society will prove of lasting advantage to our county, I have tried to forward the undertaking to the utmost of my power; and I believe that the result will justify my anticipations. Although it may be true that in a pecuniary point of view the society's meeting here will not be so successful as those it has held elsewhere, I hope that in other respects it will have no reason to regret its decision to favour Canterbury with its presence. The natural position of our county prevents that great number of visitors attending the show that might be expected when it is held in districts more central, and that have larger populations. I hope, however, that as the receipts of the society last year were unprecedentedly great, the council will amalgamate them with this year, and strike an average of the two. I also hope that the next meeting may surpass, in every respect, any one that has gone before it. I hope that the society will continue to flourish, and maintain, in unabated vigour, its useful existence; that it may foster and encourage the inventive brain, and the skilled intellect, until the limits—

if there be any—which improvement may not pass have been reached; and that it may still be a stimulus to the discovery of whatever can promote the great cause of agricultural progress. With these feelings, in which I am convinced you all heartily join, I beg to propose the toast of "Success to the Royal Agricultural Society of England."

Lord NELSON gave "The President."

The CHAIRMAN in reply said:—Gentlemen, I believe the Show this year to be a very excellent one. There are a great variety of implements, and with respect to the animals, I must especially mention the Shorthorns and Herefords. I do not think they have been ever surpassed. The sheep are as good, but not better than those exhibited in former years. I cannot quite chime in with my noble friend (the Earl of Winchelsea); but I did see one or two pens of very lean sheep indeed. (Laughter.) I thought, in fact, that something serious was the matter with them. (Laughter.) No doubt some animals are too fat; but I prefer a fat beast to a lean one. I don't want to see the angular points too clearly. The horses were not so good as they ought to be; some of them were in fact very moderate animals, but there are some excellent specimens of the Suffolk cart-horse. I don't like to see too much hair on the hock of a cart-horse, and I like them to step quick. The nags were nothing very superior. But taking the Show altogether, I have not had any occasion to believe that the Society is receding in usefulness; on the contrary, I think it is doing as much good as ever. The Society has visited every district in England, and it is now going over the ground again, taking care however, though returning to the same district, not to go to the same town or locality. We are told the population of this district is not large. Some persons of your own county went so far as to say, that the farmers of Kent were not very much advanced in agriculture. (Oh! and laughter.) Well, they were of your own county; but I do not say that I by any means agreed with them. That would be a poor return, on my part, for the hospitable reception the Society has met with in Kent. I am only telling you what I was told; I hope that by doing so I have not left any unpleasant impression on your minds. That opinion was given me by persons of some importance; but I think that perhaps they did not come from the neighbourhood of Canterbury. Though Kentish men, perhaps they were not men of Kent (great applause).—not perfectly identified with the feelings and views of the county. I was not aware of the difference between a Kentish man and a man of Kent before I came here; but I find there is a broad distinction. However, were the statements I told you true, it would be a reason for us to come instead of being one that should make us keep away. Our object is to excite an interest in the cause of agricultural progress; to wake up the farmers to a sense of the importance of the subject. We are glad to bring to you, who live in what has been called a corner of England, all the latest improvements in the art of agriculture; not expecting or desiring you to adopt them without thought, but in the hope that you will give them your calm and deliberate consideration, and decide whether it be worth your while to accept them or not. I am quite sure that many of them are most excellent improvements, some suitable to one part of England, some to another. For instance, I cannot own to much admiration of your Romney Marsh sheep, but I am quite ready to admit that they may be best suited to the climate and peculiar nature of your marsh land. It is very likely that Southdowns would get on poorly where Romney Marsh breeds would prosper; but yet it may be worth while for you to reflect if your sheep are not capable of improvement. Again, your system of ploughing is altogether singular; and, if I may venture to say it, so is the shape of your plough (laughter.) No doubt if the Society had merely studied how they might make the most money, districts more favourable than East Kent could have been easily selected; but I am sure that such a narrow view would be altogether foreign to the purpose and object of the society. Of course, after a meeting at such a place as Warwick, centrally situated, and near large towns, the number of visitors, when we come to Canterbury, will be sure to fall off. But I think we have no reason to regret our selection. It will have given us an opportunity of introducing to this district all the most important, as well as the most trifling,

improvements: especially, I am glad that you have had the opportunity of witnessing that most extraordinary exhibition of the steam-ploughs at work. Now, gentlemen, far be it from me to advise you to buy a steam-plough; but I will say this, that they are practically used in almost all parts of England, and I believe a day will come when we shall have them employed everywhere—when they will be so much improved that we shall see them in common use even in this county. I want to give you a very few figures, with reference to this subject, which you may take home with you, and turn over in your minds at your leisure. I will give you the outline of calculations that have been made of the cost of the steam-plough compared with the ordinary plough. For their accuracy I do not pledge myself; but I think they will be found pretty correct. The first outlay certainly appears a very large one. The apparatus will cost from £500 to £750, according to the plough you use, or the manufactory you have it from. The annual expense of working the steam plough, including wear and tear, and interest for the money, would be between £400 and £440. Another calculation puts the saving effected by the introduction of a steam plough on a farm of 400 acres at cost of eight horses, £280, and the expense of their keep annually, £330. This would be a partial set off to the cost of a steam-plough; but still by this calculation—for which I am in no degree responsible—it would appear that the cost of ploughing by steam is greater than by horses. On the other hand, there are persons whose statements are entitled to every consideration, who maintain the reverse. At any rate, the owner of the steam-plough possesses this great advantage—he is enabled to complete his operations in a much shorter space of time, and I need not tell you that this is frequently a matter of the first importance.

Lord BERNERS gave, "The Mayor and Corporation," and in doing so said: If the show-yard was not so full as it has been on previous occasions, I never saw a public dinner attended by a more hearty company than that now before me. I hope the district of East Kent will derive as much benefit from the visit of the Society as other districts have done, and that the breed of Romney Marsh sheep may, before long, begin to show symptoms of improvement (laughter)—something more nearly approaching to the Shropshire and Southdown breeds than they are at present. Before sitting down, I should like to mention one fact of some little interest, when taken in connection with the disease among sheep which prevailed last winter. Any member of this Society has the advantage of communicating with its veterinary surgeon, in case of a disease breaking out in his neighbourhood among the cattle; and if the malady is of sufficient importance, the surgeon—a very able and experienced officer—is authorized to attend and give his advice. I know that in my own district, last winter, there was a terrible mortality among sheep, which I really believed might have been almost entirely prevented, if the veterinary surgeon of the Society had been asked down. Not less than 15,000 sheep died within an area of ten miles; whereas in another district, which our surgeon attended, the mortality did not exceed three in every hundred.

The Mayor having becomingly responded,

The DEAN proposed the "Labouring Classes." He said: I mean not with any studied effort to recommend this toast to your favour, for I am speaking to many hundreds here whose interest in the welfare of the working classes has been unmistakably shown by their doing what they could to improve their condition, to raise them in the scale of society, and to fit them for a better discharge of their duties here and a firmer hope in happiness hereafter. A toast is sometimes called the toast of the evening. In some sense or other I think that every toast is such. We have already drunk, and done, I hope, full justice to what, locally and properly speaking, is the toast of the evening, I mean that of success to the Royal Agricultural Society. But, in solemn depth of meaning, in real intrinsic importance, the toast of the evening is surely that which I am about to propose, "The Labouring Classes." They are the broad basis upon which our national prosperity and our national happiness must rest; they are the main support in which every great intellectual or moral movement must find its strength and its stability; they are the classes whose condition, character, and conduct must stamp the age in which we live with its broadest features. And there

are circumstances now passing around us that may give confidence and courage to all who are engaged in working for the good of the labouring classes. I have alluded, in another place, to this subject; but that was not the place for compliments; they sound strangely in the pulpit. This is the time for them. Sometimes speeches made on occasions of this kind are called contemptuously "after-dinner speeches," but I have always felt that they enable us to say many welcome truths which cannot elsewhere or otherwise be said. The improvement that has taken place in the labouring class cannot be denied. It is to be found in all the ranks of that innumerable army; in those whose march is in the furrowed soil, whose home is in the glebe, as well as in those who toil at the forge or devise and carry out those wonderful machines which we have seen to-day. One great benefit of modern improvements is the tendency to unite in the same workman the knowledge of different trades. The division of labour confines a man to a particular branch of a trade; the concentration of labour that these inventions aim at, and often attain, has precisely the opposite effect. For instance, agricultural servants will no longer be able to live in ignorance of machinery; every farm labourer will be soon also something of a machinist. We have heard from competent authorities that men of business become soldiers with little trouble and in short time. So I believe we shall find that agricultural labourers will become machinists. It is also worthy of observation, in the present days, that a desirable end may often be brought about by a movement altogether dissimilar in character, and started with a wholly different object. For instance, some time ago an effort was made to procure a Saturday half-holiday for the labouring classes generally. Meetings were held and prize essays invited. While I with others was looking them over, and endeavouring in this round-about way to arrive at our object, the Volunteer force sprang into existence, and with it the half-holiday, which they readily obtained, in order that they might grow perfect in their drill. Thus, what we had been striving after so long, with little chance of complete or speedy success, was in a moment obtained by means of the Volunteer movement. And so in other cases we shall find that the success of one project gives unexpected assistance to some other undertaking wholly dissimilar to that from which it derives the advantage.

Mr. DYKE ACLAND said: I rise to return thanks on behalf of the labouring classes, and also to be your humble mouth-piece, in proposing the toast of "Agriculture, Manufactures, and Commerce." As one of the original members of this Society, I have, perhaps, been selected for the task of giving you this toast. Much has been said about Kent being a corner of England, and the inconveniences resulting from this position. But are we not, I would ask, close to the highway that leads to some of the most civilized countries in the world? Do I not see round these tables many distinguished foreigners, Frenchmen and Spaniards, who have come to Canterbury because of proximity to the continent; They have come to see, not merely what the men of Kent can do, but also what the whole labouring class of England can do. We know that agriculture represents the permanence of England, and manufactures her progress; and we know how to unite the two: first, by meeting together, as we have met this day; secondly, because we meet as free men; thirdly, because we know that our great institutions can only flourish by the cultivation of the arts and sciences. This Society is pre-eminently a peace society, and its interests are all bound up with the preservation of peace. Its object—as one of its founders used to say—is not to teach England—that he would never presume to do, but to make England teach herself, by bringing each part of her into acquaintance with what the other parts could do. I believe that each district has some peculiar practice, which contains a hidden merit; here, for instance, you have the Kent plough. I know that when an Englishman finds out a good thing it is extremely difficult to get him to give it up, so I suppose there must be something in this Kent plough not yet found out by all of us.

Sir BROOK BRIDGES proposed "The Railway Companies, and thanks to them for their co-operation in promoting the objects of the Society." I wish heartily that I could congratulate the Society upon this being the most successful meeting they had ever held; but, unfortunately, I cannot do so, because it would not be the fact. Yet this I will say, that if the first ob-

ject of the Society is rather to extend the knowledge of agricultural progress than to bring money into its own exchequer, their visit to Canterbury will have well answered their purpose, because it must certainly be the means of introducing among our agriculturists many important improvements. I wish I could speak in terms of even qualified approbation about the number of visitors to the showyard; but I must say, that the attendance both yesterday and to-day was not of the kind to give one an impression that much interest was taken in the meeting by the mass of the people in East Kent. At the same time, let me observe that we are essentially a corn-producing county, and have comparatively little interest in the different breeds of cattle. But there is an idea abroad that the principal object at these shows is the cattle; and this perhaps may have acted as a check on the number of visitors. We feel the greatest interest in the implements; and had it been generally known what a splendid collection of these might be seen at the yard, I think probably the attendance would have been much larger.

Mr. NEVILLE GRENVILLE said, if he had, like the noble lord, carried off a prize for five Southdown ewes, he should have felt no difficulty in addressing them; but under the present circumstances he should be content with simply calling upon them to drink to the health of the stewards and judges of the show. (Applause.) The Earl of Winchelsea had spoken most disparagingly of the horses. Now, he observed very prominently displayed in the Hall the Kentish horse—or rather, from the gender of the motto, “Invicta,” it ought to be a grey mare (laughter); and he had no doubt that in the course of a little time the breed of horses would considerably improve. (Hear.) There had been a good deal said about the steam plough, but he could not help recollecting the nice light sandy soil which the Suffolk plough-horses got over so well, whereas he and some of his friends round the table could tell them curious “chronicles of a clay farm.” (Laughter.) He was sure that the stewards and judges had had very arduous labours to perform, and they well deserved the thanks of the company.

Mr. MILWARD briefly returned thanks. Not a single beast had been missed in going round the stands. With respect to the horses, the show was usually a bad one, but this year the worst he had ever seen. Many of the hand-somest horses had been pronounced by the veterinary surgeon unsound.

The Marquis of CONYNGHAM proposed, as the last toast, the health of Earl Powis, the president-elect.

Earl Powis said: I hope and believe that you will not suffer all your interest in the Society to cease with the present proceeding; on the contrary, I look forward to seeing some of you at least next year at Leeds. We shall not, indeed, be able to attract you by offering any prizes for Romney Marsh sheep or Golding bops; and yet, I think in spite of this, we may fairly say that the Leeds show will present peculiar attractions for you. Your local committee has this year given special prizes for the best fleeces of wool. Let me ask you, that being the great staple branch of agriculture in this county, to visit the locality where your principal customers reside—to come to the great woollen manufactories at Leeds and Bradford, and other neighbouring counties. I venture to say you will find the visit both amusing and instructive; and that the most busy man here, the most strict man of business, will not have wasted the time which he devotes to visiting the great market which gives a value to your produce.

THE GENERAL MEETING

Was held on Thursday morning at the Town Hall, when Lord Walsingham took the chair. There were also present Lord Powis, Lord Berners, Lord Leigh, the Hon. Colonel Hood, the Mayor of Canterbury, Messrs. Neville Grenville, T. Pain, C. Barnett, R. Milward, W. Fisher Hobbs, E. Pope, James Howard, J. Shuttleworth, J. Clayton, B. T. B. Gibbs, Munn, W. Murton, G. P. Tuxford, H. Corbet, Lee, Wilson, Voelcker (the chemist of the Society), Frere (the editor of the Journal of the Society), and H. Hall Dare (the secretary of the Society).

On the motion of Lord Powis, seconded by Colonel Hood, a vote of thanks was passed to the Mayor and Corporation of Canterbury for the reception given to the Society, and which the Mayor acknowledged.

On the motion of Mr. Barnett, seconded by Mr. Milward, a vote of thanks was passed to the different railway companies for the facilities they had afforded.

And on the motion of Mr. Fisher Hobbs, seconded by Mr. Brandreth Gibbs, a similar compliment was paid to the Local Committee.

The CHAIRMAN then rose to present a Testimonial on the part of the Society to Mr. Brandreth Gibbs. This consisted of a handsomely-bound portfolio, having the gold medal of the Society inlaid on the cover, and bearing the following inscription:

“The Council of the Royal Agricultural Society of England on the 1st February, 1860, unanimously passed a vote of thanks to B. T. Brandreth Gibbs, Esq., for his valuable services to the Society as Honorary Secretary, and also as Honorary Director at the Annual Country Meetings.

“WALSINGHAM, President.”

In presenting this, Lord Walsingham stated that Mr. Gibbs had been unwilling to receive anything of much pecuniary value, and the Council consequently determined on offering the highest honour they could bestow—the award of the gold medal of the Society. This testimonial was offered to Mr. Gibbs not merely as a memento of his temporary services at a time of great need, when he acted as honorary secretary of the Society, but also for the continued assistance they received from him as Director of the Annual Show.

Mr. GIBBS becomingly responded, and in doing so dwelt especially on the many agreeable associations to which his office as conductor of the Show had conducted.

In reply to an enquiry from the Chairman as to whether any member of the Society had any suggestions to offer,

Mr. NEVILLE GRENVILLE gave notice of a proposition for holding the Summer half-yearly meeting of the Society on the Wednesday in the Show Week.

Major MUNN then proceeded to comment on the general character of the meeting, and to express his opinion as to the success of the Show, the railway accommodation, and the too bigoted notions entertained as to Kentish ploughs and Kentish sheep. But he more especially referred to the line of conduct recently adopted by the great implement makers in declining to exhibit at the meeting. This might be taken as something of an insult to the county itself; but he could tell these gentlemen, however great they might be, that they could not dictate to the Society or their customers; and as they had chosen to withdraw, the public would prefer having the Society's introduction, and give their orders elsewhere. He knew numbers of Kent men who had already determined to do so. Still, although these large firms did not exhibit, they had been sending round circulars to say they themselves should come to the Meeting; and he was told their agents were doing what business they could. But he thought farmers would not be inclined to submit to this kind of dictation, and that the trade would go into other channels.

Major Munn's observations were not taken up by any of the implement makers present; and the proceedings terminated with a vote of thanks to the Chairman.

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

At a Weekly Council, Lord Walsingham, President, in the Chair. Present: Earl of Powis, Lord Bridport, the Hon. Col. Hood, the Hon. A. Vernon, Mr. Raymond Barker, Mr. Denman, Mr. Frere, Mr. Brandreth Gibbs, Mr. Maddison, Mr. Slaney, M.P., Prof. Simonds, Prof. Spooner, Mr. H. Wilson, and Prof. Wilson—

The names of Candidates for admission were read.

The following correspondence relative to Dates and Carob Beans as articles of cattle food was read:—

“Office of Committee of Privy Council for Trade, Whitehall, 23rd June, 1860.

“Sir,—I am directed by the Lords of the Committee of Privy Council for Trade to transmit to you, to be laid before the Committee of the Royal Agricultural Society of the United Kingdom, the enclosed information which has been received through the Foreign Department from her Majesty's Consuls-General at Tangier, Tunis, and Tripoli, in reply to some inquiries emanating from Professor Lindley relative to the price, quality, and quantity of Dates procurable in those countries suitable for the purpose of feeding cattle.—I am, sir, your obedient servant,

“J. EMERSON TENNENT.

“The Secretary of the Royal Agricultural Society of the United Kingdom,”

TUNIS,

“The most inferior quality of Dates used for cattle food is produced at Gabres (on the eastern coast of this Regency), and may be obtained at from £4 15s. to £5 per ton free on board. The quantity to be obtained of course depends upon the crop. The above quality is also used for human food, and there is besides another inferior quality produced at Nyfyanah (in the interior of the Regency), but the charges of transport are much heavier than its first cost. The quantity produced cannot be given. Prices would probably rise much in the face of a large demand. It is impossible to form any idea to what extent, but it is most certain it will rise in proportion to the demand. The rate of freight to England at from 25s. to 30s. per ton.”

TRIPOLI.

“The common price of Dates of inferior quality fit for cattle-food varies from £3 to £3 10s. per ton of 2,240lbs., but when in demand at Malta, as is often the case, prices increase in ratio to the consumption, and frequently reach to £5 and £7, to which must be added 16 per cent. for export duty and all other expenses free on board. In good crops the exportation is calculated from 10 to 15 vessels of 80 tons burthen, at a small reduction from the above, the quality being the same. Prices would rise in face of and in proportion to the demand. There being no direct trade with England it would be impossible to state the freight; but from 12s. to 15s. per ton for Malta. With the exception of Barley and Carobs, the country produce no other cattle food for exportation on a large scale. The prices of Barley are regulated by the markets of Europe; a few cargoes of Carobs have been sold this year for exportation at the rate of £1 8s. and £1 10s. per ton, expenses not included.”

TANGIER.

Tangier is not a port where dates are sent for exportation in any large quantities, as the date tree does not grow in the Northern Province of Morocco. Though I believe at Zsafilitt, and other parts of the interior of this country, dates could be obtained in large quantities and at a low price, yet I fear that the cost of transport would be so great that the price of that fruit would be found too high by British agriculturists for the purpose of feeding cattle.”

A conversation ensued respecting the value of the date to feeders of stock, in which the probability of the

Carob bean being the El Charob, translated “husks” of the parable of the “Prodigal Son,” was advanced.

Mr. Frere exhibited specimens of the yellow and blue lupines, with which he was making an experiment on some light blowing sandy land resting on a subsoil of chalk, and reported that whether from the wetness of the season or from some other cause, the crop so far did not exhibit a promising aspect. He observed if this crop had really suffered from excess of wet it was the only agricultural plant within his knowledge that on such land could suffer from rainfall.

A MONTHLY Council was held on the 4th July, Lord Walsingham, President, in the chair. Present: the Earl of Powis, Lord Portman, Lord Tredegar, Sir E. Hulse, Bart., the Hon. Col. Hood, the Hon. W. G. Cavendish, M.P., Mr. T. Raymond Barker, Mr. Bramston, M.P., Mr. Brandreth, Col. Challoner, Mr. Foley, M.P., Mr. Frere, Mr. Fisher Hobbs, Mr. Humberstone, M.P., Mr. Milward, Mr. Torr, and Mr. Wightwick, Mayor of Canterbury.

The following new members were elected:—

Earl of Winchelsea, Eastwell Park, Ashford
Earl Grosvenor, M.P., 25, Princes Gate
Sir John Montague Burgoyne, Bart., Sutton, Potton, Beds.
Edward C. Tompson, Dromenagh, Iver, Bucks
Gerard Barton, Fundenhall, Norfolk
Charles Frederick Clements, Hasmond's Lodge, East Hoathly
Douglas Brown, 15, Hertford-street, May Fair, London
William Robinson, Heatley, Lymm, Cheshire
E. H. Lyon Winder, Valnor Park, Berriew, Shrewsbury
Sir Walter Charles James, Bart., Betteshanger, Sandwich
Mrs. Cadogan, Brenkburn Priory, Morpeth
Philip Halse, Molland, South Molton
Joseph Ruston, Lincoln
Major Deedes, Hillhurst Farm, Hythe
Thomas Phillpotts, Risea, Newport, Monmouthshire
Mark Taylor, Cleeve, Goring, Reading
Lieut.-Colonel T. Arthur, Misterton Hall, Lutterworth
Thomas Kibble, Green Trees, Tunbridge
Michael Lewis Brown, Cliff Ville, Stoke-on-Trent
Thomas Bostock, 9, Hill Farm, Burslem.
Thomas Wood, Littleton, Chertsey.

The names of Candidates for election were then read.

FINANCES. — The Hon. Colonel Nelson Hood presented the report of the Finance Committee, from which it appeared that the current cash balance in the hands of the bankers on June 30th was £3,647 6s. 10d. The Secretary's receipts had been duly examined by Messrs. Quilter, Ball, & Co., and were found correct. Messrs. Hammond & Co., of Canterbury, had consented to act as bankers to the Society during the period of the forthcoming show.

VETERINARY.—Mr. Thomas Raymond Barker, V.P., presented the report of the Veterinary Committee:—

The Committee report that they consider the arrangement for the visita of the Veterinary Inspector to be capable of material improvement, as the members generally do not avail

themselves of the advantages of advice as now offered to them by the Society.

It appears to the Committee that the present regulations lead to unnecessary delay in obtaining the assistance of the Veterinary Inspector, and that it further appears to the Committee that if a fixed scale of fees for the Inspector's visits and consultations could be arranged, it would be far more satisfactory. The system to be based on the same principle as that now existing in reference to the Consulting Chemist of the Society.

A letter was read from Mr. Brandreth Gibbs, Hon.

Director of the Show, reporting the completion of the Show-yard at Canterbury, with more than the ordinary attractions to visitors.

A request having been made by the Smithsonian Institution, of Washington, for the back numbers of the Society's Journal, with a view of placing them in the library of that Institution, the same was granted.

The Council then adjourned to its Weekly Meeting on the 25th inst.

ADJOURNED GENERAL MEETING OF THE SMITHFIELD CLUB.

In accordance with a resolution passed at the last meeting, on June the 19th, another adjourned general meeting of the Smithfield Club took place on Tuesday, July 17, at the Free Masons' Tavern. There were about sixty members of the Club present. Of these, Lord Walsingham, Lord Tredegar, Sir J. V. Shelley, M.P., the Hon. Colonel Hood, Colonel Towneley, Mr. G. Darby (Sussex), Mr. J. Crawley (Beds), and Mr. H. Brandreth, represented the landed interest; while of the more directly practical agriculturists there were Mr. Jonas Webb (the chairman of the New Agricultural Hall Company), Mr. J. Clayden (a director of the company), Mr. J. Druce (a director of the company), Mr. S. Druce, Mr. Fisher Hobbs, Mr. Henry Webb, Mr. T. B. Northeast, Mr. J. Ford, jun., Mr. J. B. Twitchell, Mr. W. Fletcher, Mr. J. Hitchman, Mr. W. Baxter Smith, Mr. T. Mortin, Mr. R. Westbrook Baker, and Mr. W. H. Baker. Messrs. Allen Ransome, R. C. Ransome, R. Garrett (a director of the company), R. Garrett, jun., B. Garrett, N. Garrett, F. Garrett, H. Garrett, J. Shuttleworth (a director of the company), N. Clayton, F. Howard, James Smyth, sen., A. Priest, R. Read, T. W. Ashby, W. Exall, G. A. Barrett, B. Edgington, Sutton (seedsman), A. M. Lawson (seedsman), Bigg (sheep washer), and J. Odams (maunre manufacturer), appeared for the implement makers and other trades in the habit of exhibiting at the club. The cattle salesmen in attendance were Messrs. J. Giblett (the promoter of the company), W. Collius (a director of the company), W. Vorley, J. Brewster, and W. Guerrier. There were also present Mr. Alderman Mechi, Mr. Banbury (the Smithfield banker), Mr. H. Corbet (the secretary of the Central Farmers' Club), Mr. B. Boulnois (the proprietor of the Baker-street Bazaar), Mr. S. Sidney, Mr. J. Bourne, Mr. W. M. Boullivant, Mr. W. H. Davis, Mr. Brandreth Gibbs (the secretary of the club), Professor Simonds (the veterinary surgeon of the club), Mr. G. Ade (solicitor to the club), and Mr. C. Dorman (the solicitor to the Agricultural Hall Company).

There was a meeting of the supporters of the new company held an hour previous to the general meeting of the members, but to that our reporter was refused admission.

In the absence of the Duke of Richmond, Lord WALSHINGHAM, as vice-president of the Club, was called upon to preside.

In reading the minutes of the last meeting, Mr. GIBBS remarked that he had received a letter from Mr. Dorman, requesting him to insert the word "legally" before "binding," in order to show what he really meant in saying at the previous meeting that the agreement would not be binding on the Club.

The minutes having been approved, Mr. Gibbs read the following letter from the President:—

Goodwood, Chichester, July 16, 1860.

MY DEAR SIR,—I regret to say that my health is such that I cannot go to London to attend the Smithfield Cattle Club. If called upon to give an opinion upon the proposition of removing

the show to Islington, I should hesitate much, as I fear that the tradesmen, who are now, I believe, our most numerous visitors, would not follow us; and if the show does not pay, we cannot expect that it will be well done.

Believe me, dear Sir, yours sincerely,
RICHMOND.

Mr. Gibbs next read a letter from Mr. Tower, stating he saw no reason for altering the opinion which he expressed at the last meeting, that the plan should be submitted to the annual meeting in December next; one from Sir W. Miles, protesting against the removal of the show from the present site; one from Mr. Stokes, simply expressing regret that he was unable to attend; one from Mr. Edward Frost, saying that he thought the Club ought to consider well before entering into an agreement for so long a term as 21 years; one from Mr. Joseph Robinson, in favour of carrying out the report of the show-yard committee; one from the Manager of the Crystal Palace, setting forth the advantages which that place afforded for the cattle show; and the following one from Lord Berners:—

Keydhorpe Hall, Leicester, 16th July, 1860.

DEAR SIR,—May I beg you to express to the meeting of the Smithfield Club to-morrow my regret that I am not able to attend, which I fully intended? I do not feel well enough to undertake the journey, which I hope will be accepted as an excuse.

I may now express my opinion, which I did not like to do when occupying the chair, that I highly approve the site, in many respects most eligible, particularly suitable for the convenience of the salesmen, and a healthy situation. Had it been nearer the west end it might be better; but no such was offered. The fullest and calmest discussion of a subject so important to the welfare of the club was so desirable that I trust advantage and permanent satisfaction will be derived from the delay which has taken place.

I am, in haste,
Yours very faithfully,
BERNERS.

The Secretary also read a letter from Mr. Francis Fuller, offering to provide suitable accommodation for the show in a building to be erected in the north of London, it being understood that this offer emanated from the Muswell Hill Crystal Palace Company.

Mr. S. SIDNEY said: My lord, I rise to propose a resolution which will bring distinctly before this meeting the question at issue. The task which I have undertaken has been very much simplified by a pamphlet which has been issued by Mr. Gibbs, giving a distinct account of every step that has been taken by the committees, whose reports are now substantially before the meeting. The resolution I have to propose is couched in the following words: "That the report of the sub-committee appointed at the general meeting of December 9th, 1859, to inquire into the practicability of providing a more commodious place for holding the annual exhibition of the Smithfield Club, having been adopted at the special general meeting of the 22nd of May, 1860, and the report of the Legal Arrangements Committee, appointed on the same 22nd of May to conclude the terms of the agreement with the Agricultural Hall Company, having also been

adopted at the special general meeting held on the 6th June, 1860, this meeting does in the fullest manner confirm those proceedings; and it is further resolved that Messrs. Milward, B. E. Bennett, William Torr, S. Druce, Owen Wallis, Thomas Twitchell, and R. C. Rausome, or any two of them, be authorized forthwith to sign the agreement which was settled by Mr. Ade, the solicitor of the Club, and Mr. Dorman, the solicitor of the Agricultural Hall Committee, and approved by the Legal Arrangements Committee in its report to the general meeting of the 6th of June, and that a copy of the agreement be entered on the minutes." My lord, it is not enough, in the case of a great society like the Smithfield Club, that a measure like this should have been adopted by a large majority; it is absolutely necessary that such a society should stand well in public estimation, and it is in order that it may do so that I intrude myself on the notice of the meeting, to give an account of the successive steps by which we have arrived at our present position as regards the question now before us. I appear here as a simple member of the Club, without any of the advantages connected with rank or agricultural reputation, for this reason—that what I say is all the more likely to be judged according to the facts and figures; that what is laid before the meeting will not derive any weight whatever from the person submitting it, unless, indeed, it be that weight which everyone must have who, having been for some time before the public, is known—as I believe I have always been known—habitually to adopt a straightforward course. My Lord, the commencement of this discussion dates back as far as the general meeting of the 8th December, 1857, when it appeared to be the unanimous feeling of the members present that the existing accommodation was insufficient, and notice was given of the intention to move the appointment of a committee of enquiry. On the 7th of December, 1858, on the motion of Mr. Giblett, seconded by Mr. Fisher Hobbs, it was unanimously agreed, "That a sub-committee be appointed to enquire into the practicability of procuring a better and more commodious place for the Smithfield Club to hold their annual exhibitions, and report the result of their enquiries to the next general meeting." Two days after, on the 9th of December, at a meeting which was equally unanimous, the committee was nominated. That committee made its report to a meeting held on the 6th of December, 1859, distinctly declaring that in their opinion Baker-street was not suitable for the purposes of the Club; and that document was adopted by a very large majority, the minority consisting, I believe, of only seven persons. At the same meeting the committee was re-appointed, with the addition of six other members of the Club. This committee reported to a special general meeting held on the 22nd of May last. On that occasion, for the first time, Sir John Shelley, who had not taken the trouble to attend any of the previous meetings, and who had not, as he himself has stated, read any of the circulars which have been issued.

Sir J. SHELLEY: I never said anything of the sort.

Mr. SIDNEY: No, I beg pardon; what Sir John Shelley said was, that there were a number of members who had not read the circular, and that it was to be presumed that such gentlemen had not taken a very warm interest in this matter, and were not well informed respecting it. My opinion is that most of the persons who did not trouble themselves to write did feel a warm interest in what was being done, but were perfectly satisfied with the reports of the committee. On the 22nd of May, the report of the committee recommending the adoption of the agreement

with the Agricultural Hall Company, and which was in accordance with that adopted at the meeting of last December, was carried by a majority of 16 to 8, one member only having been added to the number of those who originally opposed what is now under contemplation. On the same occasion a Legal Arrangements Committee was appointed; in other words, a number of independent members were selected to draw up the terms on which the Smithfield Club should lease its Show to the Agricultural Hall Company. That committee, acting in conjunction with Mr. Ade, the Solicitor of the Club, and Mr. Dorman, the Solicitor of the Company, drew up a form of agreement, which was submitted to a general meeting held on the 6th of June. All these meetings were summoned by the indefatigable Hon. Secretary of the Club, who, with that business-like talent which always distinguishes him, distinctly showed in every circular the precise business to be transacted on each occasion. You will see, therefore, from this statement that six general meetings and three committees have by their proceedings led to the adoption of this agreement; that it was unanimously declared that the premises in Baker-street were unsuitable for the purposes of the Club, and that it was decided by a large majority that it was desirable that the Agricultural Hall Company should be formed, and that the arrangements offered was such as it would be advantageous to the Club to adopt. I think, therefore, I have completely stamped out the insinuations made at the previous meeting, and propagated through the medium of the press, that the scheme of the Agricultural Hall Company was got up for the benefit of the promoters, and without any regard for the interests of the Club. And here I might stop, because it is perfectly clear from the minutes which have been read by Mr. Gibbs, that the bargain is complete, and cannot fairly be disturbed; but, as I said before, it is essential that a club like this should stand well with the public, and therefore I will enter a little further into the merits of the case, even at the risk of provoking animadversion from those who are opposed to me on this question. In the first place, my Lord, allow me to remind the meeting that this Club consists of 361 members. The committee, to which I have referred before, consists of vice-presidents, judges, stewards, and leading exhibitors, comprising altogether 40 influential members of a club, with a total list of about 360. I ask, was any question ever investigated in a more satisfactory manner? (Hear, hear). The hon. baronet opposite (Sir John Shelley) will, perhaps, tell us that these persons are very insignificant compared with those whose names he has brought forward in support of his opposition. I am sure I feel, as we no doubt all do, the greatest respect for persons of high social rank, who honour the Club with their patronage; but at the same time we must pay some regard to the opinions of the active working members of the Club, men who have taken an active part in the proceedings of the Club. Among these gentlemen I find the name of Mr. Sanday, the well-known breeder of Leicesters, the occurrence of whose sale to-day has, I know, prevented many members of the Club from attending this meeting. I find also the names of Mr. Milward, Mr. Torr, Mr. Owen Wallis, a distinguished agriculturist, whose name commands respect wherever he is known, Professor Simonds, and Mr. Bennett, agent of the Duke of Bedford, who has declared that he cannot attend any more meetings on this subject, because he regards the question as settled, and considers that it would be a gross breach of faith to attempt to unsettle what has been acted upon, partially at least, after the fullest

investigation and the most distinct decisions. This will show you that the question has not been dealt with in an idle manner, but has been duly considered by some of the most active members of the Club, who, in deciding it for themselves as they have done, have not, indeed, imagined that they are doing the best thing in the world, but have thought that they were doing the best thing that could be done under the circumstances; it being distinctly understood that the Club, as such, declined to build, or to incur any responsibility, however disposed they might be to treat with distinguished members of their own body (Hear, hear). Now, at the last meeting we were met by legal objections ("Hear, hear" from Sir John Shelley). Legal objections are exactly the sort of quibbles that gentlemen raise when they have no good argument to advance against a scheme which is under consideration. It is said that you are not competent to do what is proposed—that you will place yourselves in a frightful dilemma if you venture to connect yourselves in any way with a company, including several of the most distinguished members of your own body (Hear, hear). Let me ask where was this dread of a Chancery suit, when the Club entered into an arrangement with Mr. Boulnois for five years, at an increased rent? I wish to avoid everything that is unpleasant. I will not say one word about the circumstances under which that agreement was entered into; but I cannot help alluding to the fact that it was entered into, and so little terror did the Club feel in relation to legal consequences, that the agreement was signed by our honorary secretary himself.

Mr. B. GIBBS: It was signed by three trustees.

Mr. SIDNEY: I really cannot understand why gentlemen should be any more afraid of entering into an arrangement with Mr. Jonas Webb, Mr. Clayden, Mr. Shuttleworth, and the other members of the Club, who are associated with those gentlemen in this matter, than they were of entering into an arrangement with Mr. Boulnois (Hear, hear). Moreover, there is this difference in favour of what is now submitted for final approval, that whereas Mr. Boulnois was not satisfied without obtaining the personal responsibility of three trustees, the Agricultural Hall Company, well knowing the high character of this association, are satisfied with a resolution. They feel confident they are entering into an agreement with gentlemen who will adhere to what has been arranged, and all they ask for is such a memorandum as will make it clear what is expected of them. Well, then, we are told that if we go to that frightful place Islington, that unknown region, that savage district, we shall lose all our visitors, that no one will in that case come near the show, and the Club will become bankrupt and be totally ruined. Now, it appears from the pamphlet published by Mr. Gibbs, that the Club has always been moving from one place to another. We have, I believe, no record of what was said when it was proposed and determined to remove from Goswell-street; but if we had, I have no doubt it would be found that at that time some gentlemen got up and said that they had done exceedingly well in Goswell-street, and that if it removed to Baker-street it would be totally ruined. To some persons it may appear very ungentle to know the situation of Islington, just as Theodore Hook once made a great hit by enquiring where Bloomsbury-square was; but I, at all events, can state from experience that the proposed site is within about a quarter of an hour's ride or drive of King's cross Station, and persons residing at the West End, who wish to go to it, need not be affrighted because they have to drive a short distance northward instead of going to the Botanic Gardens in Regent's Park. What does the site consist of? The Agricultural Hall Company are prepared at the present moment to place at our disposal something like 10,000 feet, and they will acquire something like thirty or forty thousand feet more should it be wanted. Lord Berners and Lord Feverisham both approve of this change. When you find that the cost of riding from the House of Commons to the projected Hall will only be 1s. 6d., from the Bank only 1s., and from Grosvenor square 2s. at the outside, I think you must agree with me that the district in question cannot be very remote. When to this I have added that 1,850 omnibuses go every day either past or close to the contemplated site, you will see that so far as omnibus communication can render it, the place is tolerably accessible: while as regards railway communication, it is less than a mile from the railway

which, beginning at Fenchurch-street, goes all round London, and will shortly have the advantage, by means of a station at King's-cross, of that metropolitan subterranean railway which is now in course of construction, and will help to connect it with several of the principal metropolitan lines, and with the south side of the river (Hear, hear.) I am far from saying that it is the best situation in London for a cattle show (Hear, hear.) I confess that I should be glad to see the show held in Portman Market, or in Hungerford Market, but neither is available. We cannot have the former, we were not prepared to pay for the latter; while, on the other hand, we have an extremely accessible place offered to us on perfectly fair terms. The situation is one of the most eligible in London, more especially for omnibus communication. Upon the ground-floor alone there will be double the amount of space that is to be found in Baker-street, and there will be advantages which are not to be found at Baker-street, namely, air, light, and ventilation. As regards the question of responsibility, can we be afraid that we shall not be quite as secure in the hands of gentlemen whom we know so well as those members of our own Club who are the promoters of this Agricultural Hall Company, as we were in the hands of Mr. Boulnois? Can we believe that in the hands of such men as Mr. Jonas Webb, whose rams would buy half-a-dozen Agricultural Hall Companies, or of Mr. Shuttleworth, who employs some five or six hundred men, we should be placed in some building that would be wholly unworthy of our show? (Hear, hear.) I will make one remark in reference to the proposal of the Crystal Palace Company. It may be all very well for that company to appropriate some portion of their building to a summer cattle show, but to attempt to carry out a winter cattle show at the Crystal Palace would be absolutely preposterous (Hear, hear.) I am sorry, my Lord, to have detained the meeting so long, but I have thought it only right, notwithstanding that the names of gentlemen of rank and high social position may appear on the opposite side, to do justice to the committees who have taken so much trouble and exhibited so much ability in this matter (applause.)

Professor SIMONS, in seconding the resolution, said: Mr. Sidney had so completely exhausted the subject, that it would not be necessary for him to trouble the meeting with any remarks. Everyone must now admit that the Agricultural Hall Company, in which he begged to say he did not hold a single share, and he did not know that he should hold one, was formed at the express desire, and, as it were, at the bidding, of the Club, and that but for that it would never have had an existence. It was declared at the outset that the Club did not intend to build, that they wished to be tenants and not landlords; and he must say that they would not stand in a very creditable position before the world if, after no less than three committees had reported in favour of what was proposed, declaring its adoption to be for the benefit of the Club, and after the Club itself had confirmed the decision of those committees, they were on that occasion to reverse all that had been done (Hear, hear).

Sir JOHN SHELLEY, M.P.: In accordance with the notice which I gave at the last meeting, I rise to move as an amendment, that the whole subject be postponed till the meeting of the Club in December next, and I will shortly state the reason why I think it for the benefit of the Club that that course should be adopted. In a pamphlet, which some one has been good enough to send me, various motives are attributed to me for taking the course that I have done. That pamphlet being anonymous, I ought perhaps to treat it as anonymous communications are generally treated; but there are one or two points on which I wish to offer explanation. It is there remarked that I have pursued that course which is most calculated to please my own constituents. Now, I beg to say that although I am proud to represent Westminster, I do not represent Marylebone; and Baker-street is not within my district. Looking to the interest of the Smithfield Club, which has alone guided me in connection with this matter, I think it would be a great error to remove from the centre of London; and the more I inquire the more satisfied I am that that is the opinion of those whom I am in the habit of meeting most frequently. My Lord, I will now say a few words in answer to the speech of Mr. Sidney. Let me first notice the statement that I said the members of the Club are not in the habit of reading the circulars which are issued by the committee

What I especially referred to, in my remarks on that subject, was the issuing of that circular at the instance of Mr. Jonas Webb, for his own satisfaction, and that of the other members of his Company, with whom, as a club, we have of course nothing to do, wherein it was stated that in case no answer was received by a certain day that was named, it would be taken for granted that the persons addressed agreed with the committee. In reference to that matter, I observed that when a printed or lithographed paper was received by a member of Parliament, it was as a matter of course shied into the waste-paper-basket. As an illustration of this, I may remark that on my recently asking Lord March what he thought of the circular in question, he replied that he had not read it, adding that he saw some paper with "Smithfield Club" upon it, but did not open it. Any printed or lithographed paper is, I contend, almost sure to find its way into that sort of "refuge for the destitute"—the waste-paper-basket. As regards the insinuation which Mr. Sidney says I made against the members of the Agricultural Hall Company, what I said was in effect that whatever might be the object of Mr. Jonas Webb, Mr. Clayden, and others, in getting up the company, it appeared that many of them had not taken shares, and that they must therefore be looking to the public to take some; and that the public did not care a penny-piece about the Smithfield Club, and would look to something else besides the exhibitions of the Club to afford them an adequate return for their outlay. I added that I thought the best course the Agricultural Hall Company could take was to erect their building, and that if after it was erected the Club considered it a good place for their meetings, it could not be supposed that they would not be held there. The insinuation which I made was simply that the public at large would look to something else besides the Smithfield Club Show to yield a return for the investment of their money. Now, with regard to the amendment which I have brought forward, I assure you that I have no other object in proposing it than that of benefiting the Club. I may be told that if some persons have not taken a sufficient interest in the proceedings of the Club to be made aware of all that has occurred in reference to this matter, that is their own fault (Hear, hear). I admit that; but at the same time I must remark, that public men have so much to occupy their time and attention, that it is very natural that they should avoid attending meetings as far as possible; and perhaps this is the reason why so many influential persons have known so little about the recent proceedings of the Smithfield Club. Till I saw the thing in print, I myself was not at all aware that there was a project for a twenty-one years' lease; and I now declare that I have not met with one individual—I may have been unfortunate in this respect—who, whatever may be his opinion with regard to the removal of the show, has not been against binding the Club for so long a period as twenty-one years (Hear, hear). I have the greatest respect for my friend Mr. Webb, with whom I have had the pleasure of acting not only in this Club, but also in the Royal Agricultural Society, for many years; and, whatever others may have imagined, I, at all events, do not believe that that gentleman has intended in this case to promote his benefit individually (cheers). But, nevertheless, I must be excused for saying that I can feel very little respect for a company with limited liability, particularly when I find that so few of the shares have been taken up (Hear, hear). My friend Mr. Garrett told me the other day that he had not taken a single share, and Professor Simonds has told us in effect that it is doubtful whether he will take one. Who, then, are the Agricultural Hall Company? Everyone knows very well that in the case of a limited liability, whatever may be the extent of a man's property, he cannot be held liable beyond the amount of his shares. When we are acting for a large club—a club consisting of three hundred and sixty members—we ought to be very careful what course we pursue, especially as there are a great many members whose engagements make it impossible for them to attend. I contend that the proper time for deciding this important question is the Christmas Meeting, when there is sure to be a large attendance of members. Mr. Sidney has stated that a great many persons are prevented from being present to-day by Mr. Sanday's sale. I myself know that a great many members of Parliament are kept away by parliamentary duties; and I say that such

facts constitute a strong ground for postponement. A great deal has been said with regard to my motives in taking the course that I have done. I shall treat everything of that kind with the contempt it deserves. I know very well what I am doing, and by what motives I am actuated. People may say what they please. I declare that my sole object throughout has been to benefit the Club (Hear, hear). I have been assured that if this project is carried out as it stands—of course if any modifications should be made in December it will be open to everyone to turn his own opinion with regard to them, and to act as he may deem best—it has been stated to me, and I myself say advisedly, that if this project is carried out in its present shape, several of the most influential members of the Club will withdraw their names. I believe that in adopting the proposition of Mr. Sidney you will be taking a course which is not likely to turn out to have been for the benefit of the Club. Let me remind you, with regard to the divisions which have taken place on the question up to the present time, that only a very small number of members have been present. I have counted the number present this afternoon, and so far as I can make out there are only 45 members in the room (A voice: "60"). I have counted 45 or 46 (Another voice: "There are upwards of 60"). Well, you shall have the benefit of the doubt. I will suppose that there are 60 members present out of a total of 350. The present meeting is certainly a much larger meeting than the previous ones. The largest number of members that have attended previously was 24. There were on that occasion 8 votes for the amendment which I proposed, and 16 against it. When we met at Hachett's Hotel, a month ago, the members that voted were 6 on one side, and 9 on the other; and even supposing that there are 60 out of 350 present this afternoon, I think we shall not be doing right if we do not afford the absent members another opportunity of expressing their opinion on the question before the meeting (Hear, hear). I was told the other day, that if there were any further postponement, the whole thing would fall to the ground. I don't know what the promoters can be looking to. Do they really mean to say, those who are taking shares in this Company, with the hope of getting 10 per cent, that they expect the Show of the Smithfield Club to yield that return? ("No.") Is there something behind? Is there to be an independent exhibition of implements at some other period of the year, perhaps when the Royal Agricultural Society is holding its exhibition (Hear, hear)? All these things want looking into, and render it desirable that a larger number of members should have an opportunity of expressing their opinion. In the pamphlet put forth by Mr. Gibbs something is said about the value of the agreement at law or in equity. It there appears that in answer to a question which I put to the solicitor of the society, Mr. Dorman, that gentleman said, that the parties signing the proposed agreement on behalf of the Club would incur no responsibility; that the agreement, so far as its binding the club was concerned, would not be worth the paper it was written upon.

MR. DORMAN: I wrote a letter to Mr. Gibbs to say that that did not correctly express what I meant; I meant legally, "as far as legally binding the members of the club."

Sir J. SHELLEY: I should like to know the meaning of the words "as far as legally binding the members of the club." Would it bind the members of the club at all?

MR. DORMAN: Sir John Shelley knows that the agreement was drawn in that way on account of the difficulty of getting members to sign it on behalf of the Club. It was believed that if parties were asked to read themselves personally responsible, as was the case with regard to the agreement with Mr. Boulnois, the project could, in fact, never be carried out. That matter was well considered by the promoters of the Company, and they were perfectly willing to rest upon a simple resolution of the Club not entailing any personal responsibility. The agreement simply expresses the terms of the arrangement, and though it is binding, the Club would, in fact, only be bound in honour. The Smithfield Club not being a chartered body, and not being registered under any Act of Parliament, it is impossible to frame any agreement which would be legally binding on the Club, unless it was signed by every one of the members.

Sir JOHN SHELLEY: Without being a lawyer, I venture to say, in answer to that statement, that there can be no such thing as an agreement that is binding on one side and not on

the other (Hear, hear). I perfectly well remember your saying, Mr. Dorman, that the agreement would be legally binding—

Mr. DORMAN: Not as against the Club, but as against the Company.

Sir JOHN SHELLEY: Well, I object to an agreement that is said to bind one side and not the other. As a man of business, I cannot conceive anyone in the money market being willing to take shares, unless it can be shown that the agreement is binding on the Club; and you would certainly be just as likely to get your shares taken if the matter is postponed till December as you are now, when it is declared, on behalf of the Company, that the agreement is not binding in any way. With all due submission to the legal knowledge of other gentlemen, I must say that I never before heard that an agreement could be so worded that it would be practically a case of—"Heads, I win; tails, you lose" (Hear, hear). I must not say any more, having another place—I will not say a better one—to attend very shortly. In conclusion, I would earnestly entreat the meeting calmly to consider what is likely to be best in this case for the real interest of the Club. For my own part, I certainly entertain very great doubts as to the desirableness of removing the show to such a distant part of London. I think that if we are to go out of London—(I call Islington out of London)—looking at various circumstances connected with this question, if we are to remove from the centre of the metropolis, it might be worth our while to consider whether we could not make an arrangement with the Crystal Palace Company which would suit our purpose. I am not prejudiced in any shape or way, but I have the greatest dislike to the removal of the show from the centre of London; and, above all, to our entering into a tacit understanding that would bind us for twenty-one years to a building which is not yet erected (cheers). I beg, then, to move that the whole subject be postponed till the meeting in December next (cheers).

The CHAIRMAN: Did I understand you to state, Mr. Dorman, in reply to Sir J. Shelley, that you considered that the agreement, supposing it to be signed by two members of the Club, would be binding on the Agricultural Hall Company, and not binding on the Club?

Mr. DORMAN: The agreement was, my lord, prepared by the solicitor of the Club, and not by myself; but there can, I apprehend, be no doubt of the fact that it is binding on the Company.

The CHAIRMAN: And not on the Club?

Mr. DORMAN: The agreement is here, my lord; and can be read.

Sir J. SHELLEY: We should not be a bit the wiser if we heard it read.

The CHAIRMAN: The agreement appears to me to be an agreement without a consideration.

Mr. DORMAN: The Agricultural Hall Company agrees to pay the Club £1,000 a year so long as the show is held in the building. There is a distinct consideration in the show being held there. I do not think there can be any difficulty in the case. I had a clause inserted, to prevent any personal responsibility. The agreement, with reference to the lease of the Smithfield Club Cattle Show, is made between the Company of the one part, and two members of the Legal Arrangements Committee appointed by the Club of the other part. It recites the constitution of the Company and the Club, and the various meetings and proceedings of the Club and its committees, with a view to obtaining a proper place of exhibition for the Cattle Show, and their decision in favour of the proposal of the Company. It then recites that "it is distinctly understood that the parties signing are not, by entering into and executing the agreement, to incur any liability, either at law or in equity, to the Company in respect of the provisions hereinafter contained; but it is also understood that the Club will be bound in honour by the execution of the agreement by the members of the Club who are parties thereto." The agreement goes on to embody the various stipulations with regard to the accommodation to be given by the Company, and the management of the annual exhibitions of the Club. And it concludes by stating that, "in consideration of the aforesaid agreements on the part of the Company, the parties signing did thereby—to the intent to bind themselves in honour as members of the Club, and also to bind in honour the other members for the time being of the Club, but not further or otherwise, or so as in any way

to render themselves liable either at law or equity for any breach or default, on the part of the Club, of the arrangement—agree and declare with and to the Company that in case the Company should perform all the covenants on their part, then the annual exhibition of the Club shall be held in the building to be erected by the Company at Dixon's Layers, Islington, in the month of December, 1862, and in the month of December in each of the next twenty years." Those, my Lord, are the simple terms of the agreement, and I apprehend that if the Company did not carry out that agreement they would be liable upon their covenant to pay £1,000 a-year. There is an express agreement on their part to provide a place for holding the show, and I apprehend that in the event of the place not being ready an action would lie for £1,000?

The CHAIRMAN: That you state to be your opinion as a professional man?

Mr. DORMAN: Yes.

Mr. ADE: I am disposed to agree to that, as regards the liability of the Company; but it would be incumbent on the Club to take the animals and the implements to that particular spot, and if the Company were to refuse, or were not able to carry out their undertaking, the damage would immediately arise. But it would only be from year to year that it would arise. For the present there would be no consideration, and you could not file a bill in Chancery to compel the Company to erect the building. In 1862 you might take your show to Islington, and if they could not then afford you the accommodation promised in the agreement, what would be your remedy? You would then have established a consideration: for what? For a building to put your show in, and an action at law would lie against the Company. But, then, you would be subject to that from year to year, and the Club would be dealing with a limited liability company. Mr. Jonas Webb and the respectable gentlemen who are associated with him might not be able to carry out the agreement. That is the difficulty. I do not see how any difficulty could arise so long as you were able to take your show there.

Mr. DORMAN observed, that as regarded the necessity of taking the animals to the place, the difficulty might be got over by the insertion of the words "without any necessity for the animals being tendered."

Lord TREDEGAR thought that one of the principal reasons for postponing the question was the difference of opinion between the two professional men. He seconded the amendment of Sir John Shelley.

Mr. DORMAN said he was not aware that there was any difference of opinion.

Mr. DARBY said he admitted that the Club was under great obligations to gentlemen who had formed a company with the view of carrying out what they believed to be the wishes of the members; but he hoped that that would not prevent the meeting from carefully considering the whole subject and endeavouring to adopt the wisest course, having regard to all these circumstances. Now, how did the matter stand that day? There was a limited liability company, the members of which were, of course, not liable beyond a certain amount, and who, if they had shares to-day, might be gone to-morrow. If the whole company consisted of such men as Mr. Jonas Webb, he, for one, should in that respect be satisfied. But what was the amount subscribed for among the promoters? Was it anything like an approach towards £30,000? Why, it was under £2,000, leaving £28,000 still to be signed for. Among whom was the great bulk of this money to be raised? He confessed, that as a member of the Club, he felt under great obligations to Mr. Jonas Webb and other gentlemen who had endeavoured to the best of their ability to promote the interests of that Club, clearly without having in view any personal interest of their own (cheers.) As regarded the agreement, there must be two parties to it. He hoped that agriculturists would always attach due weight to honour; but in this case there must be two parties to what was proposed—on the one side the Company, and on the other two persons, who were to have a sort of power of attorney to sign for the Club. He had lately been into Sussex, and had met with a great many members of the Club there, as well as in London, and whether it were on account of the period of the lease, or the Company's limited liability, or some other cause, all entertained some objection to this scheme. He ad-

mitted that the most active members of the Club were entitled to much consideration; but on the other hand, they must not overlook those to whom all looked up with great respect. He did not concur in the opinion that Islington is out of London (Hear, hear). He thought the Crystal Palace was in that respect much more objectionable than Islington. But he was not at all sure that it was desirable to remove the Show from the place where it was now held. Had the removal from Goswell-street to Baker-street proved beneficial or mischievous? (Hear, hear). If it had been beneficial, that gave them a little of the insight of experience; and, though he did not deny that for some reasons Islington would be convenient, he maintained that they must look at the whole combination of circumstances in arriving at a decision. Islington would be convenient for the salesman; but would it be for the public, whom they most wanted to interest in the Show? (Hear, hear). He earnestly recommended that this question should be postponed, and postponed in a good spirit, till December. If he lived to attend the meeting then, he would be prepared to listen attentively to any reasons which might be urged in favour of this project; and if he should be convinced that the inconveniences of Baker-street were so great as had been stated, and that Islington presented such great advantages as some appeared to imagine, he would at once abandon his opposition.

Mr. DORMAN said, as regarded the question of postponement, he must observe that the owner of the land had positively declared that he would not allow the matter to stand over any longer. There was great difficulty in inducing him to do so after the previous meeting.

Mr. W. F. HOBBS said, having been a member of the committee from the first, he did not attach any great importance to that remark, for a similar one had been made at all the preceding meetings. He felt bound to support the amendment of Sir John Shelley. He had always been a consistent advocate for holding the exhibitions somewhere near the centre or in the western part of the Metropolis, and therefore it could not be thought that he was now acting in an antagonistic spirit. One objection to this proposed removal was that it would involve a tax on every exhibitor. He thought he was justified in saying that it would be a tax of £1 on every ox or cow, and of from five to ten shillings on every sheep or pig. Again, it had been rumoured within the last six weeks, and that rumour had gained ground since the meeting at Canterbury, that the committee of this Joint-Stock Company intended to hold exhibitions, which might be injurious either to the Smithfield Club or to the Royal Agricultural Society; he meant exhibitions during the summer months. Perhaps so long as Mr. Webb remained the head of the Company there would be no danger of anything of that kind; but it should be remembered that among the directors there were many members of implement firms.

Mr. SIDNEY: Three out of twelve.

Mr. HOBBS continued: He might be mistaken as to the proportions; but he knew that great interest was taken in this question by persons of that class, and he trusted that, if any agreement were entered into between the Smithfield Club and the Company, Mr. Webb would take special care, so long as it should be in his power to do so, that no exhibition was held which could militate against the interest either of the Smithfield Club or of the Royal Agricultural Society (Hear, hear). He would only add that, as the exhibition was now regarded as a national one, an opportunity should, he thought, be afforded for a general expression of opinion, without as well as within the Club.

Mr. GARRETT wished to explain that the reason why he had not taken any shares in the new Company was, that he desired to avoid doing anything that might appear detrimental to the interests of the Club, or to have a selfish object. His sole object in joining the Company was, that the Club might have something tangible to deal with (Hear, hear). It had been thought desirable that the shares should be offered, in the first instance, to the members of the Club; and that course would be pursued (Hear, hear). The promoters had not been actuated by a wish to have a good commercial speculation, though he believed that the Agricultural Hall would prove one; and, one-sided as the agreement was, he had no doubt that the public would take any shares which might be refused by members of that Club.

Mr. GIBLETT said that the whole of the shares were, in one sense, bespoken. It was understood that they were to be

kept in abeyance till they had been offered to the members of the Club; but should any be declined by them, they would, he believed, be taken by other persons, immediately after. He was confident that the promoters of the Company had been actuated throughout by the best motives. Having been connected with the Smithfield Club Show during almost the whole of his life, no one, perhaps, knew more than he did about the inconveniences to which exhibitors had been subjected at Baker-street (Hear, hear).

The CHAIRMAN: Perhaps before putting the question I may be allowed to say a very few words. On entering this room I did not intend to take any prominent part in the proceedings, wishing to leave the discussion in the hands of others. I was, however, surprised to find that, as the only vice-president in the room, it became, in the absence of the President, my duty to take the chair, and hence it is that I occupy the position in which you see me. Now, never having expressed, I think, my opinion in this matter, I think it right, considering the position which I now hold, that I should endeavour to state in very few words the opinion which I entertain on this question. I have always considered that the great objection to the proposed arrangement was the binding, or the attempting to bind, the Smithfield Club for so long a term as 21 years (Hear, hear). I feel that there would be much less objection to binding the Club for 5 years, as it has been already bound to Mr. Boulnois. I regret very much the necessity of removing from the central position we now occupy to a place which is not, so far as the visitors to the exhibition are concerned, equally convenient. But it must be admitted that the premises in Baker-street are too small and confined for the purposes of the show, and that, therefore, it is desirable to obtain, if possible, another place. I must say that, from all I have heard, I do not believe a better site can be found in another place than that which is now proposed. I do not believe there is another of the same kind to be found in London. The observation, however, made in the Duke of Richmond's letter puts the matter in that clear and commonsense light in which his Grace is in the habit of presenting his opinions. He says he is afraid that the tradesmen, who are our principal supporters, will not follow us up to Islington. I think there is great force in that remark, and I am most unwilling to bind the Club, either at law or in honour, for so long a term to hold their meetings in what I must consider to be a somewhat out-of-the-way place. No doubt, so long as it is the interest of the Club to hold their meetings in this new hall, if it should ever be built, they will hold them there; but I think we should be doing extremely wrong if we were to attempt to bind the Club for so long a time as is proposed. With respect to the legal question, I am unwilling to express any opinion where lawyers differ, but I have always understood that in order that an agreement may be binding, there must be two parties to it, and a consideration. Either the Smithfield Club, or some parties acting on their behalf, must be bound, or there is no consideration, and in that case the Company can no more be bound, I think, than the Club. At all events, this agreement is of so extraordinary a nature, that it might involve us in some legal questions, and I think the Club had very much better avoid that evil (Hear, hear). We have not to look solely to the respectable and honourable names of those who are now at the head of the Company; we must also take into account those persons who may hereafter form part of the Company. The shares may fall into the hands of persons about whom we know nothing; and I think it would be a most dangerous thing for this Club to involve itself in an agreement which might or might not be binding, or in legal difficulties which might give us immense trouble, and entail upon us great inconvenience (Hear, hear).

Mr. SIDNEY, in replying, said that if it should be found within twelve months of the time fixed for opening the show at Islington, that the Agricultural Hall Company were not taking proper measures for that purpose, he should be the first person to propose that the arrangement with them should be terminated. He was far from wishing to say anything disparaging of his opponents on this question, but he felt bound to do all in his power to secure a suitable building for the Show.

Mr. BOULNOIS having solicited and obtained permission to address the meeting, although the discussion was closed, as a matter of order, said, his object in rising was to endeavour to throw some light on the subject. The

implement-makers complained that they had not room enough in Baker-street. Was it not doubtful whether they would have sufficient space at Islington? At the Bazaar he could provide 30,000 feet; and, if he understood the matter rightly, the Company would provide only 37,000 feet. He would not attempt to keep the show if he could not do what was necessary; but he would be happy to place the Bazaar at the disposal of the Club for another year, and then await its decision (Hear, hear). Having considered the dimensions of the building which it was now proposed to erect, he stated boldly that the promoters would not provide for implements more than 7,000 feet beyond what he himself offered; and he thought that before involving the Club and themselves in this arrangement, they ought to show clearly that there would in fact be sufficient space for them at Islington. He should vote for the postponement of the question till December, in order that every member of the Club might have an opportunity of expressing an opinion on so important a subject.

Mr. GIBLETT wished to state, in consequence of what had just been said by Mr. Boulnois, that the committee appointed

to see that proper space was awarded in each department, had determined that the Company should provide 50,000 feet at least in the implement department, and every possible accommodation for cattle, sheep, and pigs.

Mr. ADE remarked that the space to be set apart for implements and other articles was 35,000 feet, which was exclusive of the accommodation for the public, the avenues, and everything connected with the viewing of the show. Mr. Boulnois, he understood, provided at present only 20,000 feet, which included all the viewing accommodation.

The CHAIRMAN then put the question to a show of hands, when the numbers were—

For the amendment	10
Against it	39
	—
Majority	29

The original resolution was then put and carried.

Thanks were then voted to the Chairman, and the meeting separated.

ROYAL AGRICULTURAL COLLEGE CLUB.

The second annual dinner of the above Club took place at the Freemason's Hotel, Canterbury, on Wednesday, the 11th July, Dr. Vœlcker, president, in the chair.

The object of the society, which was inaugurated at Warwick last year, is to afford the present and past students of the college an opportunity for a social meeting, and the interchange of experience from year to year; and as the annual shows of the Royal Agricultural Society present a very general rallying point, it was determined to meet at the show, wherever that might be held. Besides members, the Club was honoured by the attendance of Messrs. E. Bowly, J. Niblett, Thomas Arkell, and Scott Burn, whose name is familiar as an agricultural writer.

Mr. E. BOWLY, in rising to propose the toast of the "Royal Agricultural College," alluded to the disinterested and philanthropic conduct of his friend Mr. E. Holland (unfortunately unable to attend, on account of parliamentary duties), who at a time when the affairs of the institution were in a most critical, he might even say ruinous condition, came forward, and advanced, at great personal risk, a large sum of money, which, together with improved management, was the means of raising the College to its present satisfactory condition; and it was with heartfelt satisfaction that he could tell them as an eyewitness that it was prospering. He had lately inspected the farm, and considered it well cultivated, and offering an excellent opportunity for studying economical practice, whilst the educational department was, he might say, guaranteed by the staff of professors, at the head of which staff stood the world-known name of Dr. Vœlcker, whose name he begged to couple with the toast.

Dr. Vœlcker, in replying, thanked the last speaker for the flattering manner in which he had mentioned his name in con-

nection with the college. It might, he thought, be instructive to learn the steps by which he came to occupy that position of which he felt justly proud. It was a common delusion to imagine that genius was necessary to success. Now he was thankful to say he never was a genius, neither could he boast of more than average abilities. If genius was not, however, essential, he would tell them what was—the constant striving to excel, whatever position we may be called upon to fill, endeavouring manfully to do the very best. The discipline necessary for such efforts is invaluable. In a humorous speech the Doctor detailed his early school struggles, his chemical apprenticeships, both in Germany and as Professor Johnston's assistant, showing that his present position and success was attributable, under Providence, to a constant determination to do thoroughly whatever he attempted.

The SECRETARY laid before the meeting the annual report. He was glad to tell them that the names of about 50 members were enrolled, and he hoped that number would be doubled before the next meeting. Meagre as was the accommodation provided, compared to what he trusted eventually to see, it had not been secured without much trouble and anxiety, in great measure owing to the difficulty of making arrangements so far from the spot. He would draw their attention to a proposition from an absent member, as to electing a local committee, who should be empowered to make the necessary arrangements for the next meeting. He regretted that the efforts to obtain permission to erect a tent in the show-yard had not been successful; he trusted, however, that after formal application, the Council of the Royal Agricultural Society would grant their request, and that members would find at the Leeds' meeting show-yard accommodation.

THE SUSSEX COUNTY STOCK SHOW

Was held at Chichester on Thursday, July 12. The great interest of the meeting centred in the Southdown Sheep classes, for which the following were the chief awards:—

First prize of £10 for the best short-woolled ram, one year old and under two, W. Rigden, 110v; 2nd of £5, W. Rigden.

First prize of £10 for the best short-woolled ram, two years old and upwards, W. Rigden; second of £5, W. Rigden.

First prize of £10 for the best pen of five short-woolled yearling ewes, Messrs. Heasman, Angmering; 2nd of £5, the Duke of Richmond.

The Duke of Richmond sent a number of rams, and Mr. Scott Haywood and Mr. Ellman were amongst the competitors.

Lord MARCH, who presided at the dinner, said nothing but severe indisposition prevented the Duke from being present that day, and on that very morning he had looked out of his window to see whether it was not possible he could inspect the stock, though of course he could not have remained to the dinner, for it would require some time yet ere he recovered from the severe attack of gout with which he was seized so far back as the middle of January last. He knew his Grace's di-appointment at the result of the decision of that day; but while he said this it was not to be imagined that he wished to impugn the decision of the judges; the Duke expected to have been more successful, but he had been beaten by an old competitor and an old friend, Mr. Rigden—he meant in the class for rams. Although it was probably not correct to say the Duke and Mr. Rigden had fought side by side; they had fought in the same ring; and while he admitted that his Grace had not been successful on this occasion, he believed that on most occasions the Duke had beaten Mr. Rigden. He believed that if his Grace were present he would say that although he was beaten on this occasion he would take care that it did not occur again.

Mr. DONOVAN said he had great pleasure in rising to propose a toast which he knew would be received with enthusiasm. In these county meetings they met together in friendly rivalry, and could do honour to a certain few only, but he wished particularly to note that all the prizes, with the exception of two or three, had gone to the east, to the great disappointment of their brethren in the west. He did not see why this should be so. There was one thing to which he wished to refer in particular—that was with regard to the horses. It was suggested to him some time ago that he should get up a prize for the best hunters, with a view of giving a stimulus to the breeding of that valuable class of animals in this country (Hear, hear), because, as was well known to all, the breeding of those useful animals had gradually gone down hill. When he was a boy they were as plentiful as blackberries. And it was with the object of rendering the breeding remunerative that he had got up a couple of prizes (Hear, hear), but he was sorry to observe that the judges had not thought any of the animals exhibited that day worthy of a prize. He should, nevertheless, continue to go on; and he wished, in the west as well as in the east, to get up prizes to the value of £60, which should be again offered next year. He proposed

“that they drink to the health of the successful candidates, coupled with the name of Mr. Rigden” (loud cheers).

Mr. W. RIGDEN, in responding, said that before he proceeded to say anything on the subject of the toast, he wished to correct a remark which fell from the chairman as to his Grace being the most successful candidate. He claimed that position for himself, for since that association had been formed he believed he had beaten the Duke twice for his once (cheers and laughter). He regretted, however, that his Grace had not stood better at Canterbury; but he there had to compete with a formidable competitor, Mr. Webb, who had an immense number of sheep to draw from, and he (Mr. Rigden) doubted very much whether they should ever be able to beat him. Still, they could reap an advantage, and that was by comparison. Hitherto in this county they had neglected the shoulder of the sheep, and he would advise others to look to this point, for it was one in which they were most deficient.

In responding to the toast of his own health, Lord MARCH said further, there was his friend, Mr. Rigden, whom he felt even more vigorous now than before to have another “go at” (laughter). Mr. Rigden had said he was quite wrong in what he had said, and that he had beaten the Duke twice for his once: but he must remind Mr. Rigden that he was referring not to the county shows only, but to all the shows, including the Royal Society and Smithfield; and if he was wrong in saying the Duke had not offended Mr. Rigden, then he should apologize to him. With regard to the improvement in Southdown sheep he quite agreed with what had fallen from Mr. Rigden, that the general fault was in the neck and shoulder, and it was with a view of correcting this that they had gone from Goodwood to Mr. Webb more than once for a change of blood; but they must, at the same time, take care not to go too far, otherwise they should lose that character for which the Southdown sheep was so remarkable at the present time (Hear, hear). He felt sorry the Duke had been unsuccessful at Canterbury, and also that day; but he felt sure it was gratifying to the farmers of the county to reflect that if his Grace was to be beaten at all, it should be by talented persons like the Messrs. Heasman, rather than by a farmer from a distant part. He complimented the Messrs. Heasman upon their success, and though he was sorry they had beaten the Duke, he trusted they would yet have another fight, when his Grace would prove himself the better man (cheers and laughter). He had said so much of the advantages of these shows that he had scarcely a shot left in the locker (a laugh); he might, however, observe that though the weather had been somewhat unfavourable, he never saw more excellent crops than they had in that neighbourhood (Hear, hear). Referring to a case where the white carrot had produced 35 tons to the acre, the noble Earl passed on to comment on the excellency of the mangold wurzel on Goodwood farm, observing at the same time that he believed they would agree with him few roots were more beneficial than a good field of mangold wurzel.

The Meeting was altogether one of the most successful ever held in the county, and the catalogue quite a curiosity in the way of print, paper, and general appearance.

THE PRODUCE OF THE CROP OF 1859 IN SCOTLAND.

SIR,—As it may appear interesting to many of your readers to have some idea of the acreage and produce in quarters of the grain crops grown in Scotland, and the value in money of the various descriptions of grain, together with the like statistics of the two principal green crops, I have collected these and put them into shape, from the statistical accounts made up by Mr. Hall Maxwell, or rather under his guidance and superintendence.

It is to be regretted that such statistics are not continued, for really the expense of bringing them out was little in comparison to the fact of their being so easily and so cheaply compiled and brought forward. A very small sum to a compiler, and a dinner to half-a-dozen of collectors for each county in Scotland, surely cannot be the reason why these valuable statistics were dropped in 1859. Statistics of every description are now the order of the day, and is one of the first and

most important of these to be dropped, pettishly, or for some cause unknown? There are hundreds of agriculturists ready to engage in the "labour of love" again. Surely the expense of a paltry dinner to the collectors cannot be the reason why these useful documents are dropped. Statistics of trade are got up at a considerable expense by Government, and continued to form the basis of commercial treaties of other countries, and why not agricultural statistics as well as commercial? The following statistics are extracted from those published for the years 1854, 1855, 1856, and 1857, the only years compiled from the collectors' reports. Those I have put into shape, showing the acreage of each description of grain, the gross produce in quarters and tons, fiars prices, and produce in money, viz :

AGRICULTURAL STATISTICS OF SCOTLAND FOR CROPS

1854, '55, '56, AND '57.

Description of Crop.	Acreage.	CROP 1854.			
		Average Produce per Acre in Bshls. or Tons.	Gross Produce in Qrs. or Tons.	Average of Fiar Prices of Grain.	Amount.
Wheat	168216	28.82	606062	65 9½	1993691 8 10
Barley	207507	35.81	955666	33 5½	1598747 9 0
Oats	932991	36.28	4261630	26 11¼	5739466 4 9
Beans	43874	28.67	136158	44 7	301289 17 1
Bere	18118	35.62	80677	29 0½	117151 8 2
Rye	3809	27.00	12830	34 0	21811 0 0
Potatoes ..	143032	3.70	529915	75 0	1987181 15 0
Turnips ..	433915	14.77	6411419	15 0	4808564 5 0

Total of Cereals and two principal Green Crops, £16567903 7 10

Description of Crop.	Acreage.	CROP 1855.			
		Average Produce per Acre in Bshls. or Tons.	Gross Produce in Qrs. or Tons.	Average of Fiar Prices of Grain.	Amount.
Wheat	191283	26.48	632817	70 8½	2237771 15 4
Barley	186080	32.73	761613	38 6¼	1454204 15 10
Oats	936111	32.21	3767464	27 7½	510249 14 6
Beans	42744	27.69	147831	44 1¼	325593 2 6
Bere	17260	32.26	69609	31 0½	118480 6 4
Rye	3692	24.30	11422	38 0	21701 16 0
Potatoes ..	149563	4.98	732141	70 0	2562493 10 0
Turnips ..	449372	14.38	6461476	15 0	4846107 0 0

Total of Cereals and two principal Green Crops, £16669602 0 6

Description of Crop.	Acreage.	CROP 1856.			
		Average Produce per Acre in Bshls. or Tons.	Gross Produce in Qrs. or Tons.	Average of Fiar Prices of Grain.	Amount.
Wheat	261842	26.10	908872	45 1¼	2050642 9 0
Barley	165663	33.21	697746	37 1¼	1284463 15 0
Oats	918253	31.95	3995597	23 1	4611815 4 1
Beans	45288	26.25	159930	39 3	314329 0 0
Bere	15385	30.03	62638	34 1	106745 11 10
Rye	4620	23.30	10282	37 0	24576 14 0
Potatoes ..	148930	2.17	413850	75 0	1552087 10 0
Turnips ..	459741	14.30	6540267	15 0	4965185 5 0

Total of Cereals and two principal Green Crops, £14849845 9 8

Description of Crop.	Acreage.	CROP 1857.			
		Average Produce per Acre in Bshls. or Tons.	Gross Produce in Qrs. or Tons.	Average of Fiar Prices of Grain.	Amount.
Wheat	223152	28.64	769366	40 1	1541927 13 10
Barley	198387	32.66	811817	28 0½	1138235 11 8
Oats	938613	34.50	4098850	21 4	4366773 6 2
Beans	42873	26.44	129730	37 10	245387 0 0
Bere	21607	30.19	83972	25 10½	108459 13 4
Rye	17218	23.40	17218	30 0	25870 0 0
Potatoes ..	139819	3.00	430468	75 0	1614255 0 0
Turnips ..	476691	14.90	6690109	15 0	5017586 15 0

Total of Cereals and two principal Green Crops, £14058505 0 0

It appears from the above that crops 1854 and 1855, from the high prices of grain and large crop of potatoes, must have given a larger return to the farmers than the two following years, 1856 and 1857, by upwards of two millions of money.

Farming, like most other professions, has its good and bad years; but as farmers generally get all the same weather, they cannot complain of being unfairly dealt with. A bad crop is a grievance and a loss to the farmer, but is, when general, much more so to the consumer.

Crop 1859 was somewhat like crop 1826, in so far as spring crops were affected by the season, yet the same result did not

follow with respect to prices. Wheat fell from 3s. to 4s. per quarter on crop 1826, as compared with 1825, and rose 4s. on crop 1859, as compared with 1858. This would make it appear that neither of these droughty seasons were against the wheat crop materially, but told more severely on the spring crops of those years. The rise in 1826 over 1825 reached upwards of 25 per cent. on barley, oats, and beans; while in crop 1859 over 1858 the rise was only 11 per cent. Admitting that the spring crops of these years—1826 and 1859—were equally bad, the rise on crop 1859 may have been checked by free imports.

Crop 1859 must have told severely on farmers in Scotland, and must be marked down as a bad year; for, besides the heavy loss on green and green crops, hill and stock farmers have suffered much during winter from the weather and dear feeding materials.

Underneath I hand a sketch of what probable loss farmers may have suffered last season. The statement may exceed in some cases, and may be under in others, but I "guess" it is not far off the truth. A little of the shortcome in quantity is made up from higher prices of grain, and reduces the loss. There is no doubt—though all my statements are open to correction—that the farming interest of Scotland has suffered a deficiency of nearly three millions of money on crop 1859. This will average, on 3½ millions of acres under rotation, something near to sixteen shillings per acre of deficiency. The reverse of these years, 1826 and 1859, appears now on the ground, a light wheat crop, thinned by a severe winter, and a full spring crop, favoured by a superb seed time and seasonable showers since. However, there is much 'twixt the cup and lip.

DEFICIENCY OF CROP 1859 IN QUANTITY, AS COMPARED WITH THE AVERAGE OF CROPS 1854, '55, '56, AND '57.

Description of Crop.	Acreage.	Average Crop 1859				Amount in money.
		acres sown these four years.	short per acre in bush.	Gross bushels short.	Fiar prices per bush.	
Wheat	211123	3	363369	5 0	158342 5 0	
Barley	189409	9	1704581	3 6	298310 3 6	
Oats	936929	12	11171148	2 8	1489486 8 0	
Rye	4561	6	27366	3 6	4289 1 0	
Bere	18092	7	126544	3 8	32313 1 3	
Beans	43653	18	785790	4 10	159599 5 0	

Total short on grain crops £2163549 3 9

In addition, it is estimated that turnips were short a quarter of an average crop—this will add 1223590 4 6

Short on grain and turnips £3387139 8 3

Thus showing that, on crop 1859 there is a short come in money of £3387139 8s. 3d., calculating at fiar prices for crop 1858. But as the fiar prices of grain were higher for crop 1859, the farmers recovered part of their loss by the additional value of their grain. Thus—

Description of Crop.	Acreage.	Estim. crop Excess of in qrs. fiars prices				Amount in money.
		Crop 1859.	1859 over 1858.	£	s. d.	
Wheat	650108	4 0	130021	12 0	1560252 0 0	
Barley ..	593625	5 0	148406	5 0	1484060 0 0	
Oats	2633292	2 0	263329	4 0	10533172 0 0	
Rye	10270	4 0	2054	0 0	20540 0 0	
Bere	58394	4 0	11673	16 0	470124 0 0	
Beans ..	44937	3 5	7676	14 9	110112 0 0	
Deduct ..					563166 11 9	

Nett loss on grain and green crops £2813972 16 5

—I am, &c.,
July 12, 1860.
MERCATOR.
—North British Daily Mail.

BUTTER, CHEESE, AND EGGS.—The quantity of butter imported in 1859 was 421,534 cwt., and the customs' duties received for it amounted to £104,587. The quantity of cheese was 397,225 cwt., and the duties came to £49,656. Eggs have not been counted since 1853, when the number exceeded 123½ millions; but in 1859 the extent of the packages was 743,572 cubic feet; and the duty at 8d. per foot amounted to £24,787.

THE HOLME PIERREPONT RAM LETTING.

The annual show and letting of pure Leicester rams at Holme Pierrepont took place on July 17th, and was numerously attended; many of the principal flocks in the kingdom having representatives present to obtain such animals as might be deemed most suitable for maintaining the purity of their breed. The pre-eminent position which Mr. Sanday has obtained for Leicester sheep has become a household word amongst agriculturists of all nations; but this success has been the result of the most careful attention and study, and a cost regardless in amount. At the meeting at Canterbury, last week (equally with the one at Warwick in 1859), of the Royal Agricultural Society of England, he took all the prizes offered for rams, and the only pen he sent of shearing ewes obtained the first prize, the second being taken by Lieut.-Col. Inge, who uses Mr. Sanday's rams. The early part of the forenoon was spent in a careful examination of the lots offered for competition, and it was at once apparent that the late severe winter and spring had been much against that favourable development of condition which, under other circumstances, would have shown itself. So far as their quality was concerned no fault could be found. Every sheep had a most magnificent skin; and now that such wool is worth near upon 2s. per lb., this is a most important consideration. Although the present owner of this flock may date his high fame from the extensive purchase he made at Mr. Burgess's sale at Cotgrave some thirteen years ago, its foundation may be said to have been laid many years since, during the lifetime of Mr. Sanday's father, who was one of the most spirited agriculturists of Nottinghamshire, and gave large sums for sheep, on one occasion expending no less than 100 guineas in the purchase of a ram. There were sixty-three lots, viz., 26 shearlings, 20 two-shears, 10 three-shears, 4 five-shears, and 3 five-shears. Of these, 42 were disposed of by public competition, and most of the remaining 20 were afterwards let by private agreement upon more favourable terms to the owner. In the shearlings were included the second and third prize sheep at Warwick, the first being reserved for home use. At about half-past twelve o'clock the company were invited to luncheon, at the conclusion of which Mr. Sanday proposed "The Queen;" and Mr. S. Umbers, of Wappenbury, Warwickshire, the health of Mr. Sanday, who, in returning thanks, said it was a matter of regret that the sheep were not in such condition as they were last year, but the reason was well-known to them. Such a state of things was, however, always more in favour of the hirer than in his, and the rams were of the same quality and breed. He might add, that perceiving there were several strangers present, he would assure them that they would find him as liberal as heretofore, and in the event of anything going wrong with the sheep they might take, he should be ready and happy to meet them in a liberal and equitable manner.

Mr. H. Strafford, of Euston-square, London, who officiated as auctioneer, stated the usual terms upon which the sheep were let. The last lot in each class would be taken first, and so proceeding upwards. As in former years, each would be put up at £10 10s., and if there were no bid they would be turned back. The following is the result of the biddings, with the name of the hirers:—

No.	SHEARLINGS.	Gs.
2.	Mr. Somerville, for Lieut.-Col. Inge, Thorpe Constantine	10
4.	Mr. Henry Mann, Lutterworth	10
6.	Mr. Hind, Ganelston	10
7.	Lieut.-Col. Pennant, Penryn Castle, Bangor	10
9.	Mr. Wright, for Lord Carrington	12
10.	Mr. Cobb, Walton, Warwick	10
12.	Mr. Stamper, Nunnington, Oswaldkirk	10
13.	Mr. Wood, Staawick Park, Darlington	10
14.	Mr. G. Mann, Scawsby Hall	16
15.	Lieut.-Col. Pennant	14
16.	Mr. Biddle, Walton	18
17.	Mr. H. Mann, Lutterworth	21
18.	Mr. Hurlston, Heathcote Farm, Wasperton	35
19.	Mr. G. Shaw, Hunsbury Hill, Northampton	43
20.	Mr. J. Mann, Stragglethorpe	12
21.	Mr. Wedge, Fernhill, Newport, Salop	31

22.	Mr. J. Tremaine, Trevarton, Cornwall	21
23.	(Third prize sheep at Canterbury) Mr. Owen, Blessington, Wicklow	53
24.	Mr. J. Hall, Scorb'ro', Beverley	45
25.	(Second prize sheep at Canterbury) Mr. Thunder, Kingston Lodge, Navan	111
26.	Mr. J. Hall, Scorb'ro'	45

TWO SHEARS.

3.	Mr. Hind, Ganelston	10
6.	Mr. Stamper, Nunnington	13
7.	Mr. S. Umbers, Wappenbury, Leamington	15
10.	Mr. J. Hall, Scorb'ro'	14
11.	Mr. Slater, Brigg	13
12.	Mr. G. Mann, Scawsby Hall	10
13.	Mr. Marshall, Colgrave	12
14.	Mr. Sonley, Lund Court, Kirbymoorside	25
15.	Mr. J. Singleton, Givendale	30
16.	Mr. J. Hall, Scorb'ro'	12
17.	Ditto	23
18.	Mr. Wedge, Fernhill, Salop	40
19.	(Third prize sheep at Canterbury) Mr. Mead, Rallymartle, Kinsale, Ireland	81
20.	Mr. Dixon, Brancsburton, Bridlington	21

THREE SHEARS.

7.	Mr. G. Turner, Barton, Devonshire	39
8.	Lieut.-Col. Inge, Thorpe Constantine	10
9.	Mr. James Freeston, Frithlingborough, Higham Ferrers	10
10.	Ditto	12

FOUR SHEARS.

2.	Mr. J. Hall, Scorb'ro'	10
4.	(First prize sheep at Canterbury, and to be retained at Holme Pierrepont until the 10th of October) Mr. Clarke, Scopwick	70

FIVE SHEARS.

3.	Mr. Marris, Chase, Lincolnshire	10
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The general result of the letting will be thus seen to be—

	£	s.	d.		£	s.	d.
21 shearlings	593	5	0	being an average of 28	5	0	
14 two-shears	334	19	0	"	23	13	0
4 three-shears	65	2	0	"	16	5	6
2 four-shears	84	0	0	"	42	0	0
1 five-shear	10	10	0	"	10	10	0
42	£1087	16	0	"	£25	18	0

There can be no question that high as this average is—and which exceeds Mr. Jonas Webb's Southdowns by £2 17s.—it would have been considerably higher but for the circumstances alluded to by Mr. Sanday. Mr. Geo. Mann, of Scawsby Hall, obtained a first-class shearing—a combination of wool and mutton which will maintain the character of his well-known flock. The highest-priced ram was taken by Mr. Thunder, a gentleman pre-eminent for his endeavours to improve the breed of sheep in Ireland, and who last year had the same honour by hiring the best shearing at 90 guineas. This year he met with a stronger competition, and his principal opponent was a countryman—Mr. Owen, who lives in the adjoining county of Wicklow. For this magnificent sheep 20 guineas was first bid, and this sum was presently increased to 70 gs.; after which Mr. Thunder and Mr. Owen had the race to themselves, the former winning, in racing phraseology, by a head—advancing one guinea over Mr. Owen's offer of 110 guineas. Mr. Mead, another gentleman from the Sister Isle, gave 81 gs. for the 3rd prize all-aged ram at Canterbury. It speaks much to Mr. Sanday's praise that year after year the same breeders hire his sheep; and the liberality which characterizes all his transactions are fully appreciated by those who have known him the longest.

SALE OF MR. J. R. NEATE'S HAMPSHIRE DOWNS.—The first annual sale of a portion of the Hampshire down flock of Mr. J. R. Neate took place at Northington farm, on Friday the 13th July. The sale was conducted by Mr. F. Ellen, of Andover. There was a pretty good attendance, but much less than there would have been had not many been detained at home taking advantage of the fine weather in securing the hay. Buyers, however, were present from Wilts,

Dorset, and other counties, but Hampshire of course contributed the largest number. About one o'clock the company assembled in a spacious marquee, and partook of luncheon. M. Portal, Esq., occupied the chair, and Mr. Edney and Mr. Ferris were the vice-chairmen. The auctioneer enumerated some of the leading prizes awarded to Mr. Neate's stock, and the sale commenced with the rams. Three rams were to be let, and ten to be sold. The highest priced ram was knocked down to Mr. Ferris at 28 guineas. Twelve ram lambs were to be let, and 88 sold. In this class 15 guineas were realized for the hire of one ram for a month, and several others made near that amount. Pairs of ram lambs reached 25 guineas; and the average of the whole was highly satisfactory. The ewes, 120 in number, were full-mouthed, and excited considerable competition, the biddings reaching as high as 68s. per head.

SALE OF SHORTHORNS, &c., AT BUSHEY FARM.

This pleasant stronghold of the Hertfordshire Shorthorns was on Wednesday, July 18, the scene of a fourth sale. It is upwards of three years since Mr. Wetherell's Bushey labours were rewarded by that average of £90 2s. 5d., which still holds its proud fourth place in herd annals. The present time was most auspiciously chosen. In 1857 we saw Great Mogul bought-in for 400 gs., with Royal and Yorkshire honours in store for him; and not only has prophecy become fulfilment four times over in this respect, but out of the four of his stock which went to Canterbury, Harkaway had just returned with the first bull-calf prize, and Lady Butterfly and Joyful with high commendations in the yearling heifer and calf classes. Vesta—the highly commended cow—was a great feature, along with Lady Butterfly, Queen of the South, and Diadem, the second yearling heifer at Dublin Spring, in a close adjoining the one where the young bulls were on parade, in front of Harkaway's and Young Mogul's box. Many extended their visits from them to Great Mogul, and his son Tallyho, a calf of January 27th, and, as our guide observed, "the very moral of him." Lovesome, from Lucy—another of his get—stood side by side with that most exquisite handler Joyful; and those who marked her beautiful top almost wished that the well-known fancy in judges' minds for roan over white had induced Mr. Marjoribanks to send her, with her half-sister, on the off chance. Among the July calves were a red heifer from Rosa Bonheur, a roan heifer from The Bride, and a roan bull from Myrtle (half sister to Mr. Eastwood's Rosette), all by Great Mogul, so that Mr. Marjoribanks bids fair to have a tolerably wide choice for his Leeds prize-fighters.

About two hundred visitors were present, including General Lord Rokeby, Sir A. de Rothschild, Hon. W. Cavendish, M.P.; Sir Adolphus Dalrymple, Bart.; Mr. Alderman Copeland, M.P.; Major Wood, and Messrs. Tanqueray, Jonas Webb, Noakes, Jas. Currie, Thursby, King, C. A. Barnes, Whittingstall, Trehonais, Cobb, Fryer, Snewing, Claydon, Taylor, Jno. Iles, W. T. Copeland, Abbey, &c. After an excellent lunch had been discussed, under Mr. Wetherell's presidency, in the barn, the veteran led the way to the well-remembered spot. The dairy heifers and their calves were all grazing in the sale meadow, where pens had been put up for the sheep and pigs; and as the bulls were marshalled in Indian file, the whole of the lots were remarkably handy for inspection, and came up, not exactly with "the goose step," but with a precision and regularity worthy of rifle volunteers. The eclipse was visible just after the biddings began, and unloosed the tongues of the idlers so much, that Mr. Wetherell was obliged to request them to leave it alone.

The fourteen bulls and bull-calves, five of which

were born this side Christmas, made 549 guineas, and the eight by Great Mogul averaged £50 12s. 8d.; so that Mr. Wetherell's energetic "Come away!" proved to have lost none of its potency. Bulls alone will not tempt great herd owners to a sale; and hence they were parted with decidedly under their value. Corporal Trim, a very nice level young bull, with a remarkably sweet open head, went to the Duke of Sutherland for 61 guineas. Kirkman, a dark roan, with a good back, capital substance, and long quarters, but not a very nice head and horn, was knocked down for 66 guineas to Mr. Armstrong, after some strong bidding from the Rev. F. Thursby. Rory O'More, 70 guineas, became Lord Chesham's, and after a spirited set-to between Mr. Noakes and Mr. Peter, for Crony, the "Kentish fire" was silenced, and the Australian market triumphed. This was far away the cleverest young bull on the ground, nicely packed in his quarters, and well filled in behind the shoulder, a point in which some of the Great Moguls, like their beautiful-quartered sire, are a trifle deficient. Beyond a rather sunken eye, there was very little for fastidious cynics to urge against him; and the fact of his not having been even commended in his class at Canterbury, makes us fancy it a stronger one than it seemed to be as they stood in line. Amongst the other bull purchasers were Messrs. Crisp, Barnard, Ellis, Duckworth, Woodward, Sisman, Wetherell, Thursby, Barnes, and Botham. Cock of the Walk, to whom Vesta and Elegance are in calf, was put up afterwards for 200 guineas, but did not elicit a bid. The top price for shorthorn dairy heifers, only three of which were bred by Mr. Marjoribanks, was £23 10s., and for fat polled Scots £22.

The Southdown sheep were principally by tups from the Duke of Richmond's and Mr. Jonas Webb's. The Duke of Sutherland and Sir A. de Rothschild were purchasers, and the highest prices were £9 10s. for a shearing ram, 61s. a piece for fat wethers, and 59s. for ewes. Six boars of the small white Bushey breed averaged £5 13s. 4d., and the total proceeds of the sale were £1,688 19s. Every head of stock in the catalogue was sold. The weather was delightfully fine, and the general arrangements, and the bloom in which the stock was brought out by Mr. Tallant, combined to make it a very pleasant appendix to "the great fact" of 'fifty-seven.

SALE OF MR. PAWLETT'S LEICESTER FLOCK, AT BEESTON, BY MR. STRAFFORD, ON JULY 13TH.—

The Friday in the Royal Society's Show week was not the most eligible day for a sale on the other side of the Metropolis, and the attendance at Beeston was consequently but small. Amongst the purchasers, however, who either bid in person, or through their agents, were Lord Spencer, and Messrs. Gell, G. Smith, Smart, Happer, A. A. Young, Smyth, Bruce, Jefferson, Lindsell, Allington, Woodward, Crouch, Bennett, Northey, Trotter, Serjeant, Bodger, Wright, Gould, J. Young, F. Jordau, R. Fisher, R. Woods (agent for G. S. Foljambé, Esq.), Davis, Pope, Hassell, Cresswell, Gibbons, Wootton, Bulmore, Armstrong, Watkina, S. Spencer, Burdett, Borton, Mead, Hopper, Shaw, F. Fowler, Marris, and the Rev. S. Stopford.

The 30 shearing rams realized £495 2s. 6d., an average of £16 19s. 9d. The highest price of 47 gs. was given by Mr. R. Fisher for lot 27; sire the Chester prize sheep, dam Z.

The 12 two-shears brought £193 14s. 6d., an average of £16 2s. 10½d. The highest price was 50 gs., for lot 37; sire a sheep of Mr. Sanday's, dam Gloucester prize sheep. Mr. Cresswell was the buyer.

The 13 three, four, and five shear rams made £163 5s. 6d., an average of £12 11s. 2d.

The general average of the 55 rams was £15 10s. 3d. The total £858 2s. 6d.

The 150 ewes and theaves brought £720 2s. 6d., an average of £4 16s. The total results of the sale, £1,573 5s.

SALE OF MR. H. PAIN'S HAMPSHIRE DOWNS AT MITCHELDEVER, HANTS.—There were several hundreds present, all apparently bent on business, and many of them having come from far distant counties. An adjoining barn had been fitted up for luncheon; and the wines and liquors, of which there was a plentiful supply, were most excellent, and appeared to give great zest to the repast which was partaken of by the large company assembled. The duties of chairman were filled by George Brown, Esq., of Avebury, Wilts; F. Bailey, C. R. Cundell, and W. Taylor, Esqs., officiating as vice-chairmen. About half-past two the company adjourned to the sale ground, and after a few lucid remarks from the auctioneer, Mr. Frederick Ellen, of Andover, the real business of the day commenced with the two-tooth ewes. A very short time sufficed to show that but few present were mere lookers-on. The biddings were at once quick and liberal, and the result was satisfactory. Two-tooth ewes reached 70s., four-tooths 85s., six-tooths 90s., full-mouthed 115s., and ewe lambs 70s. per head; the whole making an unusually high average. The ram lambs appeared to be in great demand, one pair realizing 40 guineas. Among the principal buyers were the Earl of Uxbridge, the Earl of Leicester, Sir J. Titchborne, Bart., Messrs. Atkins, Allen, Attwater, Bland, Barrett (Norfolk), Butler (Norfolk), Baines, Brown Collis, Courtenay, Cundell, Cockeram, Foot, Frapton, Galpin, Hillier, Hammond, Lyne, Margeton, Moore, Martin, Newton, Portal, Pern, Pain, Pile, Parker, Read, Reeks, Smith, Sillence, Stubbs, Simpkins, Tice, White, and Young. Many noblemen and gentlemen not present were represented by their agents. The Earl of Uxbridge bought the highest-priced ewes, Mr. John Neate, of Northington, being his competitor; Mr. Brown, of Uffcott, the next; and Messrs. Parker, Allen, Moore, Margeton, Collis, Bennet, and Bland all purchased at prices not less than 60s. per head. For ewe lambs the highest bidder was the Earl of Leicester, and Mr. Collis bought the next highest lot. Mr. Martin, of Shapwick, Dorset, purchased the highest-priced ram lambs; his principal competitor was Mr. John Moore, of Littlecot. The sale was in all respects one of the most important and successful that ever took place in the county.

IMPORTANT SHEEP SALE.—One of the largest sales by auction of sheep that has ever taken place in Dorset took place at Kimmeridge farm on Tuesday, when Mr. G. Mayo, who is relinquishing that farm, offered to public competition, through Mr. Rossiter, nearly 6,000 of the best breeds of sheep in Dorset, descendants from the celebrated flocks of Messrs. Paul, Salter, and Bridge. One and all appeared unanimous as to their excellent quality. The sale attracted the attention of graziers and dealers from remote counties, Worcester and Lancashire sending to the auction some keen judges of mutton. The sale took place in a large pasture field opposite Smedmore House, the residence of Colonel Mansel. After partaking of a substantial luncheon, the auction commenced, when the conditions of the sale were read, and the disposal of the six-tooth ewes commenced, 436 in number, and in 22 lots, finding purchasers at prices varying from 37s. to 49s. per head, and realized in the aggregate nearly £1,100. The four-tooth ewes were next offered in 44 lots, and 887 animals figured for upwards of £2,000—the price per head ranging from 54s. 6d. to 45s. 688 two-tooth ewes were sold at figures from 42s. to 60s. 6d.; they made 35 lots, and produced in the aggregate about £2,500. Chilver hogs, 951 in number, and 48 lots, met with buyers at prices from 40s. 6d. to 50s. 6d.; and the proceeds for this description of sheep amounted in the gross to upwards of £1,600. A large number of chilver lambs, pur hogs, four and six-tooth wethers, pur lambs, several rams and stags, were sold at a later period of the day, and the total amount of the sales could not have been less than £10,000.

THE MINSTER LOVELL RAM SALE.—The annual sale of shearing rams from the flock of Mr. John Gillett, of Minster Lovell, took place on Saturday week. Having done justice to Mr. Gillett's hospitality, the company withdrew to the barn. The sheep were penned in an adjoining close, and it was admitted on all hands that they were quite equal, if not superior, to those of former years.

They were big in size, perfect in symmetry, with fine heavy fleeces, and most of them could boast of the much desired recommendations of grey legs and faces. Mr. Cother commenced business by letting four rams for the season, two two-shear and two three-shear sheep; the former made 7 guineas and 7½ guineas, and the latter 6½ guineas and 18 guineas. Mr. Stratton of Fulbroke, Mr. Smith of Shilton, Mr. J. Taylor of Fulbroke, and Mr. J. Mace of Sherborne were the hirers. The sale of the shearing rams (60 in number) followed, and for many of these there was considerable competition, some of them making as high as 50 guineas each, and others 28 guineas, 26 guineas, and 24 guineas.

SALISBURY PRIZE SHEEP FAIR.—About 10,000 sheep were penned. There was a good attendance of buyers, and the whole changed hands at about the same prices as were obtained at Stockbridge on Tuesday. There was a fair show of horses, which sold at late rates. The prizes were awarded as under:

A piece of plate of the value of £5, given by Lieut.-Gen. Buckley, M.P., for the best 10 Hampshire Down Ram Lambs—Mr. E. Oldin, of Ratfin Farm, Amesbury.

A piece of plate of the value of £3, given by M. H. Marsh, Esq., M.P., for the best 100 wether sheep—Mr. S. Strange, of Hazelbury Brian.

A piece of plate of the value of £5, given by Lord Harry Thynne, M.P., for the best 100 breeding ewes, good on tooth—Mr. Pile, of Woodford.

A piece of plate of the value of £5, given by the Members of the Town Council of Salisbury, for the best 100 wether lambs—Mr. Shittler, of Bishopstone.

A piece of plate of the value of £3, given by the Members of the Salisbury Town Council, for the second best 100 wether lambs—Mr. Brake, of Romsey.

A piece of plate of the value of £5 (late Alderman Smith's prize) to the largest penner—Mr. S. Strange.

A piece of plate of the value of £5, given by the Right Hon. Sidney Herbert, M.P., Giles Loder, Esq., and other subscribers, to the largest buyer—Mr. Stubbs, of West Tisted.

NORTHLEACH.—On Wednesday Mr. Hewer's annual sale of 52 Cotawold rams took place as usual in a field adjoining the churchyard, under the able presidency of Mr. Wm. Cother, auctioneer, and attracted a large company of sheep breeders and the public generally. The sale was very spirited, the rams realizing prices ranging from six-and-a-half guineas to 62 guineas, the average price being £16 5s. 11d.

HOW CARROTS AFFECT HORSES.—The carrot is the most esteemed of all roots for its feeding qualities. When analyzed, it gives but little more solid matter than any other root, 85 per cent. being water; but its influence in the stomach upon the other articles of food is most favourable, conducing to the most perfect digestion and assimilation. This result, long known to practical men, is explained by chemists as resulting from the presence of a substance called *pectine*, which operates to coagulate or gelatine vegetable solutions, and favours this digestion in all cattle. Horses are especially benefited by the use of carrots. They should be fed to them frequently with their other food.

DRYING RHUBARB.—Rhubarb dries very well, and when well prepared will keep good for an indefinite period. The stalks should be broken off while they are crisp and tender, and cut into pieces about an inch in length. These pieces should then be strung on a thin twine and hung up to dry. Rhubarb shrinks very much in drying, more so than any plant I am acquainted with, and strongly resembles pieces of soft wood. When wanted for use, it should be soaked in water over night, and the next day simmered over a slow fire. None of its properties appear to be lost in drying, and it is equally as good in winter as any other dried fruit. Very few varieties of rhubarb are suitable for drying, as most of them contain too much woody fibre. The best variety of rhubarb, for any purpose, is the Victoria, when grown in a suitable situation. The Mammoth is worthless, owing to its fibrous nature, as are also some other kinds.

THE SALE OF SHORTHORNS AT CORBOLLIS, CO. LOUTH.

The sale of Mr. Lee Norman's herd, which was conducted by Mr. Strafford, took place on Thursday, July 19th. The attendance was very good, but the unfavourable nature of the weather, which at one time caused an adjournment, was much against the day's proceedings.

The sale commenced in the following order:—

COWS AND HEIFERS.

Name.	Calved	Purchased by	Price.
Queen.....	Feb. 27, 1852	Dr. Phillips	£32 11
Maradan 3rd	March 21, 1854	Met with an accident.	
Speranza	March 10, 1855	Mr. Ford for Ld. Lurgan	49 7
Maradan 4th.....	April 7, 1855	Mr. Pattison	37 16
Nina	April 23, 1855	Dr. Phillips	43 1
Frangrance	Jan. 3, 1855	Mr. Fetherston	42 0
Dapple	Jan. 9, 1856	Lord Clermont	28 7
Daylight.....	March 1, 1856	Mr. Naper	57 15
Kiss	June 14, 1856	Mr. Pattison	27 6
Prima Donna	Jan. 10, 1857	Lord Clermont	31 10
Maradan 6th.....	Oct. 6, 1857	Mr. Pattison	12 12
Delight.....	Jan. 12, 1858	Mr. Cunningham	23 2
Maradan 7th.....	Jan. 4, 1858	Lord Lurgan	59 17
Lilywhite	Jan. 19, 1858	Mr. Allen	32 11
Specific	March 5, 1858	Mr. Allen	56 14
Princess Maude	May 5, 1858	Lord Clermont	39 18
Dewdrop	Oct. 12, 1858	Mr. Spencer Percival	10 10
Careful	Dec. 22, 1858	Mr. Carragher	16 16
Maradan 8th.....	Jan. 7, 1859	Mr. Fetherston	38 17
Maradan 9th.....	Jan. 8, 1859	Lord Lurgan	76 13
Specimen	Jan. 6, 1859	Lord Clermont	52 10
Nun.....	Jan. 23, 1859	Lord Clermont	22 1
Princess Helena.....	March 25, 1859	Mr. Cunningham	42 0
Piccolomini	May 26, 1859	Sir Alan Bellingham	15 15
Dove	Sept. 7, 1859	Sir Alan Bellingham	34 13
Maradan 10th	Dec. 7, 1859	Mr. Percival	34 13
Namette	Dec. 28, 1859	Sir Alan Bellingham	22 1
Princess Louisa	Feb. 18, 1860	Mr. Murphy	16 16

Average of 28 females, £34 4s.

BULLS.

Nonsuch	May 24, 1857	Mr. Pollock	28 7
Nonplus	Jan. 23, 1859	Mr. Fetherston	31 10
Photo	Feb. 25, 1859	Mr. Naper	31 10
Dilemma	August 23, 1859	Mr. Murphy	19 19
Master Maradan.....	Dec. 12, 1859	Mr. Fetherston	26 5

Average of 5 bulls, £27 10s.

Messrs. Robinson and Howard have hired Mr. Barnes's Duke of Leinster. He leaves Moynalty this day for Olney, Bucks. This is another instance of the preference given by Englishmen to carefully selected and well bred Irish shorthorns. The Duke is a magnificent animal, and will, we are confident, maintain his illustrious name with honour to his country.—*Irish Farmers' Gazette*.

THE SALE OF SHORTHORNS AT KINGSFORT, CO. MEATH.

This sale took place on Wednesday, the 18th July. A large number of visitors were drawn together. Well did the herd stand the test, and sustain the long-established reputation which Mr. Chaloner has earned as a shorthorn breeder. Another point was also very clearly brought out, to wit, the great value set upon the "Booth strain" in this country. So much so was this the case that throughout the entire catalogue the greater number of "Booth" crosses which the pedigrees exhibited, so much the more was the respective

values of the animals enhanced. This was shown especially in the case of "Miss Warlabry," her yearling son "Sheet Anchor," and her nine weeks old calf "May Queen;" the prices paid for the three amounting to £929 5s.; although "Miss Warlabry" completed on the day of sale her eighth year.

It will be observed that none of the cattle sold at Mr. Bolden's sale, reported in our last impression from the *Mark-Lane Express*, reached the prices obtained at Kingsfort.

From the time when Mr. Strafford mounted the rostrum, and the appearance in the ring of "Lady Faunty," until the termination of the sale, the biddings were remarkably steady and regular. There was no persuasion required; people appeared to have their minds quite made up, and everything went on "like clock-work."

The following is a list of the animals, the respective purchasers, and the prices obtained:—

COWS AND HEIFERS.

Name.	Calved	Purchased by	Price.
Lady Fanny	Sept. 7, 1848	Mr. Spencer Percival	£39 18
Miss Warlabry	July 18, 1852	Mr. Waldo	372 15
Lady Portia	Sept. 27, 1852	Mr. J. G. Wood	99 15
Mirrh	Feb. 23, 1853	Mr. Hopper	52 10
The Bride	March 13, 1853	Mr. French	47 5
Fleda	Jan 22, 1854	Mr. Cather	74 11
Primrose	March 2, 1854	Mr. Welsted	40 19
Harriette	March 6, 1854	Mr. Kearney	56 14
Nancy	April, 1854	Mr. Waldo	59 17
May Dew	April 17, 1854	Mr. Pawlett	94 10
Pearl	May 8, 1854	Mr. Robinson	94 10
Bonny Lass	May, 30, 1854	Mr. Malone	315 0
Honey Dew	March 15, 1855	Mr. Bloomfield	52 10
Prude	July 28, 1855	Mr. Robinson	79 18
Modesty	May 1, 1856	Mr. Butler	39 18
Julia	June 11, 1856	Mr. Brookes	100 18
Coronella	April 4, 1857	Mr. J. G. Wood	36 15
Fly	July 19, 1857	Mr. Robinson	73 10
Lady Pigot	Aug. 2, 1857	Mr. J. P. Tynte	95 11
Favourite 2nd	Nov. 27, 1857	Mr. S. Percival	50 8
Windsor Pearl	Jan. 12, 1858	Mr. Hopper	65 2
Bella Donna	June 13, 1858	Mr. J. P. Tynte	73 10
Bon Bon 3rd.....	June 18, 1858	Mr. Malone	283 10
Hear's Ease	Oct. 7, 1858	Mr. Kearney	69 6
Flower Girl	Nov. 6, 1858	Mr. S. Percival	52 10
May Maid	Dec. 13, 1858	Mr. Howard	94 10
Flirt	Jan. 6, 1859	Dr. Phillips	58 16
Miss Harbinger	Feb. 14, 1859	Mr. Boyle	48 1
Forget-me-not	April 12, 1859	Mr. S. Percival	105 0
The Nun	May 28, 1859	Mr. Winter	58 16
Heather Bell	May 29, 1859	Mr. Allen	84 0
Bridal Wreath	June 27, 1859	Mr. Pawlett	55 13
Red Rose	July 17, 1859	Mr. S. Percival	25 4
Portia	July 25, 1859	Mr. Kearney	44 2
Julianna	Aug. 26, 1859	Mr. S. Percival	131 5
Hoya-Bella	Oct. 2, 1859	Mr. J. G. Wood	57 15
Irish Girl	Jan. 12, 1860	Mr. Garnett	49 7
White Rose	Jan. 29, 1860	Mr. French	19 19
May Queen	May 13, 1860	Mr. Barnes	210 0

Heifer calf, by Dr. M'Hale, dam			
Bonny Lass	June 11, 1860	Mr. J. Richardson	53 13
Heifer calf, by St. Patrick, dam			
Bride	June 25, 1860	Mr. Jones	17 17

Average of 41 females, £36 8s.

BULLS.

Heir of Windsor.....	Jan. 24, 1858	Mr. Dalton	30 0
Sheet Anchor	April 3, 1859	Mr. J. P. Tynte	346 19
Hohenloe	June 30, 1859	Mr. Bloomfield	78 15
Sugar Plum	Jan. 8, 1860	Mr. Jones	32 11
Master M'Hale.....	Feb. 28, 1860	Dr. Phillips	74 11
Little Pat	March 29, 1850	Sir R. Paul	27 6
Magnum	May 17, 1860	Mr. Wade	11 11
Calf	July 8, 1860	Mr. Caffrey	13 13

Add sales of cows, &c. £615 6
 3532 4

Average of 8 bulls, £37 18s.

—[Abridged from *Irish Farmers' Gazette*.]

THE SMITHFIELD CLUB.

At another adjourned General Meeting of the Members of the Smithfield Club, held in London, it was definitely resolved to remove the Show from Baker-street to Islington. This proposition was carried by a very large majority in a very full Meeting. Indeed, after the thirteen or fourteen Members who made up the attendance at the first call in June, increased to five or six and twenty in answer to a second summons later in last month, it was somewhat surprising to now see more than sixty Members present. This was the more remarkable as farmers were just in the heat of a catching hay-harvest; and inviting them to come up to town sounded about as feasible as making a Meeting of the Jockey Club on the day of the Derby, or asking an Alderman to dine with you, and fixing the ninth of November for "the pleasure of his company." An assemblage of sixty farmers in London is at any time a significant demonstration, and equal to at least six or seven times that number of citizens. Sir John Shelley's motion, that the final settlement of the question should be deferred until the next Christmas Show Meeting of the Members, would consequently appear to be at once superseded. Of course the great body of the supporters of the Club are, or are supposed to be, the farmers; and if they will come up sixty strong in the summer, their opinions and their decision may be well taken to answer for both themselves and their fellows.

But the Meeting on Tuesday was not a Meeting of the farmers, and the determination to go to Islington for one-and-twenty years not the decision of those who exhibit cattle, sheep, and pigs. Of the sixty or so who made up the Meeting, there were, as nearly as we can put them, eight landlords, fifteen practical farmers, twenty-two implement-makers or "trade" exhibitors, five salesmen, six or seven gentlemen of other pursuits living in or about London, and four officers of the Society or of the Company. Again, of these fifteen agriculturists three were Directors of the new Company, and three or four more related to or closely connected with gentlemen actively engaged in promoting it. Amongst the implement-makers one Director was supported by four of his own family, whilst other Directors were accompanied or represented by their partners. Two of the five salesmen were Directors; and one of the official staff of the Club actually seconded the motion for confirming the establishment of the Company. It was utterly impossible to glance round the room without seeing how thoroughly the whole thing had been settled. Mr. Sidney's smart speech was clearly thrown away; and the majority and minority would have been much the same had he never spoken at all.

The friends of the Agricultural Hall Company think strongly on the subject; so strongly, indeed, as to charge those who think otherwise with prejudice, or even worse motives, for their opinions. Now, while no one for a moment attempts to question the goodness of their intentions, we may be pardoned looking a little into their details. At best the removal of the Show is but an experiment; and surely it is not wise to make this one of so long a duration as one-and-twenty years. What may not happen before then? A more convenient site than Islington may be found—by no means an impossibility. The world may choose not to go so much out of the way for its sight-seeing; and "the shillings," or in other words the success of the Club,

so possibly decrease. The very President, his Grace the Duke of Richmond, wrote up to this very Meeting to say that "he should hesitate much as to removing the Show to Islington;" and Lord Walsingham, the Chairman of the day, "had a great objection to binding, or attempting to bind, the Club for so long a term, in what I must consider to be a somewhat out-of-the-way place." These, however, are noblemen living at the West-end of London, and of course with West-end notions to correct. Let us admit that Dixon's Layers have, as we are assured, every capability for doing full justice to the Exhibition, in either of its departments. Let us say that the Company will enter into the business of building with all due spirit as well as experience of what is required. So far we are with the promoters—and let us hope that "the unknown region, the savage district," will not be too remote for either town or country to travel to. But further than this, will any one dare to say that the delay which has already occurred has not done good? Will any member, however sanguine or wedded to the scheme, question but that the discussion and "ventilation" of the matter has conduced to a more satisfactory feeling? Our object has been to encourage such discussion. It may be all very well for the legal adviser to try and hurry over the thing, and get to business as soon as possible. It may sound very terrible to be told, as we have been from time to time, that the proprietor of the ground will not wait another day, and that if you mean to deal with him you must do so at once. But this is an old story, and generally has only the effect of making his customer a little more cautious. We maintain that these very meetings have had a beneficial effect, especially for the new Company, and we only regret that even a little more time had not been allowed. The directors say the majority of the agriculturists are with them. Sir John Shelley and Mr. Darby declare, on the contrary, that many are not. They may not care about writing; and as for coming up specially at such a season, that of course could never have been expected. Now, if the farmers are really in favour of the New Hall, how much better it would have been to have laid the foundation-stone with some more definite expression of their views. Sir John Shelley's amendment went to this, and we openly avow our regret that the ultimate determination had not been deferred until a time when the agriculturists themselves might have constituted the chief element of the meeting. As it is, the point has been almost altogether adjusted without them. The more influential of those who attended the last meeting were distinctly identified with the new project, while the greater proportion of the majority was supplied by a class of members and exhibitors who do not represent the leading features of the Smithfield Club Cattle Show.

It may seem almost useless dwelling upon a business that has been so resolutely dealt with. But the Directors, with a feeling for which we are willing to allow them all credit, are now about to offer the refusal of the shares in the Company to their brother-members of the Club. We should like to see every such share taken by the Club. We should wish to have every exhibitor of cattle—every agriculturist, in a word, thus associated with his Agricultural Hall. There would be more and more guarantee for its well-doing. "I voted for it, and I will support it." Instead of this, other people voted for him, and rumours of resigna-

tion abound. Considering the fearful looseness of the agreement, it becomes more and more necessary to have some one we know as our landlord. If possible, let the members of the Club, after all, be the chief agents in building their own House. It may not yet

be too late—the great mistake so far has only been a little too early—and so let the offer of these shares be made in a straightforward intelligible letter, clearly defining the amount of liability, and the genuine character of the undertaking.

THE SOCIAL CONDITION OF THE COUNTRY.

A few years ago it was a debatable question among statisticians and financiers whether the gold discoveries would have any, and what influence, in enhancing the value of commodities. That the diffusion of gold, and the extended employment and comforts it affords to large classes of society, are beginning to have some such effect would certainly seem to be the case just now, although there are, at the same time, other causes exercising an influence in enhancing the prices of food. That the diffusion of so large a sum as two hundred millions of gold in the past ten years over Europe and America must have had a beneficial effect, no one will, we think, deny. An article of value of this kind, on which there is so little waste, passing as a medium of exchange, and replacing, as it has done in Europe, so much depreciated paper money, cannot but have benefited labour and commerce. In the past ten years we have added 54½ millions sterling to our previous gold coinage in Great Britain, and the extension of comfort, and even dispersion of wealth, would seem to have reached especially down to the operative classes, whose wages have been higher, and their means of living and providing for themselves and families greatly improved.

Let us glance at a few facts which may guide us in our investigation. Firstly, there has been a gradual increase in the number of small fund-holders of late. Out of a total of 266,719 persons holding stock in the public funds last year, 223,628 were in the receipt of dividends under £50, and of these 137,316 were for less than £10. Again, the Savings' Banks returns afford some slight index of the position of the bulk of the people, and here there has been a gradual and steady improvement both in the number of depositors and the amount of their deposits. Taking first the United Kingdom as a whole, we find the progress in the past six years has been as follows :

	1854.	1859.
Number of depositors	1,277,873	2,086,776
Amount of deposits	£33,736,080	£40,997,630

Now it should be remembered that the amount that may be deposited by individuals in a savings' bank is limited, and the diffusion is shown by the fact that £36,500,000 was deposited by about 1,500,000 individuals (excluding Friendly Societies, &c.), giving an average sum of over £24 to each depositor. There is another criterion of prosperity, which may be referred to—the decline of pauperism—even with an increasing population. At Lady-day, 1856, the total number of paupers in receipt of relief was 1,111,476; while at Lady-day 1859, it was only 1,031,759. The amount expended for the relief of the poor in each country was respectively as follows :

	1856.	1859.
England and Wales.....	£6,004,244	£5,553,689
Scotland.....	629,349	657,366
Ireland	733,212	524,063
	£7,366,805	£6,740,138

Scotland seems to be the exception to the general improvement. And yet the Savings' Banks returns for that portion of the kingdom show an increasing number of depositors, with an average amount of £15 10s., for

the last three years, to each of nearly 2,000,000 depositors. Steady employment and good wages place means at the disposal of the labourer, the artisan, and the factory hand, which he is not slow to avail himself of, in increasing his comforts in respect to food and clothing. Hence we may partially account for the increased demand for butcher's meat. There has been also a longer Parliamentary session than usual, an increased floating population in the metropolis, and a greater demand (under adverse circumstances) for butcher's meat. Our supplies too of cattle from the Continent were less last year than they were in former years, and there was at the same time a greatly reduced import of bacon and hams; not one-third of the supply of 1857. These are all points deserving of notice.

Emigration has had its influence in the last few years in abstracting labour and enhancing wages to those at home. With so many competing British colonies sending special funds for promoting free or assisted emigration from our shores—with the inducement of free grants of land to settlers in Canada and New Zealand, and the increasing labour wants of the United States, in railroad building and public works, farming, &c., there have been great inducements held out to many to leave our shores. Hence those who remain behind have found their labour in greater request and better paid. The Government, also, has been a competitor in the labour market, in the increased demands for the army and navy; and for these increased supplies of fresh meat have been required.

In Ireland the improvement in the condition of the people of late years is most remarkable. In the first week in January in 1849, the total number of paupers receiving relief was 620,747; in the next year it was reduced by one-half; in 1855 the number dropped to 86,819, and it has gradually gone down, year by year, until in January, 1860, the number receiving relief was under 45,000; and a very few of these were able-bodied. Exclusive of the large Irish emigration in previous years, about 70,000 have left Ireland annually in the past four years, their destination being chiefly to the United States. The success attending their efforts is proved by the large remittances sent home to bring out their friends and relatives. Thus we have the official fact recorded by the Emigration Commissioners, that in the three years ending 1858 upwards of £2,000,000 sterling was remitted by settlers in North America to their friends in the United Kingdom, through bankers and merchants, exclusive of what may have been sent home through private friends. Some £50,000 or £60,000 per annum is also sent in the same way by settlers in Australia, to aid their friends or relatives in emigrating.

It must also be taken into consideration, that the place of those who have left Ireland has been, to some extent, filled by the introduction of labour from England and Scotland, a large amount of British capital having been invested in land and grazing operations in Ireland. Another feature worthy of notice, as an index of social improvement, is the number of depositors and amount of deposits in savings'-banks in Ireland. These have steadily increased, notwithstand-

ing the large decrease in population; more than one million souls having left Ireland between May 1851 and the 31st December, 1858. Leaving out of consideration the deposits by charitable institutions and friendly societies (although these are also furnished by the labouring classes), let us look at the individual depositors in savings'-banks. The detailed returns for 1859 are not yet available for reference. The number of individual depositors in 1854 was 52,863, and in 1858 59,067. The aggregate amount deposited by these was, in 1854, £1,578,264, and in 1858 £1,804,163—in each case an average of about £30 per head. This is a highly satisfactory feature in relation to the sister kingdom; and, if taken in connection with the extension of cultivation, the increase of live stock, and the attention paid to the pastures, affords remarkable indications of progress.

Whatever may have been the other influences of the gold discoveries, evident benefits have resulted to the bulk of the people from the increase of employment, the advance in wages, and the diffusion of wealth among the operative classes. There has been, too, a retrogression rather than an increase in speculation; for legitimate undertakings have been chiefly prosecuted. Great public and private works have been carried out. The loom, the forge, and the workshop have been in active operation. The weekly consumption of cotton has doubled in Great Britain in ten years. Wages have hence been enhanced in the manufacturing districts 2s.

to 3s. per week; while employment has become more general, and there is great difficulty in obtaining mill hands to supply the numerous cotton factories recently erected. So also with the linen and woollen trades, which have equally advanced, as is evidenced by the enormous increased consumption of raw material.

Machinery, however delicate and subtle in its operations, will not displace altogether manual labour. Overlookers, stokers, spinners, weavers, warpers, and their assistants, must still wait upon the complicated machines. But it is not only in the manufacturing industries that this progress is observable. In the constructive departments we see an equal extension of employment. Building has been carried out on a most extensive scale, both in town and country, for several years past. Railway extension gives indication of continued employment; for there have been upwards of 2,000 miles of new lines opened for traffic in the past five years, and there are about 1,000 (out of 4,000 authorized) now in course of construction. The various government dockyards and arsenals have also given large employment for some years past.

The few facts thus touched upon may at least serve to shadow forth some of the causes which are leading to enhanced prices, in provisions especially. Whether this increase will extend to other articles remains to be seen. Good wages and continuous employment usually lead to a greater expenditure in food and clothing, and, with the thrifty, to a deposit laid aside for a rainy day.

CALENDAR OF AGRICULTURE.

The ensuing month is the general season of harvest, as all kinds of grain will be cut and carried, except in high situations and in northern latitudes. Wheat is yet best cut by hand-sickle and tied into sheaves; barley and oats are mown by scythe or by machine, and may lie some days in swathes before being tied into sheaves: when dry, carry the grains quickly. Turn over the heaps of peas very often: do not allow any mouldiness to happen on the under-side. Store peas with little superincumbent pressure: have plenty of thatch always ready.

In late climates the sheaves of grain must be made small in size, and may be very beneficially built into small ricks of three or four shocks each in the field, to stand there till dry enough for being carried.

Cut all grain crops before dead ripeness sets in: the straw makes better fodder, the sample of grain is better in quality, and the meal is finer. The husks being thoroughly filled, the grain will soon become hardened.

Finish the clearing of all drilled crops, and earth up potatoes by two furrows of Howard's ridging plough, drawn by two horses walking in distant furrows, with a main tree of five feet stretched between them. A week may elapse between the two furrows, of earthing up. Pull by hand any tall weeds that may afterwards arise.

Lay pulverized lime on clay fallows; harrow and plough it into the land; or lay the cinders on the ground, and plough them under, where the bursting and falling into powder will be caused by the moisture in the land, and the subsequent ploughings and harrowings will mix the lime and the soil.

This very excellent method of laying lime on the land requires an earlier application in the previous month. Lay farm-yard dung on the wheat fallows, spread it evenly over the surface, and plough it under; or drill the land with one furrow of the common plough, spread the dung in the intervals, reversing the drills with a single furrow, which will completely cover the dung. A cross-harrowing is required to level the drills before the land is seed-furrowed. When wet lands are ploughed, the cuts across the headlands must be very carefully opened, to convey the water to the ditches.

Supply to horses and cattle in the farm-yards ample stores of vetches, which will now be very good food, from the pods being seeded. Provide litter in abundance: the manure produced will pay almost any cost.

Fold sheep on bare pastures: go on with draining: turn over any earthy composts: burn peaty and vegetable substances, for ashes to be used by the drill: keep the liquid tank filled with earthy substances to be saturated: carry to the pit refuse matters of every kind.

Keep the draft ewes on good pastures in order to get them fattened: put ewes to the ram for early lambs. The lambs of last spring must have good keep. Some farmers, who have not wanted food nor the means of fattening, now sell the lambs and the draft ewes.

Sow on beds of rich and well-prepared lands the seeds of drumhead cabbages and savoy, for plants to be used in May of next year. Sow in the end of the month rye and tares for early spring use.

CALENDAR OF GARDENING.

Sow in the first week the main crop of next year's early cabbages: in dry weather water the drills before sowing. Sow winter spinach twice on mellow soils and moderately rich, like that after fresh dug early potatoes. Nitrate of soda has been proved to be a most fertilizing dress, particularly in binding gritty loams: half a pound scattered over a pole of thirty square yards dug in, and the rows a yard apart, sown as the digging proceeds.

Sow also a sprinkling of horn carrot and turnips, the early stone or Dutch, salads, radish, and lettuce, early, and again after the second week. Sow cauliflower in the third week.

Dig up early potatoes: allow some of the medium size tubers of the "ash leaved" kidney to lie exposed and "green" for seed store.

Transplant at various times, according to their size, the stout and well formed plants of cabbages, brocoli, savoy, and Brussels sprouts. Mix a quantity of good manure in the soil, to which has been added sulphate of ammonia, half a pound in the square pole.

Coleworts, for greens, in the same manner, twelve inches apart.

Celery: for the latest crop, about the 20th of the month. Apply water liberally if the weather be dry. Never mutilate the plants by cutting the

leaves. Earth up former plantings timely and carefully. The spade may be used when the plants are strong, and have already been twice earthed. Propagate sweet herbs by slips and cuttings. Take up garlic, shallots, and onions that are ripe.

Destroy weeds, leave none to spread the evil by seeding, and at this time the attention must be constant and very careful.

Cut up vegetable marrows and cucumbers as they come on, leaving none to become ripe. Be particular to gather French beans and runners, for if the pods are ripened, the bearing of eatable pods is wholly checked. "Gather beans and have beans" says the old rule.

Cut away the brown canes of raspberry bushes that have borne fruit, then take away the super-numerary young shoots, and leave six or seven good canes to grow and ripen exposed to sun and air. Burn the canes that are cut away, and spread the ashes over the bed of bushes. The inorganic salts developed by the fire are thus returned to the earth.

On fruit trees, as espaliers, the breast or spur wood is regulated by early cutting, and all wandering branches shortened by one-third. The future cuttings are very much lightened by an attention at this season of the year.

AGRICULTURAL REPORTS.

GENERAL AGRICULTURAL REPORT FOR JULY.

At the corresponding period in 1859, we reported the commencement of harvest work in various localities. Now, however, we have to state that in all quarters the crops are "as green as grass," even in our best districts—in point of fact, that they are more backward than we have known them during the last ten years. Judging from the present appearance of the wheats, our impression is, that they will not be fit for the sickle for at least three weeks from this time, by which period, in the ordinary course of things, we shall have diminished heat and shorter days. That the crop is in a precarious state, no one can doubt; but should we be favoured with fine dry weather in the period here indicated, we may yet secure a harvest of average abundance, and perhaps of quality superior to last season.

In the early part of the month there was every indication of a very poor yield of wheat; but since then the growth has progressed steadily. The ears have become well filled; and the blooming season has unquestionably been a most favourable one. On these points no doubt can exist; but these remarks, if more closely applied, would seem to refer more particularly to the wheats on the light lands, from which we anticipate a better return than last season. When, however, we consider the extraordinary changes in the weather, and the prevailing low temperature, which must retard the ripening progress of the crops, we should hesitate to assert that the aggregate yield will be much, if anything, in excess of 1859, either as regards quantity or quality. It seems to follow, therefore, that wheat is likely to rule somewhat high in price during the remainder of the season, even though we may import our usual supply from abroad.

The appearance of the barleys is anything but satisfactory. They are considerably stunted in growth, and some districts will not yield more than two-thirds of their usual supply. Oats, too, are far from promising; but beans and

peas are looking well-podded, and for the most part in good order.

Our advices from nearly all parts of the country state that the quantity of wheat in the hands of the farmers is considerably less than last season. In many quarters really fine samples are very scarce, and the result is that our markets generally have been very scantily supplied. As regards other kinds of produce, the supply is considerably beneath an average, hence nearly the whole of our enormous consumption is now met by the foreigner, whose stocks, if reports, apparently derived from authentic sources, are to be relied upon, are sufficiently large to meet any extra demand that may arise here; hence moderate, though remunerative quotations may be looked forward to.

In some parts the crop of hay has turned out very large, in others somewhat deficient. Where the growth has proved heavy, the quality, owing to the incessant rains which fell in June, is very inferior, and in numerous instances an enormous quantity has been spoiled from want of weather sufficiently dry to enable the growers to stack it. In this way the losses have been somewhat heavy, and it would appear—even though the second-cut may be a large one—that really good hay will be a very dear article during the winter months.

The value of wheat has fluctuated with the state of the weather. In the early part of the month prices were certainly lower, but since then they have been on the advance, until fine samples have become worth from 60s. to 64s. per quarter. Barley has changed hands slowly, and no change of importance has taken place in the value of other kinds of spring corn.

Very conflicting accounts have come to hand respecting the potato crop: some of them state that disease has become general; others, that both the early and late sorts are progressing well. As yet we have discovered nothing in the

crop that should create alarm. Consumption appears to have been steadily met with a good saleable quality, at from 150s. to 200s. per ton, and the haulm has exhibited no signs of premature decay. Surprise may be expressed, considering the low temperature during the greater portion of the year, that the tubers should have grown so fast; because we have no hesitation in saying that they are now quite as large as at the same period in 1859. However, in whatever light we may regard the crop, it is quite clear that nothing short of forcing weather will bring the crop to maturity, and produce a good keeping root for winter use.

The turnip and swede crops are looking remarkably well; better, indeed, than for some years past. A large return of these roots, however, would not compensate for a failure in the potato crop.

The wool trade has continued in a healthy state. English wools have sold at very full prices, and the public sales of colonial now in progress—and about 90,000 bales will be offered—are going off steadily at full quotations, when compared with the May sales.

The continued unfavourable weather has been most prejudicial to the hop-bine, which in several parts of the country presents a most unhealthy appearance. Certainly there is no prospect for even a moderate growth, and the duty has consequently declined to £125,000. Speculators have taken large parcels of hops off the various markets, and the result is that prices have steadily advanced.

In Ireland and Scotland the crops have progressed slowly; but they do not indicate what may be termed a limited growth. Much of course now depends upon the state of the weather between this and about the 25th of August; but, considering the condition of the fields as a whole, our impression is that much of the wheat will turn out a very moderate sample. The stocks are everywhere limited, and shipments to England are consequently small.

REVIEW OF THE CATTLE TRADE DURING THE PAST MONTH.

The importations from the continent having been on a liberal scale, there has been less excitement in the cattle trade since we last wrote than in several previous months. The demand, though healthy, has been far from active, and in some instances the quotations have had a drooping tendency. However, prices still continue high, especially for the best beasts and sheep, which have come slowly to hand; and, apparently, although we hear much of restricted consumption amongst the working classes, they are likely to be very remunerative for a considerable period.

The month's supplies of both beasts and sheep exhibited in the Metropolitan Cattle Market have been chiefly composed of stock two-thirds fat; and we may observe that the commencement of the Lincolnshire "season" has not, as yet, produced a description of stock which would warrant us in saying that future supplies will show any decided improvement upon the receipts from Norfolk and Suffolk during the first six months of the present year.

The great abundance of pasture-herbage must, of course, be in favour of additional weight in the supplies of both beasts and sheep; but the system to which we have so frequently alluded, viz., that of selling stock of premature age, must, we imagine, tend to prevent any positive increase in the actual supply of food for general consumption, which is now large beyond precedent. But even an increased supply, though it may prove of good quality, can scarcely reduce prices to their old level, because a very little consideration of the state of our manufacturing districts, and of the internal and export trade of the country, must convince the most sceptical in such matters that we have fairly arrived at a "consuming period" in our history. We have briefly alluded to our importations. The extent of the arrivals in the month just concluded will be seen by the following figures:

IMPORTS INTO LONDON IN JULY.

	HEAD.
Beasts	6,182
Sheep	29,802
Lambs	4,300
Calves	2,948
Pigs	3,526
Total	44,658

Same time in 1859	30,847
„ 1858	31,192
„ 1857	26,963
„ 1856	30,537
„ 1855	22,680
„ 1854	22,242
„ 1853	38,795

The above figures show that a much larger supply of foreign stock reached us last month than in the corresponding period in either of the previous seven years. We doubt, however, whether the actual weight of meat disposed of has equalled those seasons.

The total supplies of stock offered and disposed of have been as under:

	HEAD.
Beasts	19,870
Cows	490
Sheep and lambs	152,600
Calves	3,133
Pigs	2,428

COMPARISON OF SUPPLIES.

July.	Beasts.	Cows.	Sheep & Lambs.	Calves.	Pigs.
1859..	19,600	476	166,632	3,609	2,430
1858..	20,463	547	154,932	4,262	3,290
1857..	19,553	530	142,280	3,830	2,395
1856..	18,589	500	135,650	3,497	3,225
1855..	16,702	535	149,470	2,757	4,000

The month's arrivals of beasts from Norfolk, Suffolk, &c., have been about 6,500 Scots, crosses, &c.; from Lincolnshire, &c., 7,600 shorthorns, &c.; from other parts of England, 2,000 various breeds; from Scotland, 58 Scots and crosses; and from Ireland, 210 oxen, &c.

Beef has sold at from 5s. 4d. to 5s. 8d.; mutton, 3s. 6d. to 5s. 8d.; lamb, 5s. 8d. to 7s.; veal, 4s. 4d. to 5s. 6d.; and pork, 4s. to 5s. 2d. per 8 lbs. to sink the offal.

Newgate and Leadenhall markets have exhibited increased supplies of meat. Generally speaking, the trade has ruled heavy, and prices have had a downward tendency.

The continuance of changeable weather, though it has produced an ample supply of grass in the pastures, has rendered hay-making a matter of extreme difficulty. In some quarters, apprehensions prevail that there will not be anything approaching a good supply of winter food for stock. Losses have been numerous, even in our best districts; but the accounts from Scotland are to the effect that the number of black cattle in that country is fully equal to last season. If such should really be the case, and if food should prove abundant during the remainder of the season, we may anticipate somewhat increased supplies of good stock in the London market. Letters from Ireland are less desponding than those received two or three months since; but our impression is that nothing short of high quotations will tempt the Irish graziers to forward largely to the metropolis.

C U M B E R L A N D .

The month of June, 1860, has now passed away, and joined the months and years of time gone by. But it did not depart without leaving its

“Foot-prints on the sands of time;”

for it will long be remembered as one of the coldest, wettest, and most ungenial midsummer months on record, and in future years, when a cold and wet month of June occurs, it will be said that it is almost as wet and cold as June '60. But with the present month came a complete change, and there has been a fortnight of as fine weather as could possibly be desired, with a high temperature and bright sunny days; in short, perfect July weather, and the effect has been beneficial in the highest degree. All were anxious to commence cutting their sown grasses, and were ready to do so by the first of the present month, and many had ventured to begin a few days before the favourable change, which came in time to prevent any injury being done to that already cut, and gave an opportunity to secure the whole of the lea hay in the very best condition, which has been done, very little now remaining in the fields. Cutting of meadow has commenced; but there is scarcely any yet secured, and the prospect is not now so promising as the state of the weather during last week gave reason

to hope for—St. Swithin, that watery saint, having asserted his prerogative, and rain fell on the 15th. If it be followed by forty rainy days, according to the old adage, it would be difficult to calculate the consequence; but it is to be hoped that it will not be carried out to the full term, although it has so far, being very wet both last night and this morning, and is wearing an exceedingly gloomy appearance; but there is no pleasure in predicting evil: it is much more pleasant to hope for good. The hay crop will be much better than at one time anticipated: a part of the sown grass cut off thin and light, but much of it got to a good length, was thick on the ground and well mixed with clover. The old grass-land and dry meadows will cast off a good swathe; but for cold-bottomed land the weather had not been so favourable; but, on the whole, the crop will be good should the weather be favourable for securing it. Wheat came nicely into bloom during the fine weather, which was unattended by any boisterous winds to injure it; but much of it still appears thin on the ground, and flagging, which may probably tend to produce a coarse sample, with a deficient acreage quantity. Judging by the small quantity exposed at market for sale, the inference is, that stocks are wearing low. Barley on the warm free soils will probably turn out a good crop; but upon cold stiff soils (on which it perhaps ought not to be sown) the prospect cannot be favourable. Oats will be a bulky crop, and the recent fine weather, by stiffening the straw, will make the danger of suffering, by lodging, much less. Potatoes in some instances missed plant, through the seed being affected with dry rot, and continue to look rather thin and weak in the stem; but, generally speaking, they so far give promise of being a fair crop; but, should the present weather continue any length of time, it is much to be feared that the weakly state of their constitution will be tried beyond its strength, and that extensive disease will be the result. At present the tubers are growing rapidly, and there is as yet no report of their being affected—the plague-spot not having made its appearance. Turnips came well, and not having suffered from the attacks of their old enemy, the fly, are making rapid progress, some of the early-sown swedes being about to meet across the furrows, and hitherto there has not been much complaint of “fingers-and-toe;” but there is ample time for that very serious disease to show itself. Mangold came well, and is now doing well, the last fortnight of fine weather having produced a very beneficial effect; the previous cold and wet weather having stayed its growth considerably. Should the weather take up to be warm and sunny, mangold will, to all appearance, turn out a heavy crop. In the higher and colder districts, and where the soil is wetter and undrained, turnip-sowing was much kept back by the wet in June, after which it would be difficult to get the land into a proper state for the reception of the seed. Grazing pastures have done well, where not out-stinted; and the change of weather came in time to prevent the ill effects of a much longer continuance of such cold and wet weather as prevailed throughout the month of June. The fortnight’s dry weather was intense enough to affect the dry and sandy portions of the land, which began to show symptoms of being droughted; but the rain of the last few days will correct that, and the danger now is in the other extreme. Fat, both beef and mutton, continues scarce and dear, and may probably do so for some time to come. Store cattle for grazing, or young lean cattle of any description, are lower in price, and more difficult to sell; the same may be said of calving or milch cows, it being a time of the year when there is not much demand, the pastures being stocked for the summer, and it is too early for back-end calves. The wheat market last week showed a little more animation, with little alteration in price. The scanty supply set down shows that there is either little in farmers’ hands, or that they are holding back; the former is the more probable cause. In barley and oats there is little variation in price, with a very limited supply.—July 19.

WEST GLOUCESTERSHIRE.

A most acceptable change of weather took place about the commencement of the present month, during which the important occupation of hay-making made rapid progress; indeed we cannot call to remembrance so great a breadth of land cleared in so short a time. This was effected by an extensive use of valuable machinery. Mowing machines were at work in all directions, and it is but justice to skill and

enterprise to assert that those supplied by Messrs. Burgess and Key performed the work admirably; cutting the grass on the aggregate closer than any scythe could do. But this is not all that ought to be expressed in favour of them, for they will sustain rough usage to a remarkable degree. On one occasion, which came under our personal observation, a bar of iron had been thrust into the ground, doubtless by some worthless miscreant, ignorantly opposed to the use of these implements, and hoping to occasion permanent injury. No greater damage, however, was sustained, than the breakage of two of the blades, which was speedily rectified by the introduction of a spare cutting rod, and new blades were fixed before the others required reaharpening. It is rather a difficult task to compute the average bulk of grass crops of this year; so greatly do they vary on different soils. Indeed, the same remark applies equally to the grain crops, affording an urgent reason for the establishment of a well-considered system of agricultural statistics. On well-drained lands, in a high state of cultivation, the quantity of grass was enormous, greatly exceeding an average; while on cold clays, especially those which were spring-grazed late, the crop was most insignificant. This objectionable practice was in too many instances an inevitable alternative. The inclemency of the winter occasioned fearful encroachments on the hay-ricks, and unfortunately it generally happens that the cultivators of poor soils are the least able to purchase hay, or artificial food; their means, in fact, sympathize with the soil they farm. A considerable quantity of hay has been secured in excellent condition. That which was cut about the second, third, and early in the fourth weeks in June sustained more or less damage; the first fortnight of this month was in every respect propitious. On St. Swithin’s day a considerable quantity of rain descended; flying showers have since prevailed, and there is every appearance of the prognostication associated with the Saint being fulfilled. The appearance of the wheat has improved wonderfully. In several instances it looks well; the exceptions being the cold soils. The same observation applies to other kinds of grain, but the harvest will be inevitably late. Much delay was occasioned by the rain during the month of June, in sowing both mangolds and swedes. Those who were fortunate enough to sow early have prospects of abundant crops. Some persons were unable to finish with their swedes till the commencement of this month; what the result will be in those cases it is difficult to predict; but the weather since that date has been all in their favour. The make of cheese will be short of an average. The cold and rainy weather experienced at the commencement was not without prejudicial effects. This commodity is therefore scarce and dear, with every prospect of an increase rather than a diminution in value. There is no old cheese on hand as heretofore. It is taken to market as soon as it is made, some of it never even finding its way to the cheese room, and in this green state it finds ready purchasers. The monthly market at Berkeley has now become the favourite resort in this district, and at the last, which was held on the 4th instant, upwards of 70 tons were cleared off at prices from 62s. to 64s. per cwt. This is suggestive of another important item, the high price of meat, and the resolutions of consumers in populous towns whose inferences are clearly chimerical. There are two ostensible reasons for the high price of meat—enormous consumption by a daily increasing population, and the severity of the winter diminishing the quantity that farmers were enabled to produce. Those persons who are now endeavouring to seek a remedy, are of the class who have been the principal cause of the great demand; but it must be remembered, if they abstain from animal food they must resort to something as a substitute, and they will raise the price of whatever they may select. Cheese as an article of domestic economy is even more expensive than meat. Again, the land is only capable, under any circumstances, of raising a certain number of cattle, sheep, and pigs. Thus if inclement weather intervenes, as was the case last winter, when the powers of production were diminished, proportionate scarcity must follow, and enhanced value becomes a natural result. Those who are versed in agricultural subjects know full well that oilcake, or other artificial substitutes, can only be adopted to a limited extent. The quantity of young and store cattle and sheep on hand is great, indeed there are few farmers who do not find themselves overstocked, but it must have time to come to maturity.—July 19th.

ESSEX.

The sunshine of the past fortnight has produced its usual beneficial effect upon the crops generally; but it cannot counteract the baneful one of the past unfavourable season, as not only has the quantity of rain which has fallen within the past six months far exceeded that within the memory of most people, but it has been accompanied with frosty nights, making it still more unwelcome. The cereal crops generally have suffered severely; and although the wheat is looking tolerably well in places, it is the exception. Upon the heavier description of lands, and especially so in the Dengey and Rochford hundreds, the yield altogether is not likely to be more than half that of the past year, the wheat making the best show, and barley and oats a very bad one. Central of the county, the corn is looking better; but in the Roothing district the aspect is gloomy. John Barleycorn appears to have suffered most, having evidently been under the influence of much drink, and, in the absence of taking the pledge, which might be considered derogatory to his character, looks very pale. He has, however, brightened up lately, but in some cases is so weak, that it is doubtful whether he will ever arrive at maturity. Oats are generally looking very badly, and will produce but a scanty crop. The pulse crops are very unequal, and in some cases very promising, and, should they escape blight, which has not yet affected them, will do well. Mangel-wurzel has not been able to make so good a show as for many years past, and in some cases has suffered much from hailstorms and the ravages of the wireworm; but, with a continuance of the present congenial weather will most probably produce a fair crop: however, as it made but a very late start in growth, it is not likely to become a heavy one. The hay-crop, both of clover and grass, is generally good, and, with the exception of a small portion that was cut early, has been generally well secured.—July 14.

AGRICULTURAL INTELLIGENCE, FAIRS, &c.

BANBURY FAIR.—There was no great supply of either beasts or sheep, and both beef and mutton continue dear, little of either selling under 5s. to 5s. 6d. per 8lbs., in some instances obtaining still higher rates.

BROMYARD FAIR was but thinly attended, and very scantily supplied with stock. The few fat cows shown brought from 8½d. to 9d., and sheep 7½d. to 8d. per lb. Pigs rather in advance.

CHIPPENHAM GREAT MARKET.—The wool trade at the opening was dull, but before the close a clearance was made of about 16,000 fleeces, at the following prices: Teg wool, 46s. to 47s. 6d.; mixed, 44s. to 46s.; ewes, 42s. to 43s. 6d. per tod of 28lbs. Mr. John Moore, of Littlecot, received the prize for the best Southdown ram, and Mr. Frankom, of Badminton, for the best longwool, both prizes given by Walter Long, Esq., M.P.

DURSLEY MONTHLY MARKET.—There was a great supply of cheese of superior quality, which sold readily at 6s. to 6s.

GLASGOW FAIR.—The market was a dull one, and if we except a few horses of the very highest class, prices were even lower than they had hitherto been.

GLOUCESTER MONTHLY MARKET.—Good beef, mutton, and lamb were scarce, consequently former prices were fully maintained. The market was soon cleared at the following prices: Beef 7d. to 7½d., mutton 7½d. to 8d., lamb 8½d. to 9d. per lb.

HORSHAM LAMB FAIR.—The supply was unusually short, estimated at something like 4,000 less than the average number penned. They were exceedingly dear, although not at all well up in condition. Notwithstanding the high prices demanded, almost every one was sold, lambs selling as high as 30s., and even ordinary cull lambs making 20s. Lean bullocks were also very dear.

OVERTON FAIR.—[From our own Correspondent.]—This fair fully maintained the pre-eminence it has so long claimed, both with regard to the quantity penned and the superiority of the stock. Compared with last year the number of lambs penned was not so great; this falling off may

be easily accounted for, from the numbers that have already fallen beneath the knife of the butcher: the high prices that have prevailed for lamb through the season has tempted breeders into the fat meat market; hence the probability, from the diminished stock of mutton hereafter to be found, that still higher prices for this article are likely to be established. The show of stock exhibited for prizes was first-rate; nothing attracted more attention than the pen of cross-bred lambs exhibited by Mr. Dowling, of Hannington—for symmetry, size, and meat-producing qualities they carried off the palm. The effects of the untoward season was evident: many of the ewes in the fair were very poor. The trade was not brisk, but very dear, about 3s. per head above last year's prices. The range in prices was wide, viz., ewes 30s to 50s., wethers 35s. to 48s., lambs 22s. to 45s. per head. The cup of 10 guineas value, given by Sir Francis Thornhill Baring, M.P., for the best pen of 100 wether lambs, was awarded to Mr. G. Wigg, of Basing. For the second best pen a cup of 5 guineas' value, the gift of Mr. Sclater-Booth, M.P., was awarded to Mr. Digweed, of Basing. A cup of 10 guineas' value, offered by Mr. W. W. B. Beach, M.P., for the best 80 wether lambs, was won by Mr. James Parker, of Latham. The Earl of Carnarvon's cup, of 5 guineas' value, for the best 60 wether lambs, was carried off by Mr. Dowling, of Hannington. A cup of 10 guineas' value was offered by Mr. Melville Portal, late M.P. for North Hants, for the best pen of ewes, not less than 50, or more than 100, and after a severe competition it was obtained by Mr. F. Bailey, of Candover. The Duke of Wellington's 5-guinea cup for the second best pen was awarded to Mr. Neate, of Overton. A cup of 10 guineas' value, the gift of the Earl of Portsmouth, for the best ram, produced 14 competitors, and was ultimately obtained by Mr. Bennett, of Chilmark, Wilts. Viscount Eversley's cup of 5 guineas' value, for the best pen of ram lambs, was given to Mr. Neate, of Overton. The prize sheep and lambs realized high prices.

OAKHAM FAIR.—There was a very limited show, and only a small amount of business was transacted.

SHERBORNE FAIR.—There was a fair average of sheep for this fair, but the trade was very slack, and but few were sold. There was a good pen of 100 four-tooth Down wethers, which fetched 44s. per head. Mutton 7d. to 8d., lamb 8d. per lb. There were but few fat beasts, which were readily sold at 12s. per score. Heifers and calves met an extremely dull sale, and scarcely any were sold. One prime Jersey heifer and calf were sold at about £15. There was a great number of Irish one and two-year-old heifers, a few of which were sold at from £4 10s. to £5 10s. each. Pigs were brisk, at an advance of 2d. in the st. Sows fetched from 55s. to 60s. each.

SPILSBY FAIR.—There were only few good fat beasts, and they were readily disposed of at 9s. to 9s. 6d. per st. Mutton was a dull trade, and prices had a downward tendency, 7d. per lb. being about the top price. Store beasts were a heavy trade, and, except for the best quality, purchases might be made on lower terms.

ST. BOSWELL'S FAIR.—The following are the lots of the three-fourth part bred sheep which met purchasers:—The Rink lot brought 24s., and the Sinton lot 22s. 9d. Mr. Waddie, Kelso, sold Mr. William Dudgeon, Musselburgh, a lot at 27s.; Nether Barn's lot brought 24s. 9d.; Mr. Paterson got for his 25s. 6d.; the Sticheil lot brought 23s. 9d.; Mr. Ord, Nisbet, got 22s.; Mr. Tait, Lindean, 23s.; Mr. Johnstone, Huntingdon, 24s.; and the Blegbie lot was sold at 21s.; Mr. Runciman, Watton-walls, got 22s., Mr. Hogg, Clackmact, got 25s. 6d. The exhibition of gimmers was not as was expected; and although large prices were got for the better class, inferior kinds were entirely neglected. The lambs would be from 1s. 9d. to 2s. above last year; the gimmers would be—those in condition—3s. a-head, and the inferior kind from 1s. to 2s. above last year.

STRATFORD-ON-AVON FAIR.—There was a very limited supply of fat stock, and a good attendance of buyers, who were compelled to buy for immediate wants at the high prices asked by the farmers, who were not willing to submit to any reduction. This caused a very hanging sale both in beef and mutton, which we may quote at 8d. per lb. for best qualities. Not more than 1,200 sheep penned. There was a good show of lambs, which brought high prices. Of store cattle there was a good quantity for sale, which hung heavily on hand.

REVIEW OF THE CORN TRADE DURING THE PAST MONTH.

The month of July, though much beyond June in its genial character, has had many cold days and nights as well as heavy showers, still keeping the corn crops in a backward and therefore critical state. The first fortnight was dry, but with much coldness in the air, more especially at the beginning of the month; but it was a most welcome time to hay-farmers, some grass cut in June being nearly spoiled, and a large quantity of hay, with the help of machines, was then secured in good order; but much being later cut has lost colour and quality by the rain, though the yield upon the whole has been fair. A great improvement during the fine and dry weather was everywhere perceptible in the corn; but heavy rains towards the close laid a good deal of the most promising fields, and blight has taken many good-looking pieces of beans, so our expectations are somewhat abated as respects the general yield. With a diminished breadth of wheat sown, and much thinness of plant on the heavy lands, the finest weather henceforth seems unlikely to bring out an average yield. The first fortnight evinced a retrograde movement, the weather having taken up; but with a return of rain, first moderately and afterwards heavily, the market nearly recovered its previous losses, so that little difference of prices has to be noted. The general averages commenced at 58s. 5d. and closed at 56s. 6d. Stocks, it would appear, are working up close—the improved rates as compared with this time last year, when the averages were only 44s. 11d., failing to bring good supplies to market. The rates of imports, too, is behind that of last season, the then receipts for June being 645,823 qrs. wheat, 663,035 cwt. flour, against 413,496 qrs. wheat, 375,586 cwt. flour for June this year; but the imports of July, 1860, though not yet made up, seem likely rather to exceed those of 1859. The prospective lateness of this year's harvest makes an increased claim for consumption to the extent of about 750,000 qrs. wheat, and all the shipments making seem quite below the apparent necessity. American prices having been for some time almost stationary, more margin has been found for the British market, and supplies hence have been more liberal, with a prospect of continuance, as the great corn-producing countries of the Western States are all well reported, and receipts, both at New York and in Canada, have been more liberal. In the South, however, there is much deficiency, and the danger in the North and West this season is from drought. In France prospects have much improved, harvest proceeding rapidly in the southern and central departments. Spain and Italy have made their gatherings favourably on the whole, but there is some deficiency in Lombardy and Venetia. Belgium, Holland, and Northern Europe, though complaining of lateness, expect a fair result. Poland is very promising, as well as Southern Russia, Hungary, and the Principalities. So, should any disaster

befal this country, there seems every probability of our deficiency being made up—a favouring Providence thus again securing a provision for the wants of this populous world.

With but moderate stocks on hand, both English and foreign, and some time yet to harvest, our rates must greatly depend on the weather; but the high price of meat seems against much decline, under the most favourable weather, while a rough and stormy time might send prices up materially.

The following are the rates quoted in the corn-producing countries:—

Fine wheat at Paris was worth about 59s. per qr., and this was also about its value at Danzig and Königsberg. Fine Polish at Rotterdam was held at 62s., and Baltic red at 60s.; the best red at Louvain was quoted 56s. to 57s. (61 to 62lbs.) Red wheat at Groningen was held at 55s. to 56s. per qr. The moderate quality shipped at Riga was 54s. per qr. there. Ghirka wheat at Odessa about 43s. per qr.; Sandomirka, 42s., extra to 47s. At Galatz soft wheat was 37s. to 37s. 9d. New Banat was procurable at Trieste, at 43s. to 44s. per qr. At Smyrna, the low quality of the country was held at 36s. The quotations at Leghorn were 46s. to 49s. for red, 54s. to 57s. for white. Sander flour was held at 39s. per 280lbs., being worth—duty paid—in London about 45s. to 46s. per sack. Soft wheat at Algiers was quoted 45s. to 47s. per qr.

Prices in America as follows:—

Good Western red, at New York, 47s. 6d. per 480lbs.; white Michigan, 47s. 6d. to 50s.; red at Baltimore, 45s. to 46s., white, 50s. to 51s. 8d.; spring wheat at Montreal was quoted 42s.

The first Monday's wheat market in London opened after a large foreign, and but a small English supply. The contributions of the morning from Kent and Essex were small, but a favourable change in the weather having taken place, and with plenty of choice in foreign samples, millers kept aloof, though English factors were willing to take 2s. per qr. less money, and the business done was at this reduction, in English and foreign samples.

The dull report from London, together with the very favourable weather, produced quite a stagnation in the country markets, and the average decline on wheat, where sales were made, was about 1s. to 2s. per qr. At Liverpool the little that was done was at a decline of 1d. to 2d. per cental. The Scotch and Irish markets all felt the effect of the fine weather, and to sell wheat it was necessary to submit to some decline.

On the second Monday the returns of foreign wheat were above 52,000 qrs., though the home supply was small. Very few samples during the morning appeared from Essex and Kent; but the continuance of fine weather on so large a foreign supply kept millers aloof, and to sell it was necessary again to accept a decline of 1s. to 2s. per qr. Still the smallness of the quantity of English, and

the difficulty of replacing foreign at the same rates, prevented a pressure on the market, the latter being generally sent to granary. The country markets this week were little disposed to follow the example of London, though some few did, as Wolverhampton and Gainsborough. Worksop and Birmingham were 1s. per qr. down; but the Yorkshire markets—as Hull, Leeds, and Wakefield—kept up former rates. Liverpool did not reduce the previous quotations. The estimated stock at this port on 30th June, was 248,165 qrs. wheat, and 116,632 sacks 100,901 brls. flour.

On the third Monday the foreign supply was moderate, and the English arrival small. The near counties again gave a very scanty show in the course of the morning. The weather being broken, English factors obtained fully the previous rates early in the morning, and as the day advanced more confidence appeared, and late buyers had to pay 1s. more money. Foreign also found a more ready sale, and the market was rather dearer. Supplies still being short in the country, all the markets were firm, or in sellers' favour. Leeds, Boston, Leicester, Lincoln, Birmingham, and Gloucester, were all 1s. per qr. higher. Bristol, Reading, Norwich, Hull, Lynn, and Spalding all noted a rise of 1s. to 2s. per qr. Liverpool on Tuesday found a fair enquiry for all wheat except American at full rates, and on Friday was 2d. per cental higher.

On the fourth Monday the foreign supply was increased, but not the English. The morning's show from Kent and Essex being scanty, and a very heavy rain having set in, high rates were asked early in the day; but eventually business was done at 2s. per qr. improvement on English samples, and 1s. to 2s. per qr. on foreign arrivals off the coast going off freely at this advance. The country markets followed the London advance this week, and in some cases exceeded it. Hull, Leeds, Spalding, Gloucester, and many more were exactly the same, say 2s. per qr. up. Market Rasen, Lynn, and Gainsborough were 2s. to 3s. dearer, while at Louth 4s. to 5s. more was asked. Liverpool was 1d. to 2d. per cental dearer, and firm at the last market.

The imports into London for the four weeks have been 9,734 qrs. English wheat, 99,266 qrs. foreign, against 16,749 qrs. English, 79,628 qrs. foreign in 1859.

The flour trade during the four weeks noted, after having fluctuated with the weather, has left off with a gain in the value of Norfolks of 1s. per sack, this quality having closed at 41s. per sack; but the town trade have not varied their top prices, which has all along been 54s. per sack. The late rise in prices has materially increased foreign imports, principally from Spain and America; the former of fine quality, being worth about 47s. per sack, and the latter 31s. per brl. Prices at Santander being only 39s. per sack of 260lbs., there is a probability of further arrivals thence; and good shipments are making from the United States. The prices between France and England do not encourage business. The imports for four weeks into London have been, country 63,617 sacks, foreign 22,579 sacks and 30,263 brls., against corresponding four weeks in July, 1859, country 44,483 sacks, foreign 10,488 sacks,

Malt, though a dull sale all through the month, has not varied its price.

The barley trade, with scarcely any English arrivals, and only small foreign supplies, for the first three weeks, was very firm, and against buyers for all descriptions; but on the fourth week, with a good arrival from the Black Sea, and a plentiful offer on the coast, grinding sorts gave way 1s. per qr., at which reduction there was a fair sale. The foreign supply, however, being nearly all of low quality, and not exceeding 50lbs. per bush. in weight, fine heavy Danish and Swedish sorts, from scarcity, have rather advanced in value. Accounts generally being unfavourable to the barley crop, good malting sorts again seem likely to rule high all through the season. The imports into London for four weeks were only 356 qrs. English, and 29,624 qrs. foreign; against 417 qrs. English, and 35,333 qrs. foreign for the corresponding period last year. The foreign imports for June were 177,072 qrs.

The supply of oats for the month being very heavy, the rates have given way. On the first Monday they were 6d. to 1s. per qr. lower, and on the second Monday, with the unprecedented supply of 134,564 qrs., and many more vessels not reported, making a total of about 150,000 qrs., there was quite a panic in the trade, and uneasy holders forced off their cargoes at 1s. to 2s. per qr. reduction, and even more where the condition was bad; but as this led others to store a good quantity, there was a subsequent reaction on the third Monday, to the extent of fully 1s. per qr., with more firmness at the close, leaving the difference in buyers' favour of about 2s. per qr. When the remainder of the Archangel shipments come in, we expect to see some improvement again, as neither Scotland nor Ireland seems capable of sending important supplies, and the English stocks seem wearing out. The imports into London for the four weeks were, 3,418 qrs. English, 5 qrs. Scotch, 1,882 qrs. Irish, and 242,473 qrs. foreign; against 1,793 qrs. English, 4,454 qrs. Scotch, 2,233 qrs. Irish, and 87,157 qrs. foreign, in 1859. The total imports for June into the United Kingdom were 381,770 qrs.

Beans through the month have only come to hand in moderate quantities, with very little foreign help. Good English, from their scarcity, have increased in value fully 1s. per qr., and the tendency of foreign has been upwards, the stock of Egyptian here being moderate. The imports into London for the four weeks were 1,924 qrs. English, 523 qrs. foreign, against 265 qrs. English, 1,840 qrs. foreign in 1859. The total imports in June were 39,307 qrs.

Of peas the native supply has been small, but of foreign, chiefly from Canada, liberal. The rates though firm for English have not varied, most of the foreign being only fit for feeding, and worth about 38s., those for boiling 40s. to 41s. per qr., English 42s. The London imports for four weeks were 393 qrs. of home growth, and 8,107 from abroad. The imports into the United Kingdom in June were 31,623 qrs.

The linseed trade, with moderate arrivals and a steady export demand, has been remarkably

steadily all through the month, the same prices obtaining every week. Good cake has also been saleable at about former rates, notwithstanding the greater abundance of feed.

The seed trade generally has been dull, having as yet not recovered from the effects of the favourable commencement of the month, but since the heavy rains and colder weather holders of red cloverseed have become more reserved, stocks being small, with the probability of a late seed time and danger of frost. Trefoil and white seed have scarcely been inquired for. Canaryseed, which was rising a month ago, has become dull, though not offered cheaper. Fine white mustard remains dear and in limited request. Samples of new *Trifolium incarnatum* are appearing from France of fair quality, but business has not yet fairly commenced.

IMPERIAL AVERAGES.

FOR THE LAST SIX WEEKS:	Wheat.		Barley.		Oats.		Rye.		Beans.		Peas.	
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
June 9, 1860	54	2	35	0	27	8	38	1	45	9	40	4
June 16, 1860	54	11	35	8	26	11	37	0	46	2	40	4
June 23, 1860	57	0	34	7	27	5	38	9	45	10	41	4
June 30, 1860	58	5	32	10	25	5	41	9	47	1	41	8
July 7, 1860	57	9	34	0	26	5	41	3	46	6	41	4
July 14, 1860	57	7	33	5	25	8	41	3	45	6	43	7
Aggregate average	56	7	34	2	26	7	39	8	46	4	41	6
Same time last year	48	2	31	1	25	5	37	5	46	3	40	10

PRICES OF SEEDS.

BRITISH SEEDS.

MUSTARDSEED, per bush...	14s. to 20s.	brown 12s. to 16s.
CORIANDER, per cwt.	14s.	16s.
CANARY, per qr.	56s.	60s.
TREFOIL	16s.	20s.
TARES, winter, new, per bushel	0s. to 0s. 0d.	
LINSEED, per qr., sowing —s. to 64s. crushing.	54s. to 58s.	
LINSEED CAKES, per ton.	£9 10s. to £10 10s.	
RAPESEED, per qr.	70s. to 76s.	
RAPE CAKE, per ton.	£5 10s. to £6 0s.	

FOREIGN SEEDS, &c.

CLOVERSEED, red 38s. to 48s.	white 66s. to 70s.
TREFOIL	17s. 19s.
HEMPSEED, small, —s. per qr.	Dutch —s. 48s.
CORIANDER, per cwt.	16s. 18s.
CARRAWAY	32s. —s.
LINSEED, per qr., Baltic 50s. to 52s.	Bombay 52s. 56s.
LINSEED CAKE, per ton	£9 10s. to £11 0s.
RAPESEED, Dutch.	—s. to —s.
RAPE CAKE, per ton	£5 0s. to £6 0s.

HOP MARKET.

Mid and East Kents	90s., 126s., 147s.
Weald of Kents	90s., 100s., 112s.
Sussex	75s., 92s., 100s.

POTATO MARKETS.

BOROUGH AND SPITALFIELDS.

LONDON, MONDAY, July 23.—Our markets are well supplied with new Potatoes, in fair condition. A steady business is doing, and coarse qualities are selling at from 160s. to 200s. per ton. Last week's imports were 153 baskets from Dunkirk, 54 baskets from Guernsey, 15 from Hambro' 5 from Ostend, 837 from Rotterdam, and 58 cases from Oporto.

COUNTRY POTATO MARKETS.—York, July 14.—Old potatoes 1s. per peck, new ones 5d. per quarter and 1s. 8d. per peck. KNARESBRO', July 16.—New potatoes 2s. to 2s. 2d. per 21lbs. SELBY, July 16.—New potatoes 1s. 4d. to 1s. 7d. per 21lbs. LEEDS, July 17.—New potatoes 2lbs. for 2½d. RICHMOND, July 14.—Old potatoes 3s. 4d. per bushel, new ones 2s. per peck. SHEFFIELD, July 17.—New potatoes sell at from 9s. to 10s. per five pecks. MANCHESTER, July 17.—New potatoes sell at from 12s. to 21s. per 252lbs.

ENGLISH BUTTER MARKET.

Dorset, fine	108s. to 112s. per cwt.
Ditto middling	104s. „ „
Devon	104s. to 106s. „ „
Fresh	13s. to 14s. per doz.

WOOL MARKETS.

Per sack of 240lbs.		£	s.	d.
Fleeces—Southdown Hogs	.....	19	10	0
Do. Half-bred Hogs	.....	19	10	20
Do. Kent	.....	19	0	0
Do. Southdown Ewes & Wethers	.....	17	10	18
Do. Leicester do.	.....	17	10	18
Sorts—Clothing picklock	.....	20	0	21
Do. Prime and picklock	.....	18	10	19
Do. Choice	.....	17	0	18
Do. Super	.....	15	0	16
Do. Combing—Wethermatching	.....	20	10	21
Do. Picklock	.....	18	0	18
Do. Common	.....	16	0	16
Do. Hog-matching	.....	23	10	24
Do. Picklock matching	.....	18	10	19
Do. Super do.	.....	16	0	16

LIVERPOOL WOOL MARKET, JULY 21.

	s.	d.	s.	d.
Laid Highland Wool per 24lbs.	11	0	to	12
White Highland do.	14	6		18
Laid Crossed do. unwashed	14	6		16
Do. do. washed	16	0		18
Laid Cheviot do. unwashed	17	0		20
Do. do. washed	19	6		26
White Cheviot do. washed	32	0		40

FOREIGN AND COLONIAL WOOL MARKET.

Per lb.		s.	d.	s.	d.
German, { 1st and 2nd Elect	.....	3	4	to	4
Saxon, { Prima	.....	2	4	to	3
and { Secunda	.....	2	0	to	2
Prussian, { Tertia	.....	1	8	to	1
COLONIAL:—SYDNEY—Lambs	.....	1	6	to	2
Scoured do.	.....	1	5	to	3
Unwashed	.....	1	0	to	1
Locks and Pieces	.....	0	9	to	0
Slips and Skin	.....	1	5	to	1
PORT PHILIP—Lambs	.....	1	6	to	2
Scoured do.	.....	1	5	to	3
Unwashed	.....	0	11	to	1
Locks and Pieces	.....	0	7	to	0
S. AUSTRALIAN—Lambs	.....	1	0	to	2
Scoured do.	.....	1	7	to	2
Unwashed	.....	0	9	to	1
Locks and Pieces	.....	0	5	to	1
V. D. LAND—Lambs	.....	1	6	to	2
Scoured do.	.....	1	7	to	2
Unwashed	.....	1	0	to	1
Locks and Pieces	.....	1	0	to	1
CAPE OF GOOD HOPE—Fleeces	.....	0	10	to	2
Lambs	.....	1	3	to	2
Scoured	.....	1	1	to	2
Unwashed	.....	0	5	to	1

MANURES.

PERUVIAN GUANO (per ton, for 30tons)	£12 5 0	to	£12 10 0
Do. do. (under 30tons)	12 10 0	to	13 0 0

ARTIFICIAL MANURES, &c.

Nitrate Soda per ton	£14 0 0	to	£14 10 0
Sulphate of } Ammonia } 14 0 0	14 10 0		
Muriate of ditto	16 0 0	to	20 0 0
Corn Manure	7 0 0	to	7 10 0
Superphosph. of Lime	5 0 0	to	6 0 0
Salt	1 1 0	to	1 5 0
Caprolite (gr'd)	2 10 0	to	2 12 6
Ditto (whole)	2 0 0	to	2 5 0
Extremadura Phosph. of Lime for 70 p. c. p. ton	4 5 0	to	4 15 0
Gypsum	£1 1 0	to	£1 5 0
Bone Ash, for 70 per cent.	4 12 6	to	4 15 0
South America can Bones	4 10 0	to	4 12 6
London ditto, uncrushed	4 10 0	to	4 12 6
Do. 4 inch p. qr.	0 18 0	to	1 0 0
Do. dust	1 0 0	to	1 2 0
Animal Charcoal	4 5 0	to	4 10 0
Oil of Vitriol, concentrated, per lb.	0 0 1	to	0 0 0
Do. Brown	0 0 0	to	0 0 0

OIL-CAKES.

Rape-cakes	£4 10 0	to	£5 0 0
Cottonseed Cakes—American de-corticated	6 10 0	to	7 0 0
English	9 10 0	to	10 0 0
Ditto, English	5 10 0	to	6 0 0

JOHN KEEN, Agent, 35, Leadenhall-street.

Agricultural Chemical Works, Stowmarket, Suffolk.	
Preston's Cereal Manure for Corn Crops	per ton £8 10 0
Mangold Manure	„ 8 0 0
Preston's Turnip Manure	„ 6 10 0
Preston's Superphosphate of Lime	„ 6 0 0

Manufactured by Hodgson and Simpson, Wakefield, and Matthews and Co., Driffield, Yorkshire.

Nitro-Phosphate	per ton £6 10 0
Ammonia-Phosphate	„ 8 0 0





THE FARMER'S MAGAZINE.

SEPTEMBER, 1860.

PLATE I.

A POLLED SCOT.

A PRIZE OX AT THE BIRMINGHAM AND SMITHFIELD CLUB SHOWS, 1859.

This Angus ox, bred by Mr. W. M'Combie, of Tillyfour, near Aberdeen, in the spring of 1855, was by Windsor out of Young Jean Ann, by Monarch, her dam Jean Ann, by Panmure—Black Meg.

Windsor, also bred by Mr. M'Combie, was a prize bull at the Royal meeting at Windsor, and hence his title.

As a yearling, this beast took the first prize of his class, at the meeting of the Royal Northern Agricultural Association. He was not exhibited at two years old; but in his next season he received one of the gold medals in the extra stock class at the Highland and Agricultural Society of Scotland's meeting at Aberdeen. At the Birmingham and Midland Counties' Cattle Show last Christmas, he took the first prize of 10 sovs., with the silver medal for the breeder, as the best Scot of any age; and at the Smithfield Club Show, in Baker-street, the week following, another first prize of 20 sovs., with another silver medal, as the best polled ox. Having never been beaten, he was sold here by Mr. M'Combie to Miss Mann, of Croydon, for 70 sovs. On being slaughtered, he weighed 227½ st. of beef, with 20 st. more of tallow. He was a remarkably large and excellent beast, and altogether one of the finest Scots ever seen in the South.

In our report of the Aberdeen meeting, we thus

wrote of the sort: "Galloway, Angus, or whatever he may be elsewhere, nowhere is this beast so carefully cultivated as in Aberdeenshire. It is here that famous first-cross between the Shorthorn and the native breed is generally carried out. In no district, perhaps, are there so many good butchers' beasts reared; and this is the manner in which they are obtained. There are, of course, some very famous breeders of polled cattle; pre-eminent amongst them stands Mr. M'Combie, of Tillyfour. The recent meeting went only the more to confirm his position. If he did not take all the prizes himself, he bred most of the animals that did. There are few more useful, well-shaped, or better-grained beasts than these Aberdeenshire cattle; but we doubt their especial amiability. On the contrary, the bulls have rather a fighting look, with just the sort of head, horn or no horn, some of our old masters would have copied into their classic tourneys."

In our report of the Highland gathering at Dumfries, as given in another part the present number, it will be found how Mr. M'Combie and the Angus and Galloways stand now in the estimation of their countrymen. Our own deduction is, that despite the spreading influence of the Shorthorn, these native breeds never ranked better.

PLATE II.

STATE PRISONERS.

As you wander through the richly-wooded and clear-watered domains of a few of our old Families that trace back their ancestry to the landing of the Conqueror, Cæsar, or Noah, with their portraits hung round the walls, from the first Baron to the present *Custos rotulorum*—giving one a very good idea of the "Signs" of the times—you may suddenly come on a noble view of one of those massive relics of the past, either in the shape of the ruins of some Holye Abbaye, or mouldering stronghold of the days of feudalism; not tenanted by holy friars or grim warriors, but by the climbing clustering ivy, the chattering daw, the shrieking owl, and ever-turning bat. Here, half-a-

dozen thorough-bred mares are sauntering about, nibbling the grass in the hospitium, or sniffing the wild flowers in the refectory; one, perhaps, with her head in the confessional, relating, no doubt, to some imaginary "Jack-in-the-box" the thousands won and lost on her symmetrical form and long even stride. Or, more likely, a group are whisking off the tantalizing fly under the shade of the cloisters, or in a court of the old castle, with a few deer in the adjoining one, agrceably reminding us of the *veteris Bacchi pinguisque ferinae*, over which the "monks of old" laughed "Ha, ha!" and quaffed "Ha, ha!"

FLOOD WATERS.

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

The copious rainfall of the present season, and the repeated floods which they have occasioned, revives, very naturally, the landholder's attention to the imperfect state of our rivers, and other main watercourses. The greatly diminished supply of rain during the last two or three years, led many persons to believe that our climate was becoming drier, that our springs were thus rendered permanently less copious, and that the water-line of our wells, like that of the deep borings in London, would become lower. By a reference, however, to the rain records of the last twenty years, we learn, that the recent fluctuations in our rainfall, and in the flow of our flood waters, were neither very remarkable nor unusual. Let us examine the rainfall near London, since the year 1840, and let us suppose, what is sufficiently near to the truth for our purpose, that the annual rainfalls during that period, above 25 inches, were wet, flood-producing seasons, and that all below that depth of rain were dry and pretty free from those injurious outpourings. Let us then place the rainfalls at Chiswick, near London, in separate tables, viz., those years above 25 inches, and those below that depth of rain. The result we obtain is as follows :—

ABOVE 25 INCHES.					
1841	30.97	1852	....	32.55
1843	25.48	1859	....	25.54
1846	27.71	1860 to July 1,		
1848	28.34	about....		15.74
BELOW 25 INCHES.					
1842	22.27	1853	....	24.37
1844	21.34	1854	....	18.92
1845	23.33	1855	....	24.38
1847	16.65	1856	....	22.72
1849	22.84	1857	....	21.06
1850	18.28	1858	....	15.78
1851	20.79			

We see from these tables that since the year 1840 the rainfall has been during six years above 25 inches, and during thirteen years below that depth. So that in fact, the larger rainfall, on an average, occurs about every third year. (It is noticeable that the rainfall this year, 1860 to July 1, has been about 15.74 inches, or about equal to the whole rainfall of 1858.)

If then such is the fact, that the greater rainfalls, and the consequent larger floods, occur at certain average intervals, it only remains for us to consider whether the ill effects of those flood

waters are a necessary or unavoidable infliction upon the lowland farmer. If, on enquiry, we soon find that these flood waters would not naturally cause the present amount of damage if their course towards the sea was not impeded by artificial causes, then the next branch of the enquiry which presents itself is, the best means of diminishing the evil.

It is, perhaps, for the great mass of my readers an unnecessary task for me to prove the existence of the injury; but for many it may be well to produce the evidence of two or three eminent practical men on this nationally important subject. Let me render this testimony, as much as possible, in their own words. First then, as to the existence, origin, and extent of the mischief to English agriculture.

“Our drainage arteries, large and small,” observed Mr. A. Clarke, in his prize essay on trunk drainage (*Jour. R. A. S.*, vol. xv., p. 3), “might possibly have fulfilled their office had they been left to follow their native levels, or at any rate if their current had been assisted by prudent art. But a glance at the map will tell how they have been used for other purposes, dammed into reservoirs, intercepted for canals, or lifted to gain a water power for numberless mills, often appropriating the whole fall of the stream. Thence comes the floods of our valleys—the rank, coarse herbage of our meadows—the loss of our flocks—the miasmata and fogs of our low grounds.”

Mr. W. Bryan Wood (*Jour. R. A. S.*, vol. xiii., p. 368) has given a summary of these obstructions. They chiefly consist of abrupt turns and windings of the course, shallows, islands, trees, and bushes growing into the stream: bridges, which appear to have been built only with regard to the passage over, having low and narrow arches, and uselessly large piers; and lastly, though not the least cause of damage on many streams, are the mills. In many instances a mill affects the drainage of much land, sometimes hundreds of acres above it, and does yearly more damage to such lands by pounding the water, than its annual rent bears any comparison to. Mr. Wood instances the Thames Valley, in Gloucestershire, Berkshire, and Oxfordshire, and the Wiltshire Avon Valley. “There are fields in my neighbourhood,” says Mr. Pusey, (*ibid* 370), “which have been covered with water for months; and in a former year, a large meadow

of my own was not seen from the end of July until the following March." On the same very nationally important subject there is also a valuable paper by Mr. John Henderson (*ibid*, vol. xiv., p. 129), on the drainage of the valleys of the Rye and Derwent, for which an act of Parliament was obtained. It is an excellent account of a once bad state of affairs, and their remedy, which may be studied with advantage by the landowners of many portions of our islands; for how many extensive and fertile valleys are there, the drainage of which is confined entirely to sluggish, meandering streams, upon which, at every few feet of fall, there stands a corn-mill of perhaps only a few horses' power, the total value of which in fee simple is not worth as much as the amount of the damage which is occasionally done by a single flood, letting alone the permanent injury which is occasioned by the damming up of the outfall, in preventing the drainage of the surrounding land. In the case of the Rye and Derwent valleys, the water-mills which obstructed the drainage were removed, or changed to steam-mills, at a cost equal to £289 5s. 8d. per horse power, the entire cost being—

Cost of steam engines.....	£3,500	0	0
The fee simple of maintaining them	13,382	5	0
Compensation for damage done to mills, &c.....	3,367	15	0
	<hr/>		
	£20,250	0	0

Of the *advantage* of this outlay, Mr. Henderson adds, "I do not think I say too much when I affirm, that I have known one flood do more damage to crops and tilth, if fairly valued, than the whole sum expended under this act."

It was in 1859 that in an able address to the Central Farmers' Club, Mr. Algernon Clarke again returned to the subject. He then made an onslaught on the river dams, and other impediments; an attack which their owners will never attempt to answer. In alluding to the fertilizing effect upon meadows of the matters commonly deposited on them by the flood waters, he observed (*Farmer's Magazine*, vol. 1. p. 257) "that the bulk of coarse hay furnished by marginal meadows, without asking any return of manure, does render them of considerable value to the upland farms with which they are commonly associated, is perfectly true; but it is also the fact that this value is hazardous and precarious, owing to the capricious irrigation or sedimentary manuring of the stream that may serve as your Nile; so that if one year you get a fair pasture, in another it is too watery to be grazed. If for one or more years (according to locality) your hay-harvest is successful, the next season utterly spoils your

crop, leaving also a gritty aftermath that stock cannot relish. The farmers in the Trent valley by the Ouse, Nene, Thames, or Severn, in the rainiest as well as the drier counties, are pretty well agreed in declaring that while the small winter floods compensate for any damage they may do by the cheap manures they leave behind, the great floods of wet seasons inflict very heavy injury by hanging upon the land."

And then as to the sanitary effects of these lengthened floods, he well described the result of many laborious observations when he added, "But the evil effects of river-floods are not only agricultural; for, in the neighbourhood of towns, just where the meadows may be rented as 'accommodation land' at £2 or £3 or more per acre (and the proprietors might therefore doubt the advantage of drying them), sanitary considerations demand our care. Every man thinks his own home peculiarly healthy, until the Registrar-General dispels the pleasing illusion, and the tabular statistics of public health prove most undeniably that districts abutting upon a flooding river, or intersected with marshy hollows and choked rivulets, are above all others (excepting crowded and filthy cities) the haunts of fever and glandular disease. Thus Northampton, on the sluggish Nene, which overtops its banks, held up as a navigation, and pounded back by mill after mill along its winding course, is shown by the 'returns' to be one of the few most deadly places in England; and typhoid and milder but enfeebling maladies constantly visit the villages that inhale the hot-weather malaria of the swampy meadows. The Ouse has a like unhealthy character, as shown by the excessive rate of mortality in Buckinghamshire, Huntingdonshire, &c.; and, indeed, so have all our gloomy and lifeless rivers, as exemplified at Norwich, surrounded by the heavily-flowing Wensum and Yare—at Colchester, on the dull and tardy Colne—at Salisbury and the fashionable Bath, on the inactive and cheerless Avon; and the smaller towns and parishes flanking the streams are the hotbeds of intermittent fever, rheumatic and liver complaints, and scrofulous and pulmonary disorders, aggravated if not originated by the cold damps and poisonous exhalations from which the inhabitants have no means of escape. Trunk drainage, however, would prove a marvellous preventive. I am informed that at the village of Cople, in Bedfordshire, the Duke of Bedford cut a deep brook which relieved the parish of stagnant water, and although up to that time typhus fever was rarely out of the parish, only a single case has since happened in a period of eight years."

It would be very desirable if, by some general

act of Parliament, the owners and occupiers of land subject to be injured by floods were empowered to associate together, and be incorporated for the purpose of applying a thorough remedy. A bill of this kind was, in fact, introduced in 1852 by Lord Carlisle, containing very comprehensive and compulsory power. It was not proceeded with, in consequence of the retirement of the Administration of which his lordship was a member, and also from other causes which were well alluded to by Mr. Bailey Denton, an eminent drainer, when he told the members of the Central Farmers' Club (*ibid* p. 263), "The magnitude of the subject was such as all must acknowledge. Everybody admitted, that sooner or later, something must be done. It was only a question of time; many efforts, besides those of the Earl of Carlisle, had been made to promote legislation on the subject. Lord Carlisle, however, happened to introduce his bill just at that juncture which rendered it opportune; though from circumstances the attempt had not been repeated since. In that year (1852) when Lord Carlisle introduced his bill, more rain had fallen, than had fallen in the aggregate in the four years which had succeeded. Now, during those four years drainage had much progressed; and he believed he had made it clear, by certain experiments of his, that every acre of clay land drainage added very largely to the influx of water into the valleys. Mr. Clarke himself had referred to the Hinxworth tables, which showed that a thousand gallons per acre per diem were discharged into the valleys from drainage. He might add that those tables showed, contrary to the expectations of many men who did not believe in the porosity of clay, that the clay lands that had been properly drained had, within 24 hours of any heavy rainfall, and after the lands had become saturated, discharged at least one moiety of the quantity which had fallen on the surface. At the time when Lord Carlisle introduced his measure, there seemed to be an almost unanimous desire for arterial drainage. In the four months of November, December, January, and February, 1852-53, there was a rainfall of 16 inches; the average fall in this country, in those months, during the last forty years, having been 11 inches. Since 1852-53 there had not fallen in any corresponding period more than $4\frac{1}{2}$ inches average. With these facts before them, they could

have no difficulty in understanding how it was that the interest in the subject of arterial drainage had of late years decreased; in fact, so little interest had it excited since the winter of 1852-53, that he had met with persons who thought that there was no necessity for any drainage at all; and he had almost felt that in his own case 'Othello's occupation' was 'gone.' But nature always balanced herself, and sooner or later a downfall will occur, which would make many people regret that they had not had the advantage of Lord Carlisle's proposed act, and that the legislator had slept during the dry winters which had succeeded its introduction."

The recent decision of the House of Lords, in the great case of Chasemore v. Richards (*Farmer's Magazine*, vol. li., p. 180) will very materially aid those who are endeavouring to improve the arterial drainage of a district. Till this cause was decided it was held, in some carelessly decided causes, that a farmer could not even improve the drainage of his farm, if, in doing this, he lowered the water in his neighbours' spring; and Lord Ellenborough is reported to have once decided at the Maidstone assizes, that it was even illegal to pump the water out of a stone quarry, however its removal might be essential to the working of the quarry, if in so doing the water was lowered in a neighbour's bath! All these absurd cases, however, have been overruled by Chasemore v. Richards recently decided by the House of Lords, and there is now no legal reason why a landholder may not drain the land water from his estate, in any manner or direction he deems best.

It is thus that the advance in agricultural knowledge, fortunately for our country, penetrates into Westminster Hall, and influences the decisions of learned judges. It is thus, too, that even unfavourable seasons—ruined hay crops—arable lands covered with water, are not without their uses to us all. They certainly serve to remind us of the defects in our greater drains; they lead us to seek for remedies in the removal of crooked water-courses, of the silt and weeds which impede the flow of the current, and of mills which dam it back on our lands: they set contrivance and ingenuity to work, and thus, as the permanent fertility and healthfulness of the lowland farms are increased, our country is enriched in a way the most certain and enduring.

A WET HARVEST.

A wet and a late harvest, in the southern counties of England, has a close resemblance to a wet, early one in Scotland; but the less auspicious weather of the North, in late and even in ordinary seasons, gives rise to peculiar practices to meet them. "Necessity the mother of Invention," is one of those cardinal maxims just as appropriate in the harvest field as it is in the commercial bustle of the British capital, or among the never-ceasing rivalry of machinery in Birmingham and Manchester.

During the season, already, many an honest man has "scratched his head" in the harvest field, and doubtless

will do so again before the ingathering of his corn is concluded. What, then, are the peculiarities of practice which "Scotch mist" has given birth to in the harvest field? How are crops secured, amidst the "a-day rains" of October or the cloudy, close, and muggy weather of August? Has Experience, amongst the drenched sheaves of the former, discovered any means by which malting in the stook and heating in the stackyard are averted? In short, what is the general practice pursued in the North, in wet seasons?

In reply to this, the following resumé of the practice in wet harvests, in the eastern counties of Scotland, so far as

applicable to the southern counties of England, may not be unacceptable to our readers at the present.

By "eastern counties" is meant that tract of country lying between the Tay and Spey, including the counties of Forfar, Kincardine, Aberdeen, and Banff—a district not the most propitious as to climate, but all the better, in this respect, for illustration.

In wet harvests the universal maxim is, never to postpone anything till to-morrow that can be done to-day, always providing for the worst. In such seasons it is often, from first to last, a pitched battle with the weather, the farmer himself being always in the forefront of the fray, storming and in a storm, be it wet or dry. As the eldest son of a good but hard master, we can honestly say it was trying work for growing bones and sinews, when the Grampians began to dance and skip like lambs on a hillock, when we got to the headland. But no quarters were given. If the corn was wet in the morning, and you were idle, double work must be done in the after-part of the day; and if you got early to bed in wet weather, you must get up the sooner to-morrow morning, if dry.

In all cases of this kind, masters and servants, generally speaking, thoroughly understand each other's interests, and accordingly are ready and willing to act together whenever the golden opportunity occurs. If reapers are allowed to recruit their strength in a wet morning, they will go into it, when the day breaks up, with a spirit and a force which otherwise they would not, and even could not do. And even if they have two or three fine working days together, but are sure of the first wet day to themselves, they will then daily go through an extra quantity of work. What would be the thought of the general, who, under similar circumstances, had not his soldiers fresh and ready for the fight? Just so it is with the farmer in the harvest-field. If half the working time is wet, and barely the other half dry, as is often the case, nothing can be more short-sighted than to dabble hands at some dirty jobs during the former period when they have to perform double work during the latter. In a wet harvest always have your hands ready for the onslaught, and never squander a single hour that should be spent directly or indirectly for the harvest.

The second thing in a wet season is, to have the teams fresh and ready for their extra work whenever occasion requires. In this case, as in the last, the farmer must look often a long way before him, for if his teams are not prepared to do the extra work within the short time a wet season allows, the upshot need not be told. Night work in carrying is generally avoided in the counties in question, if possible; but we have frequently gone on two days and the intervening night without stopping, and once three days and the two intervening nights, stopping only one hour each night, and when we awoke on the fourth morning and perceived about three acres of stooks in the rain, there was loud murmuring in all corners of the camp, that we were not held on to the previous midnight, so as to have secured the whole. If prepared for it, men and horses will go through a vast amount of work, in such cases, to secure "the fruits of the earth," but not otherwise.

Men and horses ready for work, the next thing for notice is the work itself, "the cutting, stooking, and stacking the corn."

In the former of these operations—the cutting—the details of the practice depend much upon the quality of the crop, as to how it will stand bad weather. Some fields of wheat, for example, differ widely from others in this respect; so do those of barley, and the other kinds of corn. Even in indivi-

dual fields, it often occurs that the corn may be safely cut wet in some places, while it would be certain ruin to do so in others. We never cut wet corn, if possible; but in a wet harvest it never could be wholly avoided. It will thus readily be seen that it would baffle the pen of any writer to chronicle, even at the time, a faithful account of all the details of reaping in a bad harvest, so fitfully changeable is the weather, and diversified and voluminous are the consequences that follow, every sheaf having its own matter of fact to illustrate; all, therefore, that we can do is, to give a general outline of those principles upon which the practice is founded, so far as they are likely to prove useful to the southern farmer.

Passing over the reaping machine, the scythe, the reaping hook, and sickle, as implements with which all are now equally familiar, what first engages the attention of the farmer, whichever of these implements he uses for cutting, is to get his corn dry into small sheaves, and loosely tied or bound before the straw is too ripe and broken. There are three reasons for this: first, the sheaves can be more loosely bound, they stand better in the stook, while they at the same time permit a free circulation of air, the grain being thus less liable to malt than otherwise; second, they dry sooner when wet through; and third, they are sooner ready for the stack-yard. In each of these cases the practical conclusion is so manifest, that it would be superfluous to advance a single sentence in corroboration of their importance. *Large tight-bound sheaves are the curse of a wet harvest, both in the field and stack-yard.*

As to the actual size of the sheaf no general rule can be laid down, unless it be—as small as it will stand in the stook. In fine dry seasons the rule, or gauge, for a sheaf in "threaving" (*i. e.*, where reapers are paid for the number of sheaves cut) is twelve inches through; but in wet harvests we never used to allow above the half of this size, and often even less than that—three small sheaves out of one ordinary one: It is vexatiously teasing to get hands to make such small sheaves; and equally troublesome to get them loosely and properly tied, so as not to be continually breaking in the frequent handling that often takes place afterwards. It is, however, a matter of necessity in bad weather; for the farmer who successfully attends to it seldom fails to secure his crop without sustaining very much harm, while the reverse is the never-failing misfortune of him who does not.

Much depends upon the quality of the straw. If it is soft, leafy, or full of grass, many are the difficulties experienced in getting it safely harvested in wet seasons like the present. We have known cases where a single sheaf that contained much wet grass fire-fanged a whole stook, which without that sheaf would have kept well. In cutting crops of this kind, therefore, the farmer must always look forward to consequences in his stack-yard. Where a fifth part of the area has been sown out with grass seeds (rye grass and clover), and where the clover rises high amongst the corn—as it frequently does—every opportunity that occurs is embraced to get it cut when dry and stooked, so as to defend rain. If this cannot be done, the crop, whether barley, wheat, or oats, is either cut above the clover as much as possible, or else the clover is shaken out and given to stock. We have adopted various plans of this kind, the maxim being never to tie up wet clover in the sheaf. The same maxim is applicable to soft and leafy short straw. We have frequently left standing crops of this quality, cutting round about them when we were obliged to cut wet, going back to them when the weather broke up, so as to get the sheaves into the stook dry. Sometimes we have left them standing until fit to be cut and carted to the stack-yard. On the other hand, if soft stuff of this kind is much lodged or lying flat upon the ground, and offering to rot—no unfrequent case—then, if obliged to cut wet corn, this was the field, or part of the field, we preferred going to, for the simple reason that both corn and straw

would dry sooner in the stook than lying flat on the ground when the weather broke up, and sustain less harm so long as the weather continued wet, if in sufficiently small sheaves, loosely tied and properly stooked. Lying corn when thus cut wet is not unfrequently the first that is ready for the stack-yard. All depends upon how the work is done.

With regard to the practice of leaving corn abroad in the swath to dry when cut wet with the scythe or reaping machine, and in the open sheaf when cut with the reaping hook or sickle, it is not approved of as a general rule, and only followed in a very few exceptional cases. We have tried it, but were never successful, having always found the small loosely-tied sheaf when properly stooked sooner dry than the corn in either of the other two cases, and less liable to malt and to lose colour. In short, we always made it a rule to keep the stooking close up to the cutting, and this was the general one followed in the above four counties, and, we may add, throughout the North generally.

Of the different implements for cutting corn in a wet season the scythe and the reaping machine are the best, and the reaping hook and sickle the worst. The reason is this: when cut with the former two the straw is more loose, and the ears of grain less compressed together in a bunch, so that three advantages are thereby gained: first, the sheaves in the stook form a more acute angle where they meet at the top, thus carrying off rain better from the ears; second, the air and drying winds get better through the sheaves; and third, the ears are less liable to sustain injury from malting and growing together. Altogether, the balance is so much in favour of the scythe and reaping machine, that we would not have allowed Irish or Highland reapers to have cut our crops in a wet season if they would have done the work for nothing. When threshing or cutting at so much the stook of 8, 10, 12, or 14 sheaves to the stook, as agreed upon, then they make the sheaves small to your pleasure, and this is the best plan to employ in wet seasons; but even then the stooks cut with the scythe will be in the stackyard before those cut with the reaping hook and sickle. But we would never attempt cutting corn by the acre with Irish reapers in wet seasons, for the large sheaves they make would often have to be spread out and dried before they could possibly get safe to the stackyard.

The proper stooking of corn, and the keeping up of the stooks so as to admit of the free circulation of the atmosphere, and the process of drying for stacking, are perhaps the most important of all the operations of a wet harvest. No better proof need be advanced in support of this than the fact that nine-tenths of all the loss sustained arise from mismanagement in this department. Indeed, the difference between good and bad stooking is so great as hardly to be credited. It is very conspicuous however, and familiar to millers and corn-merchants when the samples begin to appear in the market.

Wheat, barley, and oats are each loosely tied up in small sheaves, and stooked. We never once stacked barley and oats loose, like hay, as we have done in England. In fine, dry seasons, the practice might succeed, but we never ran the risk; while in wet seasons it would be certain ruin to both corn and fodder—the food of man and beast. Both are carefully stooked, the same as wheat.

The number of sheaves in a stook is generally regulated by their length, the maxim in a wet season being, the fewer the better. It takes a certain number, however, to give stability to the stook in rough weather. If of ordinary length, and cut with the scythe, we generally made them of eight sheaves—four on each side—and ten when the straw was long. When cut with the reaping-hook and sickle, two hood-sheaves extra to each stook, and sometimes three hoots are added. In dry seasons twelve and fourteen sheaves are common numbers.

There are various other modes of setting the sheaves in wet seasons, such as one sheaf tied close at the top, and spread out at the bottom, like a cone; or three, four, or five sheaves in a circular form, the tops all meeting together in a point, with or without a single hood-sheaf: but they are not so well adapted for our southern provinces, where the ear end of the sheaf is thicker, especially when cut with the hook or sickle.

We may take it for granted that all know what a hooded stook means, although seldom or ever seen in some of our southern provinces; but it will hardly be credited, when we

affirm that not one in twenty in the North, where hooded stooks are common, can put on a hood-sheaf! A well-hooded stook will stand a rough storm, and defend itself against a long continuance of bad weather; and certainly few sights are more pleasing to the eye of a farmer, in a rainy harvest-day, than a field of fine corn thus stooked, and safe from harm. We have often seen them, both in early and late harvests, standing in a pelting rain to-day, and carted dry to the stackyard to-morrow, the hood-sheaves only being left behind. If the corn is cut dry, and properly stooked and hooded, it will make for stacking in not very favourable weather, and be ready for carrying whenever it breaks up; but if the hood-sheaves are badly put on, they are often worse than want, as they derange the upright position of the other sheaves on which they rest, so that they gather the rain and convey it into the stook, instead of keeping it out and carrying it over, as in the case of a well-thatched stack, the principle involved in both cases being the same. So difficult is it to get the work properly done, especially where the corn is cut with the scythe, that the great bulk of the crop is now stooked without hood-sheaves, hooding being generally confined to wheat reaped with the hook and sickle. And we may here add that wheat and rye are more easily hooded so as to carry off rain than barley and oats, for the very same reason that their straw makes better thatch for stacks.

It is a common saying that "a good bandster—one who can set a stook, and put on the hood-sheaves properly—is worth his weight in gold, in a bad harvest;" and the practice of appointing select hands for stooking only is becoming common, and, for many reasons, merits special consideration in a season like the present, when so much depends upon artistic skill and manipulation in this branch of harvest operations. As in all other subdivisions of labour, it requires a peculiar talent, and a certain amount of experience, to approximate the standard of perfection which a wet season requires; and wherever that talent is found, it is the duty of all interested to appreciate in a practical manner its sterling value.

In wet weather "the stooks" require continual attention to keep them standing right. The extra amount of labour is often very great. This arises, first from the increase of weight, and consequent force of gravitation that takes place when the sheaves get wet, so that if they are not set properly at first, this force continually acting, diverges or sways them farther and farther from their proper position, so that in a night's time they not unfrequently are found lying almost flat to the ground; and second from the smallness of the sheaves, and the least possible number of them in the stook to secure stability; but whatever may be the amount of labour and expense, the sheaves must be kept erect and in position.

Again, it frequently occurs after a long continuance of rain that the ground gets wet under the butts of the sheaves, and that the sheaves themselves get so closely set together as greatly to retard the process of drying when the weather breaks up. In such cases, when it does break up, all hands are set to shift the stooks on to the dry ground, resetting them so as to let in the draught, but to keep out the rain should it fall before they are fit for carrying; and not unfrequently the sheaves have to be opened, spread out, dried, and rebound before they can be stooked on dry ground, especially when they are made large and tied tight. The object of small loosely-tied sheaves, is to avoid this operation of spreading out and drying, for when the sheaves are large, and tied tight, they swell with the amount of rain absorbed to such a degree, becoming so hard as to render drying in the sheaf impossible.

A similar amount of extra work is experienced in the carrying as that noticed in the cutting and stooking, every sheaf having, for the most part, to be examined before it is taken to the stack-yard. This arises from the outside sheaves being dry and fit for carrying before the others, so that their removal not only secures a portion of the crop, but allows what remains to dry sooner. As soon, therefore, as a few sheaves from each stook can be got they are carried. We have gone three, and sometimes as often as four times through the stooks before the field was cleared. The farmer's maxim is to keep his teams going, and the men in the stack-yard busy, and when this is done he takes it for granted that the fields will eventually be cleared, and his crop

secured, although a single sheaf is only got in passing a stook. For him it is useless to grumble at the extra work that is experienced, since it must be done, and when gone about in a proper manner we never had any difficulty in getting it performed, for in such cases the common interest at stake induces all hands to strive with "a heart-and-hand willingness" that baffles description. An active hand soon examines a stook, loosening and turning up to the wind or sun the butts of the sheaves when they require it.

In the stack-yard the sheaves undergo another examination as they pass through the pitcher's and staker's hands; bad ones, that have escaped previous detection, or that have been taken by mistake, being thrown aside. We have frequently, in stacking, thrown as many "rogues overboard" as would have set fire to the stack. In building the stack, those sheaves unfit for stacking are not only thrown overboard, but the best and driest of them are placed in the centre, or as it is technically termed, are used for "heating the stack." Attention to this alone will often permit the work of carrying to go on in safety, when otherwise, if the sheaves were stacked promiscuously, fire-fanging would be the inevitable up-shot. "Do you think you can keep all the rogues out?" is a common question put to the stacker.

As to size of stacks and mode of stacking much might be said, owing to the diversity of practice followed in the wide district between the Tay and Spey—Buchanness and Balmoral Castle. In shape they are generally circular, but we have frequently built them long, slating the sheaves, as it were, upon hurdles and timber, a passage being thus left along the centre of the stack, open at each end to let in air, dry branches being sometimes placed between the sheaves to keep them open. The grand object is to prevent the sheaves sticking together and heating in the stack, and for this purpose the stacks are not only made smaller in diameter, but placed farther asunder, so as to permit of the free circulation of air amongst them. We have always found that small stacks placed close together are more liable to heat than larger ones with plenty of free air between them, and that stacks will keep in an exposed situation when they will heat in a confined one. In wet seasons we had always a large portion of the crop stacked in an exposed field adjoining the homestead so as to relieve the stackyard; those outside in this field being the first thrashed, and the practice was a common one. Sometimes these outside stacks were so small as only to contain

three or four small one-horse cartloads, a triangle of three props or poles being in the centre of each, so that long sheaves were actually hung upon wood, and so loose that you could have easily run your arm to the shoulder into them up to the time they were thrashed. To keep the sheaves thus open, with a free circulation of air about the stack, is the grand secret of preventing heating in the stackyard in a bad harvest. Of the different ways timber is placed in stacks we need say nothing, as they are everywhere known, as also open spaces in the centre, or the various plans of ventilation. A little requires to be said about thatching. For some time after the whole is finished the stacks require daily examination; for we have frequently found that when a stack began to settle down, or lean to one side and heat, that it arose from some bad sheaf, whose removal immediately effected a cure. In all suspicious cases, the best plan is, with three or four props to prop up the stack in time, so as to prevent it settling down on one side, and then to draw out a sheaf here and there to let off the steam or moisture. A vast amount of moisture escapes from stacks every year, unperceived, it may be, by the naked eye. Sometimes between the stacks, however, it may almost be felt, and in frosty mornings seen; and the rationale of preventing stacks from heating, is to let this moisture escape freely outwards until both corn and straw are thoroughly dry and fit for thrashing.

Such is a retrospective glance at a great national question—a wet harvest. It is truly a trying season to the farmer—one that calls into play all the skill, ingenuity, patience, and perseverance of which he is possessed. Bad as the weather may be, however, his worst enemy is a stereotyped routine practice, the same for wet seasons as for dry; for if the proper means are used in the former, the comparatively fine condition in which crops are harvested is often surprising, while it is just as surprising to see the losses so frequently sustained in the latter. Existing differences of this kind furnish an instructive exposition of fact, for the present bad season of the South would be considered a fine one in some parts of the North. In both certain principles demand attention; for cutting should be commenced in time, so as to keep the straw and ears of corn straight. Corn should be cut dry if possible; but lying beds should never be allowed to rot in wet weather; sheaves should be small and closely tied, properly stooked and carried as they are ready, and every means used to ventilate stacks and stackyards.

W. B.

A WORD IN SEASON.

The present season is one of the most untoward we have ever experienced. It is my intention to offer a few practical hints with the view of aiding my brother farmers to make the best they can of it. I took the liberty very lately to call attention to the subject of rot in sheep. I most sincerely hope that every preventive means will at once be taken to ward off such a dire calamity, for bear in mind it is still just the weather to cause the visitation, and which indeed will be further stimulated by the commencement of a warm gleamy season. I would reiterate my timely caution.

The first thing that now strikes my attention is the state of the *pea crop*. What is to be done with it? For the most part it is rotting as it stands uncut, and being still green. There can be no doubt it is a good practice to cut it down, and the best way of doing that is by the scythe, and by "mowing out" as it is called. The swathes cannot lie too thin or too lightly over the land. To cut them with hooks and "wisp" them is sure to do them serious injury. My own course has been to mow them down in slight swathes, and turn them over with a common "pea hook," *i. e.*, a small reaping hook affixed to a long shaft. The pushing under a fork shakes out more peas, and the haulm is so rotten and the pods are so tender as scarcely to bear touching without doing harm. Be that as it may, they must be moved occasionally, or the whole of the grain will speedily grow.

Advantage must be taken of every favourable day or even hour to lift them, and that as carefully as possible. The sample cannot be otherwise than a bad one; still, with constant attention much damage may be prevented, and a considerable proportion of a good crop saved, at least for farm uses if not for sale.

I next desire to say a few words about the *wheat crop*. What is best to be done with it under present circumstances? It ripens so slowly that farmers begin to be impatient, and some are even beginning to cut it already, green and unripe as it is. This is certainly wrong. It is to no purpose commencing harvest till harvest is ready. It may be that, in consequence of the crop having been so long maturing, considerable allowance may be made; and I am quite ready to believe that wheat may advantageously be cut earlier this cold and wet season than usual. I do not object at any time to cut wheat as the straw is in the last stage of the process of turning from a full green to a bright yellow. That is the proper time to secure the most flour of the best quality with the least quantity of bran. Wheat never should stand to be dead ripe, a large proportion of the berry is taken up by the covering or bran, which everybody knows makes the offal great. The danger to be guarded against in the present season is this. Should it please an all-wise God to visit and bless us with hot seasonable sunny weather, the harvest will come on surprisingly fast. It may, therefore, be prudent to

commence with some of the most forward crops. If the crops are reaped and tied tight into sheaves of about ten or twelve inches diameter they will "make well," and dry satisfactorily in an ordinary season. Another deviation I would make, owing to the lateness of the season: I am a strenuous advocate for mowing all possible crops, believing that more corn, and much manure is obtained than by reaping; but in a most uncertain and precarious season like this, I should prefer reaping and getting all into stack and under thatch as fast as possible. Immense crops of straw take much time in carriage and stacking. It is to these I chiefly refer. All light crops and short straw I would mow as usual. Of course every sensible farmer will use his best judgment according to the state of his crops, and the appearance of the season or weather.

In offering a few words upon harvesting the *barley crop* in a bad season, I fear to commit myself to any definite course, as knowing the straw of this crop is generally of considerable value from the great quantity of seed grasses that are mown along with it, and in fine weather it is made in some districts almost to equal the hay crop. This in barley counties is invaluable to the fold-yard stock. We desire then to secure both corn and straw in the best condition possible. How is this to be done? In a wet season like this, it appears to me to be the best course to mow all up to the standing, and tie into sheaf as you proceed; or if according to the crop it is best to mow out, it should be tied as before, and set up at convenience during the day. If the sheaves are small the grass seeds will wither and dry in a few days, whereas if laid along the ground and continuous rains prevail it is soon all spoilt. The great object should be to keep the barley from growing in sheaf, and the setting it up in stooks is most conducive to that end. In the district from whence I write, it is the common custom to tie all into sheaf, and treat the crop in every way like to the wheat crop. The chief objection to it is that it has to stand longer a-field lest it should take heat in the stack. Advantage is taken of every fine day to open the stook a little by a slight move or shake so as to admit air; and immediately previous to leading, the stooks are thrown down, with their bottoms exposed to wind or sun. In this way it is often secured in prime order and at no great additional cost.

The *oat crop* is of somewhat less consequence, but in the Fens and Northern districts of the kingdom it constitutes an important crop. The straw too is of great value if well got. The great aim should be to keep it off the ground as much as possible in a bad or wet harvest. The best way is to mow up to the standing corn, and tie and stook as the work proceeds. It will not require so much field room as barley, nor will it require repeated mowing prior to leading. In fact, if the sheaves are well and closely stooked, and the heads or tops of the sheaves are closely pressed together the stook will stand without material injury a long time. It is customary in this district to leave the oat crop till the wheat is all secured.

The *bean crop* demands but a word. It is customary to cut up the crop and lay it in appropriate heaps upon a few stalks till sufficiently "weltered" to tie. In a wet season this is wrong. Straw or marine bands should be used, and the crop tied as the work goes on. The sheaves may be heavy and bulky, but they are best set up, or the pods will open as they lie, and the bands become tender or rotten.

I now wish to say a word or two upon the *potato crop*. It was no doubt generally expected that this continuous dripping would seriously affect this crop. I regret to say that as respects the haulm, it was never worse, but at present the tubers are not very seriously injured. That they will be small is an undoubted fact, and the yield must be bad. They will not increase in size without a tolerably healthy haulm. This is all decayed or decaying. What then is to be done? The chief recommendation is to take off the tops, and earth up closely. In the past few dry seasons it was impossible to close the soil upon the tubers, hence many continued to decay, which has brought the topping system into disrepute. There is, however, no plan to be resorted to, equal to it. As soon as possible at the close of harvest all should be taken up, or they will commence growing in the rows as they stand, which will effectually spoil them. I think the haulm should be considerably advanced in decay before it is taken off, but not sufficiently so to affect the roots, which it will assuredly do if left to decay altogether. They should just be caught at the precise time when the haulm ceases to be of use as a feeder to the tubers. P. F.

PRINCIPLES OF MANURING.

Lawes and Liebig's Controversy on the Principles of Manuring popularly explained—The Rothamsted Experiments with Special Manures described—Lawes's Doctrines in Nitrogenous Manuring questioned—Liebig's Doctrines confirmed—The success of Consecutive Corn-growing with Special Manures proved experimentally.

In the second paper of this series, it was demonstrated that the principles which guided the authors of the Rothamsted experiments in their selection of a common gauge or standard of comparison, and in their grouping and averaging of results, were altogether erroneous. Let us now endeavour, in the first place, to discover and choose from amongst the twenty instances some one of them possessed of the qualifications necessary in a genuine test, and, in the second place, to distribute the individual trials into more natural and instructive associations.

Now, assuming it to be undeniable in principle that that which constitutes a *perfect manure*, is itself possessing *all* the elements of plant nutrition, we are naturally led

to examine whether any of the experimental compounds belong to this category, and whether the results from their use are such as to furnish a good standard mean. As a perfect fertilizer, no known substance, probably, excels rape-cake. But, as standards, the experiments with this manure, whether alone or in association with alkalis and phosphate of lime, are disqualified both singly and in aggregate, belonging as they all do (see Table V. of the last paper) to the indeterminately ascending class. Again, except these, the only other approximately perfect instances are, experiments 11 and 17 of the table; and surely it is to be regarded as a very remarkable characteristic of them, that not only is No. 11 so nearly constant in its effects as to show a decrease in six years of only three pecks per acre per annum; but the other, No. 17, in each of the divisions of three years, into which the entire period of the trials has been divided, exhibits a mean so essentially exact as to differ to the immaterial extent of less than half a peck. The details of this important experiment, No. 17, are shown thus:—

TABLE I.

Experiment No. 17.	MEAN PRODUCE.	
	1st period of 3 yrs. b. p.	2nd period of 3 yrs. b. p.
Crop 1852	45 0 ³ / ₄	—
" 1853	44 2 ³ / ₄	—
" 1854	62 3	—
" 1855	—	49 2 ¹ / ₂
" 1856	—	37 2 ³ / ₄
" 1857	—	64 3 ¹ / ₂
	3)152 1 ³ / ₄	3)152 0 ³ / ₄
Triennial mean.....	50 8 ¹ / ₄	50 2 ³ / ₄

Hence, then, not only does this experiment possess the significant characteristic of secular permanency of yield, but also this other striking peculiarity, of exhibiting a higher rate of productiveness than any other of the entire list; and in every respect, therefore, it is entitled to receive very special consideration; and to this end we present the following comparative table:

a valuable test; and, thus, with the aid of this experiment No. 17, as a gauge or standard of comparison, it may now be possible to discover how well or ill-founded are certain general conclusions deduced by the experimenters themselves from the experimental data, and expressed at p. 492 of their report—

“From a review,” they there write, “of the whole of the results relating to the action of special manures upon the barley crop,” &c., “we learn that exclusively mineral manures, and especially those containing phosphoric acid, annually increased the produce of barley, even doing so in the first year of their application on the land in the condition described.”

The following figures give the experimental particulars falling within the scope of this proposition—

TABLE III.

Exp. 5.— <i>Superphosphate of Lime.</i>	Produce per acre.	
	b.	p.
Mean of second period of three years	29	0
True gauge mean.....	50	2 ³ / ₄
Comparative deficiency	21	2 ³ / ₄
Exp. 4.— <i>Mixed Alkalies.</i>		
	b.	p.
Mean of second period of three years	27	3
Gauge mean.....	50	2 ³ / ₄
Comparative deficiency	22	3 ³ / ₄
Exp. 6.— <i>Superphosphate of Lime and Mixed Alkalies.</i>		
	b.	p.
Mean of second period of three years	32	1
Gauge mean.....	50	2 ³ / ₄
Comparative deficiency	18	1 ³ / ₄

(The mean of the second period is here and subsequently adopted in comparison, as being of more approximate accuracy than that of the first period, whether in decreasing or increasing instances.)

Of these three experimental manures, it must further be remarked, that although relatively inefficient when compared with the true gauge, they certainly exhibit some fertilizing influence when tested by the unmanured experiment Nos. 1 and 2; No. 5, in this point of view, showing an increase of 3 b. 2³/₄ p. per annum, No. 4 of 3³/₄ p., and No. 6 of 6 b. 2 p. But this manifestation of fertile power, relatively small as it is, is no less a complete exemplification of Liebig's teaching, which assigns to every seemingly successful special manure, whether nitrogenous, phosphatic, or alkaline, an exhaustive character. This is demonstrated by the following figures—

TABLE IV.

	Ex. 5.	Ex. 4.	Ex. 6
	b. p.	b. p.	b. p.
Produce of these three experiments severally in the first period of three years.....	34 0	30 0	36 3
Produce of these three experiments severally in the second period of three years.....	29 0	27 3	32 1
Secular decrease per acre per annum	5 0	2 1	4 2

Here it is plainly seen that the greatest yields at first fell off most latterly.

The second conclusion deduced by the experimenters is as follows—

“That with barley grown continuously on the same land (as was the case with wheat), nitrogenous manure had a much more striking effect than mineral manures.”

Commercial Substances composing the Manures.	Chemical Substances composing the Manures.		
	Manure Expt. No. 17.	Crop Expt. No. 17.	2,000 lbs Rape Cake.
Mineral:— 300 lbs. Sulphate of Potash 200 " " Soda 100 " " Magnesia 600 lbs. Superphosphate of Lime 350 lbs. Sulphate of Ammonia 200 " Murate 400 lbs. Nitrogenous:— 350 lbs. Superphosphate of Lime 200 lbs. Sulphate of Ammonia 200 " Murate	Silica	lbs. 1730	lbs. 210
	Potash.....	lbs. 163.5	lbs. 35.2
	Soda	lbs. 30.6	lbs. 9.0
	Lime	lbs. 60.5	lbs. 23.0
	Magnesia.....	lbs. 24.7	lbs. 13.8
	Oxide of iron	Trace	lbs. 10.0
	Chlorine	Trace	lbs. 1.0
	Phosphoric acid	lbs. 135.1	lbs. 2.0
	Sulphuric acid	lbs. 35.6	lbs. 37.0
	Nitrogen	lbs. 482.6	lbs. 5.0
Nitrogenous:—	lbs. 14.0	lbs. —	lbs. —
350 lbs. Superphosphate of Lime	lbs. 30.6	lbs. 56.0	lbs. 103.8
200 lbs. Sulphate of Ammonia			
200 " Murate			

TABLE II.—Showing the mineral and nitrogenous constituents of the experimental manure No. 17, and approximately of the crop of barley, including straw, thereby produced. The analysis of rape cake is introduced with a view to after-reference.

From this table, then, is seen how coincident in quality in every respect, save in silica, are the several chemical ingredients of the manure and of the produce raised by it; and probably the silicious element of vegetation is seldom otherwise than naturally superabundant in all soils containing a moderate proportion of clay.

In trial 17th, therefore, is presented a manure *theoretically* perfect, since it embraces in its composition every one of the mineral constituents of vegetative fertility, and no less *practically* an effective one, since not only did its use very largely enhance the yearly crop to which it was applied, but maintained an unflagging productiveness throughout the entire period of six successive years during which its use was repeated. Here, then, are found all the elements required to constitute

Now, the best interpretation which can be given of this somewhat vague conclusion (and which no doubt applies to the nitrogenous contra-distinguished from the mineral manures) will be to place the effects of the two sets in juxtaposition—

	Produce per acre.
	b. p.
Ex. 8.—Produce of 100lbs. each sulphate and muriate of ammonia, mean of second period	36 0
Ex. 5, 4, 6.—Average produce of the three experiments forming the mineral series	29 3
Superiority of the nitrogenous manure No. 8 over the mineral series	6 1
Ex. 13.—Produce of 200lbs. each sulphate and muriate of ammonia, mean of second period	44 3
Ex. 5, 4, 6.—Average produce of the three experiments forming the mineral series	29 3
Superiority of the nitrogenous manure No. 13 over the mineral series	15 0

But although these ammoniacal manures, Nos. 8 and 13, compared with the mineral series, evince a marked superiority, yet, when contrasted with the true gauge (No. 17), No. 8 shows a deficiency of 14 b., and No. 13

of 3 b. 1 3/4 p.; and still more important is it to remark that both belong to the secularly decreasing instances: thus—

	Ex. 8.	Ex. 13.
	b. p.	b. p.
Produce of the two experiments severally in the first period of three years	41 0	47 1
Produce of the two experiments severally in the second period of three years	36 0	44 3
Secular decrease per acre per annum	5 0	2 2

Here, indeed, is exhibited a very "striking effect;" but it is the effect of ultimate exhaustion, induced by the use of a species of manure all but entirely destitute of any mineral element of plant nutrition, and seemingly acting only as an unnatural and eventually depressive stimulant.

Again, it is asserted by the experimenters—
 "That by the annual supply of nitrogenous manures alone (nitrate of soda or ammoniacal salts), larger successive crops both of corn and straw were obtained than by the annual use of 14 tons of farmyard manure with all its minerals, and certainly more nitrogen than either the nitrate or ammoniacal salts employed by its side."

This is most erroneous, as is shown below—

TABLE VII.

Manures.	Mean of 6 years.		Mean of second period of 3 years.		Secular increase.		Secular decrease.	
	b.	p.	b.	p.	b.	p.	b.	p.
Experiment 7.—Produce of 275lbs. nitrate of soda	42	0 1/2	40	2	—	—	3	0
" 8.—Produce of 100lbs. each of sulphate and muriate of ammonia	38	2 1/2	36	0	—	—	5	0
" 12.—Produce of 550lbs. nitrate of soda	47	3 3/4	49	3	3	3	—	—
" 13.—Produce of 200lbs. each of sulphate and muriate of ammonia	46	0	44	3	—	—	2	2
Mean	43	2 1/2	42	3	—	—	—	—
" 3.—Produce of 14 tons of farmyard manure	43	0 3/4	44	2	—	—	—	—
Superiority of nitrogenous manure, taking a mean of six years..	0	1 3/4	—	—	—	—	—	—
Superiority of farmyard manure, taking a mean of the second period of three years	—	—	1	3	—	—	—	—

Here, then, it is shown that were the average of six years to be a proper criterion, the difference either way is too immaterial to be regarded. On the other hand, tested by the more appropriate mean furnished by the second moiety of that period, the superiority is unequivocally in favour of the farmyard manure, amounting, as it does, to all but 2lb. per acre per annum of greater yield.

But what at once demonstrates that any fair comparison of these four nitrogenous manures with farmyard manure is impossible, is this—that, excepting the anomalous instance No. 12, they all belong in very striking degrees to the *decreasing* class of the experiments, the trial with farmyard manure belonging, on the other hand, to the *increasing* list. On referring to Table V. of the former paper, it will be seen that in No. 13 the secular annual *decrease* per acre is 2 bush. 2 pecks; in No. 7, 3 bush.; and in No. 8, it is no less than 5 bush. *Per contra* to this, there is a secular *increase* effected by the farmyard manure of all but 2 bush. per acre per annum.

Again, reverting to the summary of conclusions presented by the experimentalists themselves, we find this other proposition:

"That, within certain limits, even on this comparatively exhausted soil (and it would probably be more

nearly so on soils in ordinary condition for the crop), nitrate of soda, ammoniacal salts, and rapecake all increase the produce of barley, approximately, *in proportion to the amounts of nitrogen they respectively supplied*. Their comparative effects will, however, vary somewhat according to season, the nitrate being generally more rapid in its action."

And again it is said:

"That the effect of a given amount of nitrogen, if not excessive, will be considerably increased by the addition of certain mineral manures, especially those containing phosphates. The action of the mineral manures is very much increased under such circumstances—that is, their application gives very much more increase when there is present a liberal supply of *available nitrogen within the soil*, than when there is not."

It is impossible to assent to these propositions; and, indeed, the reverse of them is true, as shall be proved by means of the following tabulation:

TABLE VIII, showing—1st, That a secular decrease of produce prevailed amongst the instances of manuring in which nitrogenous salts were used; 2ndly, That this decrease was greatest where the proportion of nitrogen was largest; and 3rdly, That the annual acreable produce was most where the nitrogen was proportionally least.

In class 3rd, where the yield is not only *steadiest* but *greatest*, the proportion of *nitrogen* is *least*.

Arranged according to the several amounts of mineral ingredient, the table may be abstracted thus :

TABLE IX.

CLASSES.	Amount (mineral) lbs.	Proportion of nitrogen.	Produce per acre B. P.	Secular decrease B. P.
Class I.	431.9	1.7th	39 0	1 0
Class II.	523.6	1.11th	42 2	2 1
Class III.	1069.0	1.16th	48 3	0 0½

From this, the true conclusion seems to be the very reverse of that deduced by the experimentalists themselves, for here it would seem that if the mineral elements be applied in plenty to the soil, an abundant and sustained yield will be procured, albeit the quantities of nitrogen in the manure be proportionally very inconsiderable.

From these last tabulations, the experiments with rape-cake have purposely been omitted, because composed as that fertilizer is of substances in a state of organic union, there is no rational analogy between them and the crude salts forming the components of factitious experimental matters. But even in this organic manure, when supplemented with mineral ingredients, the same consequence of an increase of produce coincident with a decrease of the proportion of nitrogen, exhibited itself. The following calculations (but only approximate as regards the composition rape-cake), are very conclusive on this point :

Exp.	MANURE.	Mean Mineral and Nitrogen.	Mean produce per acre, 2nd period.	Secular increase.	Proportion of Nitrogen.	Actual quantity of Nitrogen.	Actual quantity of Mineral.
14	2,000 pounds of rape-cake alone (see Table II.)	260.4	49 3	3 1	1.3rd	103.8	156.6
18	2,000 pounds of rape-cake and mixed alkalis	860.4	47 1	5 2	1.9th	103.8	758.6
19	2,000 pounds of rape-cake and superphosphate of lime	610.4	50 3	6 1	1.6th	103.8	508.6
20	2,000 pounds of rape-cake and mixed alkalis, and superphosphate of lime	1210.4	49 3	3 3	1.13th	103.8	1106.6
	Mean		49 1	5 1	1.9th		

TABLE X.

EXP.	MANURES.	Quantity of Manure.	Secular Increase.	Secular Decrease.	Mean produce per Acre per Ann. in 2nd period.	Proportion of Nitrogen	Actual Amount of Nitrogen.	Actual Amount of Mineral.
CLASS 1.—Nitrogen in maximum mean amount of 1.7th								
8	Sulphate and Nitrate of ammonia	lbs. 200	..	B. P. 5 0	B. P. 36 0	1.5th	lbs. 44.8	lbs. 155.2
15	" " and alkalis	1000	..	4 0	40 3	1.11th	89.6	910.4
7	Nitrate of soda	275	..	3 0	40 2	1.6th	45.0	230.0
	Mean .....	..	..	4 0	39 0	1.7th	59.8	431.9
CLASS 2.—Nitrogen in medium mean amount of 1.11th.								
13	Sulphate and nitrate of ammonia	400	..	2 2	44 3	1.4th	89.6	310.4
9	" " and alkalis	500	..	2 1	38 2	1.15th	44.8	735.2
10	" " and superphosphate of lime	800	..	2 0	44 2	1.12th	44.8	505.2
	Mean .....	..	..	2 1	42 2	1.11th	59.7	523.6
CLASS 3.—Nitrogen in minimum mean amount of 1.16th.								
11	Sulphate and nitrate of ammonia, alkalis, and superphosphate of lime	1150	..	0 3	45 3	1.26th	44.8	1105.2
16	" " and superphosphate of lime	750	..	0 1	49 2	1.8th	89.6	660.4
17	" " and superphosphate of lime	1350	..	0 0	50 3	1.15th	89.0	1260.4
	Mean .....	..	..	0 0½	48 3	1.16th	74.7	1099.0
12	Nitrate of soda	550	..	..	49 3	1.6th	90.0	460.0

Putting aside the Experiment No. 12, as being in its results too anomalous to be associated with any of the other instances, here are presented three classes, arranged according to the several degrees of secular decrease exhibited by the experiments, and comprising all the trials with substances composed wholly or in part of nitrogenous salts ; and from this arrangement, it clearly appears that—

In class 1st, where the secular decrease is the greatest (and hence the progressive exhaustion of the soil most strongly evinced), the mean proportion of nitrogen, in the three instances comprised in it, is the highest.

In class 2nd, where the secular decrease is smaller, so also is the mean amount of nitrogenous element.

It is true that here the mean of the produce effected by the mineral admixtures is rather less than that of the rape-cake administered alone, but in point of secular increase the superiority is very strikingly in their favour, although as respects nitrogen the proportion they contain is only 1-9th part, whilst in the cake alone, it is nearly three times as much.

And now to conclude. At the outset of this examination of the Rothamsted experiment, we premised, in the language of Liebig, that "the use of manure, rich in nitrogen, by the farmer, prepares for the proprietor the ruin of his land;" and moreover, "that a field which by manuring with salts rich in nitrogen has produced a larger crop for one or more years is thereby impaired in fertility for future crops." We also quoted a passage from his last work on "Agricultural Chemistry," which, by obvious implication, infers that the only means by which the farmer can keep his soil in sustained fertility is, by returning, from time to time, the mineral substances alienated from thence, in the condition of live

stock and corn sent to market. Adopting these propositions as the basis of our argument, we next presumed to assert as demonstrable that the results of the Rothamsted manurial trials in corn growing, when properly examined, completely confirmed these dicta; and the only postulate we sought in the demonstration was this—that if, dividing into halves the period of years involved in the use of nitrogenous manures, the yield during the latter moiety of time was less than in the previous period, that then the German controversialist's doctrines were to be held as thereby proved. Now, firstly, both in the wheat and in the barley experiments a palpable secular decrease of this kind has been pointed out, in every trial in which, by means of substances selected and used by the experimentalists themselves, a liberal amount of available nitrogen was deposited in the soil. And hence, secondly, the English disputants have with their own hands placed the garland of controversial victory on their antagonist's brow.

THE INTERNATIONAL TRIAL OF REAPING MACHINES,

AT FOUILLEUSE, ON THE 31ST OF JULY AND THE 1ST AND 2ND OF AUGUST, 1860.*

[TRANSLATED FROM THE FRENCH.]

REPORT OF THE JURY.

1st.—At the grand general meeting which took place at Paris in the month of June, our national agriculture gave proof of energetic vitality, showing that it no longer hesitated to adopt any improvement; that very far from deserving the reproach of determining for ever to follow with obstinate perseverance the traditional practices of each locality, it seeks and encourages all the improvements susceptible of increasing the wealth of the nation. The scarcity of hands in the country, which becomes more and more apparent in proportion as the rural works multiply, and the dearness of hand-labour, which naturally increases in proportion with the want of hands, show no signs of being arrested in their progress. At the same time that it asks from science the means of increasing the fertility of the cultivated soil, it exerts itself to transform the *landes* and marshes into arable fields, and to plant those districts which nature intended to be covered with forests. It orders that such works may be accomplished,

it requires that machinery should be substituted for the arm of man, that the most efficacious motive-power of labour should be introduced into the field, and that the mechanical arts should yield up all their secrets to the farmer and the metayer. We have seen the village wheelwright and the blacksmith make a thousand efforts to acquire a little science, and perfect the rough tools and implements of primitive agriculture. By degrees agricultural machines are invented. Instead of the fan, we have the winnowing machine; the straw-cutter and the root-cutter have replaced the knife and the hatchet; the thrashing machine tends to banish the flail; the mechanical separator cleans the grain and seeds more rapidly and completely than could be done by the fingers of women and children. Now, the sickle and the scythe may be displaced in a great part of the most laborious work of the harvest. The meeting—so interesting and, we may say exciting—held in the month of June, on the Imperial farm at Vincennes, has demonstrated that for mowing the natural or artificial pastures, there now

* The jury, constituted by a decree of the Minister of Agriculture, Commerce, and Public Works, dated the 13th July, 1860, was composed in the following manner: Messrs.

General Allard, President of Section to the Council of State, President

Lefour, Inspector of Agriculture, Commissary-General of the Meeting, and Vice-President

Baron Corberon, Deputy to the Legislative Corps

Baron Lesperu, proprietor, Deputy to the Legislative Corps

Baron Ravinel, Deputy to the Legislative Corps

Baron Ségurier, Member of the Institute, and of the Imperial and Central Society of Agriculture of France

De Raynal, Advocate-General to the Court of Cassation, proprietor and agriculturist of Vernay (Cher)

De Cetto, Administrator-General of the Domains and Forests of the Crown

Moll, Professor at the Conservatory of Arts and Trades, and Member of the Imperial and Central Society of Agriculture of France

De Behague, Member of the Imperial and Central Society of Agriculture of France, agricultural proprietor of Dampierre (Loiret)

Dailly, Member of the Imperial and Central Society of Agriculture of France

Barral, Member of the Imperial and Central Society of Agriculture of France

Cout de Chassepot, agricultural proprietor, President of the Committee of Amiens (Somme)

De Brueil, agricultural proprietor of Pailly (Haute Marne)

Hervé Mangon, engineer, Professor at the School of Bridges and Embankments

Emmery, agricultural proprietor of Nioul-sur-Mer (Charente Inférieure)

Lecouteux, agricultural proprietor of the Chateau de Cereay (Loire et Cher)

Tresca, Professor at the Conservatory of Arts and Trades

Tisserant, Inspector-General of the Agricultural Establishments of the Crown

Delozes, Director of the School-farm of Saint Gildas (Loire Inférieure)

Genyut, agricultural proprietor at Ville-gusien (Haute Marne)

De Corbiguy, inspector of the Domains and Forests of the Crown, at Saint Cloud

M. Porlier, Joint Commissary-General of the Meeting, filled the office of secretary to the jury.

exist *two* excellent machines at least. Last year, at the meeting that was held, as this year, on the rural domain established by the Emperor at Fouilleuse, it had been stated that agriculture had already brought into use machines that were calculated to render the harvest independent of the scarcity of hands and the inclemency of the seasons; but there remains still a great number of improvements to be wished for. Can the machines reap upon the ridge and upon hilly ground? Will they resist stones? Will they cut at need the laid wheat? Will they be constructed so as to meet all the varied conditions of a morcelled system of agriculture in an undulating country, intersected only with narrow lanes? We can reply to all these questions only by working the machines upon such land, and watching their operation. Besides, the Minister of Agriculture has decided that the prizes proposed for the reaping machines exhibited at the national and general meeting at Paris, shall not be awarded until after careful trials made at a proper time.

But the problem to be solved possesses a general importance, and interests entire humanity. The government of the Emperor takes a broad view of these questions; it assigns no limits to inventors, and has resolved that the late competition of mechanical reapers should be open to foreign machinists, of whatever country, without at the same time the French machinists having to run the chance of seeing themselves deprived of the rewards they have deserved by their efforts. Consequently, the machines sent for competition have been divided into two classes, the foreign and the French machines; and to each of the classes have been assigned three prizes of 1,000, 500, and 300 francs, accompanied with medals of gold, silver, and bronze, besides honourable mentions confirmed by bronze medals. The Minister of Agriculture has also decided that a large gold medal shall be awarded, with the title of honorary prize, to the exhibitor of the machine acknowledged to be the best in the collection of the exhibition, be it foreign or French. In order to avoid all misconception and disputes between the exhibitors of a machine of a similar system which should be re-produced by a manufacturer without evident improvements, the administration of agriculture had, besides causing to be placed, as a note inserted at the end of the catalogue of the machines exhibited, the following extract from the report of the International Jury of Vincennes, in accordance with the jurisprudence adopted in 1859 at the meeting of Fouilleuse, also decided that the nationality of the inventor, and not that of the constructor, shall constitute the nationality of the machine in such a way as that we ought to regard as foreign every machine invented by a foreigner, and first tried in another country, when even it should now be manufactured in a French workshop. But it was at the same time admitted that evident and useful improvements made in the construction of machines primarily invented by a foreigner should suffice to have those machines recognised in future as French machines. "These principles having, moreover, been adopted by the new jury of Fouilleuse, it cannot foresee any difficulty in the distribution of awards, which, in the estimation of the government, ought to encourage all the deserving in proportion to the service rendered, the inventors as well as the importers, the constructors, the distributors of new machines, and the workmen who contributed by their zeal and perseverance in causing them to be adopted."

2nd. The new competition of Fouilleuse reckons 43 machines, of which 19 were foreign and 24 French. In this number there were several hand-machines, in which one might certainly discover laborious efforts of imagination; but a rapid examination did not fail to convince us that the inventors had designed to inter-

pose between the scythe and the engineman; employing to pure loss, considerable power in order to obtain useless or insignificant results. The handle of his scythe, and his hand, when it is necessary to have recourse to the man to make it move, are certainly the best machines imaginable. The jury think it right to warn those inventors who persevere in endeavouring to find means of pushing forward such machines, that they spend in vain their time and talents in a search destitute of any practical utility.

Deducting the absent exhibitors and the impracticable machines, there remained 22 really useful for harvest-work, and dividing themselves in the following manner. The selling prices indicated are those of machines taken at the factories:—

Four machines by Messrs. Burgess and Key, exhibited either by those makers, by Clubb and Smith, by M. Laurent or by M. Ganneron, price 1,662 francs 50 cents.

The celebrated machine invented in 1828 by Patrick Bell, of Scotland, and brought from the county of Perth to Paris by his brother, Mr. George Bell, price 1,250 francs.

Five machines, invented in America, by Mr. Wood, and exhibited by Messrs. Cranstoun, Clubb and Smith, and Claudon, price 950 to 1,050 francs.

One machine invented by Mr. Cuthbert, of Bedale, Yorkshire (England), price 587 fr. 50 c.

Two machines on Hussey's system, exhibited by Messrs. Clubb and Smith, and by M. Ganneron, price 750 to 800 francs.

The American machine, with automatic arms, by Adkins, exhibited by Ganneron, and made by Bediard, price 930 francs.

Two machines on Manny's system, made by Roberts, and exhibited by that manufacturer and M. Peltier, price 800 francs.

A machine invented, constructed, and exhibited by M. Cournier, of St. Roman's (Isère), price 800 francs.

Three machines invented and made by M. Mazier, of Laigle (Orne), exhibited by that inventor and M. Ganneron, price 800 francs.

A machine, invented, made, and exhibited by M. Lallier, of Venizel (Aisne), price 1,000 francs.

A machine, invented, made, and exhibited by M. Legendre, of St. Jean-d'Angely (Charente-inférieure), price 350 francs.

A machine constructed by Messrs. Renaud and Lotz, invented and exhibited by M. Robin, of Nantes (Loire-inférieure), price 1,400 francs.

3rd. The director of the farm of Fouilleuse had parcelled out, for the trials of the jury, and those for the public, thirty-nine lots, containing from 15 to 18 ares. The jury decided that each machine belonging to a special system should be first called to perform in twelve parcels, constituted as equally as possible, presenting wheat standing, and of an average produce. The parcels were drawn by lot amongst the competitors. A number of the jury was besides appointed to follow, step by step, each machine during its work, to note all the circumstances of its progress, and to appreciate all the particularities of the ground or the crop. After the first trials, the machines were also engaged by comparison in parcels bearing wheat much thicker, partially beaten down in different directions, and growing upon a clay soil, yielding readily under the weight of the wheels.

The machines, of the systems of Bell, Burgess and Key, Woods, Cuthbert, Manny, Cournier, Mazier, and Legendre have alone succeeded in the tasks imposed upon them in the first experiments.

The following table exhibits the *resumé* of the results stated, such as they have been collected by each member of the jury:—

FOREIGN MACHINES.

Names of Inventors.	Names of Makers.	Names of Exhibitors.	No. of horses attached.	No. of men employed with the machine.	Surface cut.	Time occupied.	REMARKS.
					Ares.	Minutes.	
Patrick Beil...	Watson.....	George Bell...	2	2	16	30	The machine cut well, but made a middling swath.
M'Cormick...	Burgess & Key.	Burgess & Key.	2	2	15	15½	The machine cut well, and made a good swath.
M'Cormick perfected by Burgess & Key	Laurent.....	Laurent.....	2	2	17	16	The machine cut well, and made a good swath.
M'Cormick...		Burgess & Key.	Clubb & Smith.	2	2	15	11	The machine cut well, and made a good swath.
Wood	Craustoun....	Cranstoun.....	2	1	15	17	The machine cut well; the rake collected the sheaves unequally.
Cuthbert.....	Cuthbert.....	Cuthbert.....	2	2	16	15	The machine cut perfectly; the sheaf laid well.
Manny.....	Roberts.....	Roberts.....	2	2	15	15	Good work.

FRENCH MACHINES.

Names of Inventors, at the same time Makers and Exhibitors.						
Cournier.....	2	1	17	26		The machine cut well enough, but laid the sheaf only middling.
Mazier.....	1	2	17	21		Worked very well.
Legendre.....	2	2	16	27		Worked pretty good.

In these experiments, the wheat not being very thick, the horses were not in general fatigued. However, the jury is convinced that they could not long have continued the work that was required of them; and it was the same with the sheaf binders. Mazier's machine required only one horse, but in regular and continuous work it would be necessary to employ two. Direct measurement of the power expended by the teams, which we shall find farther on, will show the agriculturists how much, according to circumstances, the quantity of work must vary, that we ought to obtain from horses yoked to reaping machines.

In the second trials, the machines of Burgess and Key, Mazier, Cuthbert, Cranstoun (Wood's system), and Legendre, were alone able to terminate nearly their work. The jury ought to point out that the wheat cut still wanted twelve days of reaching its maturity; that it had rained heavily before the trials; that the wheat was wet, very full of herbage, and that the ground was saturated, and yielding. The trials, therefore, were made under exceptional circumstances unfavourable to the machines, and on the other hand, not permitting to judge sufficiently of the results that would have been produced, if the grain had been ripe, and susceptible of shelling itself readily. However this may be, the experiments executed afford sufficient indications to enable the jury to effect the classification of the machines.

4th.—In the first line were placed the machine of Messrs. Burgess and Key; to whom the jury has awarded the first prize for foreign machines, and the honorary prize. We know that this is no other than that invented by the American, McCormick, and has been perfected by Burgess and Key, who have added to it three screws, ingeniously disposed, for collecting the corn cut, and throwing it upon the ground in swathes parallel with the track passed over by the horses. This operation is executed perfectly when the machine is cutting wheat sufficiently ripe and dry. In wet and unripe wheat full of weeds, as was this year that of Fouilleuse, the swath is less well formed, because the ears have not, in proportion to the stems, their regular excess of weight. The makers had, in other respects, only very slightly modified this machine since the meet-

ing of last year. They have delivered 605 out of 630 that have been ordered of them. They have sold only a small number of these machines in France; but M. Laurent, of Paris, who has purchased of Messrs. Burgess and Key the right of making them, has delivered to our agriculturists 150, of which three were for Algeria. A machine constructed by Laurent performed well before the jury. This maker has, besides, the merit of having reduced the size of the machine, in order to render it more applicable to the habitual conditions of our agriculture; and he has a claim for encouragements for his perseverance and his excellent manufacture. The jury has demanded for M. Laurent a gold medal, not classed, as maker and distributor of the machine of Messrs. Burgess and Key. It has not considered that it ought to reward, at present, other importers of this machine, in spite of the skill with which Messrs. Clubb and Smith made it act on the piece of ground the lot had assigned to them.

5th.—The machine exhibited by Cuthbert had not before been shown at our meetings. It is a successful improvement on Hussey's American system, which had the inconvenience of depositing the swath behind the machine, upon the route the horses would have to take at the next bout. This made it necessary, as the jury was again obliged to state, in working the Hussey's machine, exhibited by Ganneron, that six men should be occupied in gathering the sheaves, in order to remove them from the path of the horses. Thanks to a table well-arranged, a man standing on the machine can at once collect the sheaves, and throw them on one side. But the labour this work involves is severe, and it is not probable that it will ever be properly executed with well-filled wheat. However this may be, the machine exhibited by Cuthbert, although the price is relatively rather high, is one of the best constructed that appeared at the meeting of Fouilleuse. It claimed for the exhibitor the second prize of the foreign machines.

6th.—The machine invented and constructed by Wood, of the United States, was imported into Europe by Cranstoun, who was charged to present it at work before the jury. This machine appeared last year at the meeting at Fouilleuse, and has since then undergone some modifications. The cutting-bar is supported by

an arm of steel instead of wood, which gives it more flexibility. Besides this, an automaton rake is fixed to an endless chain, which turns round the irregular platform on which fall the ears, receiving a go-and-come movement, which enables it to throw the swath on one side of the horses' path. But the gearing employed in imparting the movements is far from being well arranged, so that the rake cannot well perform its work when the wheat cut is rather thick. It then becomes necessary to disconnect the rake, and have recourse to a man to lay the swath. The improvement attempted by the inventor is, therefore, not yet completely realized. The jury awarded to Mr. Cranstoun the third prize for foreign machines.

7th.—Mr. Roberts exhibited a machine, which is the 217th of those made by him in France. He has not made any new improvements in the Manny machine since the last meeting; but the jury was desirous of rewarding by an honourable mention the zeal that this maker has displayed in disseminating the new machines.

M. Durand, the Mayor of Borneil (Oise), whom the jury had already noticed last year, has again come to make the trial of Robert's machine. This agriculturist who has used the machine in three harvests, continues to make improvements in it, upon which he reckons to produce an implement quite perfect, and capable of cutting even the laid wheat. This will be an advantage which the next meeting only will be able to prove.

8th.—The celebrated machine by Bell certainly deserves to be examined with attention, since it was the first mechanical reaper that really succeeded. From the year 1828 it has been employed in Scotland on many farms. We know that the team is made to push the machine before it, that the wheat falls upon a table furnished with an endless web, and is afterwards thrown laterally into swathes. These arrangements, although very ingenious, involve many difficulties in the direction of the machine, above all when it is attempted to change its course. Also, the wheat was not properly cut at the corners of the parcels on which the machine was tried, and it was not possible for the jury to recommend to the agriculturists by a reward a machine which nevertheless reflected the greatest honour upon its inventor.

9th.—Dr. Mazier stands at the head of the French inventors, and has not ceased to perfect his machines, which are more simple and less cumbersome than the foreign machines, and on that account are better adapted to the general conditions of French agriculture. M. Mazier, since last season, has added to his machine a moveable back-stay in a vertical position, intended to support the saw and enable it to follow the undulations of the ground. Besides this improvement, M. Mazier has reduced the price of his machine from 1,050 francs to 800 francs, and he has already delivered ninety of them to French farmers. The jury awarded him the first prize for French machines.

M. Mazier declared to the jury, with great candour, that he owed a part of his success to the persevering assistance he had always received from his superintendent, Emile Ruffrey. The agriculturists are fortunate in finding occasion for encouraging the workmen employed on their farms. They well know how much the master is compelled to trust to his servant, and it is by kindness on the part of the former that those long attachments, so frequent still between the master and his rural agents, are sustained. The jury has appreciated the sentiments which dictated this declaration to M. Mazier, and has requested the minister to assign a bronze medal and 200 francs to M. Emile Ruffrey; and he has felt pleasure in thus rewarding a co-operator in the invention of French Reaping machines.

10th.—The invention of reaping machines is perhaps the most difficult of all those required in agriculture.

We have, in fact, only one solitary annual opportunity of submitting to the test of experiment the combinations which we have conceived in the silence of the study, and to which we give a tangible form in the workshop. We await with anxiety the maturity of the harvest; and if it happens, as this year, that the weather has been for a long time cold and rainy, so that the wheat does not ripen, the inventor is obliged to come before the jury to encounter trials which perhaps will upset all his calculations. We must not, therefore, be surprised that some of the French inventors have mis-carried in the experiments of Pouilleuse. Without prejudging anything, the jury hope that one of the exhibitors, M. Lallier, will be able to overcome the difficulties under which he has failed this year. But it is results which it is necessary to reward, and not merely promises. The jury has, therefore, not without regret, resolved not to award the second prize for French machines.

11th.—M. Legendre had exhibited the previous year a machine remarkable for its price, and for the small space it occupies. This ingenious and persevering constructor has come again with a machine a little improved, but which still does not solve the problem of mechanical reaping, especially in respect to the sheafing. However, such as it is at the present moment, in thin wheat, and with two men, the machine of M. Legendre does its work well. The jury awarded it the third prize for French machines.

12th. M. Cournier of Saint Romans (Isère) has invented and constructed his machine for southern countries; that is to say, for wheat with harsh, dry straw, growing at harvest on lands hardened by the sun. The conditions in which he found himself this year at Foulleuse were too different from those of the South, for M. Cournier to hope to overcome the obstacles which hindered the working of his machine. In the mean time the Jury has awarded him an honourable mention, in order to encourage him to continue his efforts of improvement.

13th. The Jury has felt it its duty to reprove the French exhibitors for the carelessness with which they attended the meeting. They take no trouble to ascertain, before the trials, whether anything is deficient in their machines. There are thus bolts to replace, shafts bent on the road or the railway to be set right, gearings that require adjustment. The sheaf-binders, accustomed to the work required of them, are absent in spite of the orders that should have been given to them: we have not all that is wanted for the teams, which have not been tried, &c., &c. It is not thus that the English exhibitors present themselves at the meetings; nothing is wanting with them either in tools, men, or horses, and they have tested them beforehand. Their example deserves to be cited; it is necessary that punctuality, precision, and studious care should be practised with agricultural affairs, which will then have the success that industry knows how to secure.

14th. The Jury has remarked in its experiments that the horses drawing the machines were, for the most part, very much fatigued, and that the sheaf-binders could also with difficulty sustain for any length of time the work required of them. Struck with the absence of all precise information respecting the exertion required by the machines, and desirous of furnishing to the inventors useful instructions, it has requested M. Tresca to test the machines of Messrs. Burgess and Key and M. Mazier with the dynamometer. These trials were executed with the double-bladed dynamometer of General Morin, and gave the following results:

1. Messrs. Burgess and Key's machine, weighing 750 kilogrammes (15 cwt.), drawn by two horses, walking without work at the rate of 1 m. 40 d. per second (about 2½ miles per hour), with driver, and all its ap-

pointments engaged, required a power of draught equal to 228 kilogrammes ($4\frac{1}{2}$ cwt.), which corresponds with a work per second of 251 kilogrammes (5 cwt.).

The same machine cutting a breadth of 1 m. 35 d. (about 4 feet) required a draught of 317 kilogrammes (6 cwt. 37 lbs.). The speed was the same as when not actually working. The labour expended was, therefore, 349 kilogrammes (nearly 7 cwt.).

The effort due to the cutting alone and laying the swath was 89 kilogrammes (1 cwt. 88 lbs.).

The difference between the draught when not at work and that during the cutting was as 0.72.

The quantity of labour per square metre cut, rose to 234 kilogrammes, of which there were only 66 kilogrammes employed in the reaping and laying the swaths. The rest served to draw the machine upon the very soft ground soaked with the rain, upon which it operated.

2. The machine of M. Mazier, weighing 400 kilogrammes (8 cwt.), drawn by two horses, walking, not at work, at the rate of 1 m. 10 d. per second (the same as Messrs. Burgess and Key's), carrying the driver and the sheaf-binder, having all its appointments engaged, required a draught of 137 kilogrammes (2 cwt. 83 lbs.), which corresponds to a labour of 151 kilogrammes per second (3 cwt.).

The same machine cutting a breadth of 1 m. 20 d. (3ft. 4 in.) required a draught of 182 kilogrammes. It proceeded with the same speed of 1 m. 10 d. per second. The labour expended was, therefore, equal to 200 kilogrammes (4 cwt.).

The resistance due to the cutting alone was equal to 45 kilogrammes.

The difference between the draught not at work and that during the cutting was as 0.75.

The quantity of labour per metre cut was equal to 152 kilogrammes (3 cwt. $4\frac{1}{2}$ lbs.), of which there were 37 k. 50 h. employed in the cutting. The rest was absorbed by the draught, the conditions of which were exactly the same as those under which the machine of Messrs. Burgess and Key performed.

The field in which the dynamometrical experiments were executed was under an abundant crop, laid in some parts.

We know that the average power of a good horse, of an ordinary farm, in excellent condition, is equal to 70 kilogrammes. We therefore see that in the conditions under which we have operated, the two horses of Burgess and Key worked as four good horses, and those of M. Mazier as two and a-half horses. But it must be borne in mind that the field required an enormous draught, which would have been reduced to probably half, if the land had been dry and hard. Every one knows, in fact, what difference the draught meets with between a good road and one broken up; the variations of draught are not less between dry and wet fields. We may regard the preceding results as maxima which we shall rarely go beyond in practice.

The difference between the amount of labour expended per square metre for the cutting and laying the swath in Burgess and Key's machine, and for cutting only in that of M. Mazier, is $28\frac{1}{2}$ kilogrammes, or nearly one-horse power. Such is the enormous labour that will be required with reaping-machines for the sheaf binder. This statement demonstrates the interest attached to the construction of machines that can sheaf, or lay in swaths by machinery.

15th.—There are still many questions to examine, both in a dynamometrical point of view, and in respect to the better arrangement of the sections of the machines. What ought to be the speed of the see-saw movement of the cutter, and which is the preferable mode of arranging the teeth? Would not the step of an ox be better adapted for drawing the machines in the

ordinary state of their organs? Will not the arrangement of the land in ridges, so frequently in practice in many parts of France, be an obstacle to a beneficial employment of mechanical reapers? On all these points another meeting, convoked in two years, and prepared beforehand to give time to plan the machines in varied conditions, might furnish, to both agriculturists and machinists, invaluable information. The jury expresses a wish that the Minister of Agriculture will take into consideration the preceding observations on the organization of a meeting which shall render many services to agriculture.

The meeting of Fougereuse certainly could not make provision, when so short a time had elapsed since last year, for bringing forward and testing any capital new invention. However, it has signalized real improvements, especially in regard to the continuity of the manufacture. Thus, according to the details given above, we can reckon that there are now in France from 400 to 500 reaping-machines. Now, only a year ago, our makers were yet only feeling their way: from this day, the incredulity of the generality of the cultivators having given way, where even they are not absolutely satisfied with the results obtained, they give the manufacturers numerous orders. The latter are therefore encouraged to go back to their workshops in a spirit to give satisfaction to agriculture. Improvements must necessarily suggest themselves to the constructors by the multiplicity of the conditions under which the machines will be employed.

16th. The problem that it is proposed to solve, is not merely a question of economy in money. The reaping-machine will afford a certain means of increasing, by more than one-fourth, the produce of the harvest by suppressing the fatal causes of waste produced every year by bad weather and scarcity of hands. Besides, the substitution of machine for hand-labour in cutting cereals will certainly do away with the most severe labour that can be imposed upon man to perform. In all the academies we reward the inventors of processes that render the arts less insalubrious. How worthy are those of applause who exert themselves to construct machines by which we can every year save so many peasants now killed by the sun, or the rain striking them on the back during twelve or fifteen consecutive hours! We can conceive, therefore, all the interest that the government of the Emperor attaches to the discovery of good reaping machines. M. Fould, Minister of State, came at an early hour, to be present at the experiments of the jury. M. Rouher, Minister of Agriculture, Commerce, and Public Works, accompanied by M. de Morny de Mornay, Director of Agriculture, remained on the field during all the afternoon. When M. Trisca directed the dynamometrical experiments, of which this report gives the details, his Royal Highness Prince Napoleon came to see how the machines performed; and lastly, the Emperor followed attentively, during more than two hours, the experiments of the jury, and expressed to the exhibitors the deep interest he attached to their inventions. Whilst commanding the armies, the Emperor of the French wishes to be considered the first agriculturist of the country.

The public trials that took place after the experiments of the jury, were attended by a large concourse of spectators. Applauses have many times saluted the machines which overcame the obstacles presented by the state of the crops and the difficulties of the land. All, both people and chiefs, whilst acknowledging that there was much still to be done, were anxious to express their delight at seeing overcome so many difficulties formerly deemed insurmountable.

The reporter,
J. A. BARRAL,

The President of the Jury,
GENERAL ALLARD.

THE PHYSIOLOGY OF BREEDING.

SIR,—The paper read at the Croydon Farmers' Club by Dr. Shorthouse, a report of which appeared in these pages in the July number, contains many valuable remarks got up with great talent, to which may be added several other confirmatory examples, interesting and important to breeders. It also contains recommendations replete with evil tendencies, by advocating incestuous breeding and in-and-in breeding too closely.

The circumstance of the chesnut mare having issue by a quagga, which, as might be expected, bore much resemblance to the sire, and afterwards being presented to a pure Arabian, producing foals with characteristics of her first partner, is not an isolated case: there are many analogous to it, and they demand the serious attention of every description of domestic animals. A similar event took place with an Arabian mare, the property of the late Sir Gore Ouseley, which the paintings of the animals, together with their skins, will testify, on inspection of them at the College of Surgeons, Lincoln's Inn Fields, London. Mr. Goodwin, a gentleman for many years connected with the Royal stud at Hampton Court, whose investigations and experience command the highest respect, observed during the reign of William the Fourth that many of the mares bred foals to Actæon with white faces and white fetlocks, though Actæon had no white about him; but the previous year these mares had produced foals to The Colonel, who had a white face and a white fetlock. The Stud Book, than which in connexion with the Racing Calendar we can scarcely find a more certain guide, confirms the influence as relates to the first connexion. There are several instances of mares having their first produce by common horses, but a careful research through those pages fails in finding an example of the future progeny by thorough-bred horses having proved of any value for racing purposes. But this faculty does not appear to be so positively defined when a thorough-bred horse has been on the first occasion selected. As I consider this to be a subject of so much importance, I offer no other apology for detailing examples. In 1825 Eliza Leeds produced a filly by Filho da Puta; the following year a dead foal by Blacklock; then Erymus by Moses, a very fair racehorse; she was barren one year, and in 1829 had a colt by a common horse; afterwards a filly by Richard. Eva, by Sultan, was foaled by her in 1832; and St. Luke, by Bedlamite, the succeeding year. Both these were respectable runners. The first-born of another mare, Handmaiden, was by Palmerin. In 1828 she produced a filly by coach-horse; the next year cast a foal to Lottery. Eve, by the same sire, was the succeeding issue; and the year afterwards came Inheritor, also by Lottery, a very superior horse. Both these examples of Eliza Leeds and Handmaiden afford evidence that the mongrel influence had not the same effect over the future progeny as it would have had in the event of the common horses

being the sires of the first foals, of which many examples are to be found in the Stud Book. If a cart-mare on the first occasion breeds a foal by a thorough-bred horse, that foal will partake extensively of the outward character and refinement of the sire; but, on the other hand, if a cart-mare is first put to a cart-stallion, and afterwards to a thorough-bred horse, her produce by the latter will represent much of the coarseness of her first partner. I can show several living examples of this close at home.

Mr. Fisher Hobbs, at a meeting of the Central Farmer's Club, mentioned a case in which a Merino ram was put with ten Leicester ewes, and the following year a ram of the Leicester breed; the result was that six out of the ten produced lambs with a decided characteristic of the pure-bred Merino.

The late Earl Spencer laid it down as a principle, which has been frequently quoted, "that when a pure animal of any breed has once been pregnant to one of a different breed, she is herself a cross ever after." The examples already given confirm it, with this reservation, that the distinction will be more decisive if the cross-bred animal be the sire of the first issue.

I am quite prepared to endorse the argument that the male parent chiefly governs the production of external characters and structures, and very materially the action of the offspring, provided the male be of purer or equally pure blood as the female; if not, the result will be very uncertain: and it is the absence of this investigation that frequently leads breeders into labyrinths of disappointment. There are daily proofs of the influence of the male over the external structures; they are attributes which the eye can recognize, and there are other data to confirm it; but I cannot admit that the mare governs the qualities of endurance, and on this point must join issue with the Arabs. The Stud Book and Racing Calendar again come conveniently to the rescue. As Orlando was an honest race-horse and a very superior stallion, his genealogy, and the performances of some of his ancestors, will serve as an illustration. He was by Touchstone out of Vulture by Langar. Neither Banter nor Boadicea, the dam and grandam of Touchstone, were celebrated for their turf exploits. Vulture was famed for speed; she was signally deficient of the quality of endurance: one mile was her extreme distance, but half that length was more congenial to her taste, at which she had few superiors. Her being so *in-bred*—the issue of first cousins—may afford some explanations for her shortcomings. Kite, the dam of Vulture, had no predilection beyond a mile; and her dam, Olympia, added no distinction to the place from whence she derived her name. For Olympic revelries she displayed but little taste. Teddington, a son of Orlando, affords another example; his dam gave but an insignificant proof of her racing qualities, never having started but once, when she was unsuccessful. Electress,

the grandam of Teddington, had good speed, and, like Vulture, won several races, but her performances were confined to short courses; and the great grandam of Teddington made but one essay to carry a silk jacket, to which she did no credit. Without going further with the dry matter of detail, many others of the best horses on the turf and in the stud inherit very little of their racing distinction, but most essentially the powers of endurance, from their female ancestors; and in this category stand most prominent Sir Hercules, Hero, Stockwell, his brother Rataplan, and Fisherman. As a contrast, with the exception of Arachne, the dam of Industry, more recently of Beeswing, the dam of Newminster, Alice Hawthorn, the dam of Thormanby, and a very few others, from the earliest period of racing to the present time, scarcely any mares that have evinced a great share of lasting qualities or endurance, whose turf career has extended for any length of time, have transmitted good properties to their offspring or their descendants equivalent to their own. When it was the custom to run half-bred horses, those by thorough-bred sires, from mares having a flaw in their pedigrees, were found to be greatly superior to those in which the stain was reversed; affording another example of the influence of the males as relates to the powers of endurance.

If an argument is to be founded upon the habits, customs, condition, and qualities of animals in a state of nature, it implies that a vast amount of time, study, labour, and capital have been expended to no good purpose. But it is not so; man is permitted to improve the propensities and characters of domestic animals for specific purposes—the horse, for his speed, powers of endurance, and docility; the dog, for the different uses for which he is employed; and the feeding properties of cattle, or their adaptation to the dairy, as the peculiarities of the farm may require. The different attributes or qualities must be cultivated by different means. The effects of incestuous or in-breeding are known to occasion precocity, a listless inactive temperament; consequently a disposition to fatten—good qualities for feeding-stock; but if this system be carried too far, the constitution being enfeebled, the early development of the frame will result in attenuated emaciation. Impotence is another failing interposed to prevent great excesses of incestuous intercourse; and I think Stonehenge's remark tends to prove just the reverse of the argument he holds—"That breeding in-and-in prevails extensively in a state of nature with all gregarious animals, among whom the strongest male retains his daughters and grand-daughters until deprived of his harem by younger and stronger rivals." This affords a most striking and convincing proof of the intention and wise dispensation of Providence, by instilling, at certain periods, a belligerent propensity in the males, which excites them to mortal combat, whereby the aged, infirm, and weak are driven away maimed or destroyed. As it is a well known fact that animals produced from incestuous intercourses are the weakest and least capable of enduring hardship, they are by this very act of nature the first to fall a sacrifice to the more robust of their species; and, although it is not entirely prevented, incest or continu-

ous in-breeding is thereby limited. The habits of the stag afford a suitable illustration of these propensities, and the most experienced park-keepers are well aware of the degeneracy which takes place among deer, unless males are occasionally introduced from other herds.

The terms "incestuous" and "in-and-in bred" are not uncommonly associated. Incestuous, as properly understood, implies an intercourse between brother and sister, or half-brother and sister, father and daughter, or grand-daughter, son and mother or grandmother. The next degree of consanguinity implies the union between first cousins; then that of second cousins, which does not appear to entail objectionable results, if not repeated too frequently. In many instances the term in-and-in is applied where the pedigree on both sides runs back to the same ancestor several generations back; but, taking such a wide range as that, it is contrary to established facts to denounce the admissibility of such remote consanguinity.

In bringing forward some heterogeneous quotations from "Stonehenge," errors have crept in which that industrious writer, with a great leaning to in-and-in breeding, never committed. One of them is the declaration that Matilda, a winner of a St. Leger, was the produce of first cousins, a degree of consanguinity which the stud-book does not confirm. "Stonehenge," however, makes a slight mistake when he mentions that Juliana the dam of Matilda was the produce of "brother and sister;" she was the produce of half-brother and sister, consanguinity too nearly connected; but Matilda's performances on the turf, and her subsequent quality as a brood mare, do not entitle her to be respected as an example. It is mentioned that Touchstone and Verbena, sire and dam of Ithuriel, were second cousins. This is suggestive of further investigation into that pedigree. Rosalba the dam of Verbena was by Milo; that horse by Sir Peter Teazle out of Wren. Sir Peter Teazle and Wren were half-brother and sister, both out of Papillon, the one by Highflyer, the other by Woodpecker. It is notorious that Milo's descendants were very often afflicted with roaring, and on that account to be most scrupulously avoided; but fortunately there is not much of the blood in existence. When the Flying Dutchman is paraded as an example of a stallion eminently successful, it is natural to enquire, for what purpose? For racing, he is the sire of half-milers, deficient in powers, and as the great object of racing ought to be the production and maintenance of a breed calculated to produce horses for general purposes, he is as little entitled to the character of eminence as can possibly be conceived. Indeed, all the descendants of Bay Middleton are totally worthless as the progenitors of hunters or riding horses of any kind, in consequence of the defective quality of fore-legs which they inherit, and which they almost invariably transmit. The stamp of animal to be recommended for that purpose descends from Venison, Sir Hercules, Birdcatcher, Heron (very scarce), Stockwell, Rataplan, King Tom, Kingston, and such animals as possess sound limbs with pedigrees free from too much consanguinity.

Touching the canine race, I presume to know nothing

whatever of the lineage of sheep-dogs; but it is quite new to me that Mr. Meynell Ingram's fox-hounds "are much in-bred." It was said by the contemporaries of his grandfather, that he bred too closely, and that he injured his pack by doing so, but that was more than sixty years ago. The late Mr. Meynell, whose good taste and devotion to fox-hunting diffused the first rays of venatic science over the aristocratic pasture fields of Leicestershire, gave up his hounds and the Quorn country to the Earl of Sefton of that day in 1802, after having kept them about five-and-forty years. Many of the hounds, or their descendants, became the property of Mr. Heron master of the Cheshire, who sold his pack eventually to the Duke of Rutland. Mr. Meynell Ingram did not commence till the year 1816, consequently there was an interregnum of fourteen years, during which none of the family kept hounds. This new pack was formed chiefly of hounds from Mr. Talbot's kennels, and there was subsequently an augmentation from Mr. Heron's of hounds descended from the Quorn. It is difficult to reconcile the idea that the present pack is "much in-bred," as their kennel list of 1840, published in "Vyner's Notitia Venatica," when they numbered 43½ couples, included 14 couple bred from hounds in the Brocklesby, Belvoir, Badsworth, Mr. Foljambe's, and the Berkeley kennels. A list of more recent date represents 17 couple out of 46½ from similar sources, with the addition of fresh infusions of blood from Sir Tatton Sykes, the Atherstone, and the Cheshire kennels. And as in-breeding of fox-hounds has been studiously avoided by all masters of hounds, from the ruinous effects it is known to produce, it appears the more astounding when it is announced that Mr. Meynell Ingram has adopted it with success.

The term pure or thorough-bred is an expression not clearly defined as regards any of our domestic animals, but it would be very desirable to have some rule established. It may be accepted as a principle, that breeding from animals endowed with certain properties and perfections through several generations constitutes the claim to the distinction; but there is no adopted rule to determine how many generations are sufficient to establish the title. By way of illustration: any half-bred female, mare or cow, put to a pure bred male, the issue will be half-bred; that issue, supposing it to be a female, being pregnant by a thorough-bred male, will produce an offspring with one-fourth of impurity, and carrying on this system to the tenth generation, it will be reduced to 1-1024th only of impurity. A general practice founded upon this system might be adopted satisfactorily to breeders. The advantages which have arisen from the patronage bestowed on the different varieties of pure-bred animals are numerous and important. It is the means of bringing into effect the judgment and experience of breeders, by which animal organism is brought to the highest state of perfection it is capable of approaching.

Mr. Collings, to whose stock the high-bred Shorthorns are traced, purchased the celebrated bull Hubback in the year 1777, and his fame was established by the production of a descendant known as the Durham Ox,

and also the bull Comet, who was bred by the Messrs. Collings, and sold for 1,000 guineas. These gentlemen resorted to the practice of breeding in-and-in to a considerable extent, but they experienced the evil in want of stamina, and the faculty of reproduction, when they fell into an error by introducing a Galloway bull to some of their best and most valuable cows. Rushing to such an extreme the results were disappointing, and the animals which had previously been bred from stock of a similar character became contaminated. This could not be obliterated for several generations, and that strain is still in disrepute with many influential breeders of the present day. These facts present two beacons: one, of the ill consequences of excessive in-breeding; the other, that of crossing animals possessing essentially different characteristics; for although it may be admissible in some cases, especially with sheep, for the purpose of adapting the flock to certain localities, extremes must be avoided.

With breeders of cattle the object has been to establish a disposition to arrive at early maturity, combined with aptitude to fatten, as productive of meat to supply the enormous and increasing population. These have been the chief efforts, and the property of producing milk for dairy purposes has been sacrificed as relates to the pure-bred varieties. It is established as a fact, that the best quality of meat and the best quality of milk are capable of being combined in one animal or breed; but the greatest amount of flesh-producing properties and the faculty of secreting an excess of milk cannot be obtained in the same animal. Shorthorns were said to be celebrated, when the breed was first established, as good milkers; but since that period, by selecting those evincing a disposition to fatten, and supplying them with the most nutritive food, generation after generation, they have, to a great extent, lost their primitive character as milkers. This is a subject worthy of attention. In the dairy countries it is much felt, and there is no reason why a breed or race should not be established, gifted with superior milk-producing qualities as much as the existing breeds are famed for feeding.

Bulls of the pure breeds of cattle are admirably adapted for improving the local breeds; but judgment is necessary, to make suitable selections, not only with regard to the animals themselves, but also with respect to the climate and properties of the district in which they are produced. Extremes must be avoided, both of size, constitution, and peculiarities. Crossing the Kyloes with Shorthorns or Herefords could scarcely be followed by good results; the stature of the breeds are so different; also the propensity of the Shorthorns and Herefords to fatten at an early age, while the Kyloes being inhabitants of hilly and mountainous districts, they require time to become fat, when they afford delicate repasts for the most fastidious epicures. If any infusion of pure blood from another variety with the Kyloes could be desired, the Devons appear to be the most eligible, as more nearly assimilating in size, symmetry, and habits; each of them are produced in hilly countries, though the temperature of their localities is widely dif-

ferent, which appears to be an impediment, as experience confirms that all animals must become constitutionally acclimatised before they will attain a high degree of superiority.

The properties which have been most assiduously cultivated in the pure breeds of sheep are a disposition to fatten at an early age, combined with the greatest production of wool, varying in its qualities, and therefore valuable for particular purposes. There is no animal that degenerates more rapidly from in-breeding, or is more susceptible to the influences of climate or locality. The original breed of mountain sheep in Wales, treated as they generally are in a very primitive fashion, permitted to roam unheeded and uncared for, are much inbred. Their diminutive size, weak frames, and want of stamina, afford conclusive evidence of the pernicious effects of the system. A cold and inclement winter frequently destroys vast numbers of them, and in their best condition, when three years old, their average weight does not exceed twelve or fourteen pounds per quarter. The effects of climate and pasturage on the sheep are very striking. It is essential to select breeds adapted to localities. If Cotswolds were to be consigned to mountainous districts, they would rapidly degenerate; and mountain sheep removed to better keep on the Cotswold Hills, would as speedily improve in size and weight. Without, however, launching out into such extremes, a circumstance close at home, which came under my own personal observation, will serve as an example. The late Earl. Ducie had a large flock of Southdowns, bred with great care from the stocks of the Duke of Richmond, Colonel Kingscote, Captain Pelham, Messrs. Ellman, Rigden, and other breeders of renown. The very best tupps that could be procured from Mr. Jonas Webb were introduced. There was, however, a marked distinction in each generation of the sheep bred upon the farm. Every succeeding year the produce became stronger and heavier, and though gaining in weight and probably in wool, they lost much of that refinement of character for which the Southdowns are so highly famed. I directed the attention of a friend to this, a large and successful breeder of Shropshire Downs, who was

present at the ever-memorable sale, which took place after the noble Earl's death in 1853, and my friend observed the difference as well as myself. These sheep were as highly bred as sheep could possibly be; it was entirely the effect of a pasturage adapted to breeds of greater bulk. Mr. Jonas Webb was a purchaser of some of the lots, and that gentleman's subsequent success at the exhibitions is evidence of their not having deteriorated his flock. As it was found that Southdowns were not the best suited to the land, a cross-bred flock has been substituted.

The most experienced and successful breeders, as it is well known, purchase, or hire, rams at high prices, periodically, to avoid the evils of breeding from the near relatives in their own flocks.

The excellence of the Shropshire Downs presents a very powerful argument in favour of crossing; they have of late years justly gained great celebrity. This breed has been produced by introducing Southdown tups to the ewes of Clun Forest, a hilly country between Bishop's Castle and Knighton. As I have previously observed, it would be inconsistent to transport a Cotswold to the mountains of Wales; but the mountain flocks in the vicinity have recently derived the greatest benefit from the use of Shropshire Down rams. It is crossing between animals widely different in symmetry, proportions, characteristics, habits, and constitutions, that has led some persons, who have witnessed the evils that ensue, to condemn crossing upon any terms. But that differs greatly from crossing animals of homogeneous properties. The best results have been experienced from that practice, when the object has been to improve the progeny of the female by the influence of a male of greater excellence. The Cotswold and other long-wool breeds doubtless possess more or less distant infusions of the Leicester blood, which keeps up the true symmetrical form, and the propensity to fatten at an early age. With these facts, it is difficult to conceive upon what grounds an argument can be maintained against judiciously crossing the breeds of sheep.

I am, sir, yours faithfully,

CECIL.

NORTH LINCOLNSHIRE AGRICULTURAL SOCIETY.

MEETING AT HORNCastle.

The twenty-third anniversary of this Society took place at Horncastle, on Wednesday and Thursday, the 25th and 26th July. We ever approve the migratory course of agricultural societies. It is very conducive to their prosperity, and the different districts in which they are held cannot fail to derive many advantages. The convenience to tardy exhibitors, the temptation to the supine and indifferent to visit such shows when brought near to them—all has its effect, and men are brought from their homes to view for themselves, the improvements brought forward—they become interested, and the most prejudiced and obstinate go away with

more kindly views towards an improving agriculture. Very many, we know, are compelled, from their own convictions, to commence anew the work of improvement on their holdings, and in the breed of their stock. There are, however, some disadvantages arising from these migrations; occasionally, when taken to the less populated parts of the county, the funds of the Society suffer from the paucity of the attendance. We believe the North Lincoln will this year sympathize with The Royal in this respect. The attendance, notwithstanding the isolated situation of Horncastle, was good, and the show, in many of its classes, was very attractive; the

classes of horses being far in the ascendant, and the difficulties in the way of satisfactorily deciding the awards was not over when the company left the ground. At the time of closing the meeting (3 o'clock), we left the judges in full work, hence our prize awards are not quite complete. We will endeavour to supply the deficiency next week. Many very superior horses were shown, and we heard the offers of high prices having been rejected, and great interest existed. The immensity of Napoleon, a bright hay cart horse, shown by James Robinson, Bury New Road, Manchester, astonished every beholder. He is 9 years old, and without being a model of perfection, is a very splendid specimen of draught horse, and few, if any, animals in creation can be compared to him for noble grandeur. There are no less than 185 entries in the horse classes, besides several extras, ponies, &c.—a pretty good day's work for the judges: no wonder they did not finish their duties in the short time allowed them. 'Tis true many were re-entered for the gentlemen's classes; still the adjudications had to be repeated. The class of hunting stallions only mustered three, but of hunting geldings, mares, fillies, and foals there was a large and good competition. The classes of draught stallions and mares were well filled, and the foal classes were well sustained. The other draught horse classes presented nothing remarkable to notice. It was evident at a glance where the interest of visitors lay. The exhibition of horses was crowded. The show of short-horns was exceedingly good, but not equal to some former occasions; Mr. Dudding, taking the first stand with high honours, having won no less than seven prizes in the six classes in which he exhibited. Mr. Lynn takes second prize in the aged bull class, with Great Comet, commended at Canterbury. Mr. Smith's white heifer Ella is in exceedingly good form, deep, full, and proportionate throughout. Mr. Dudding's Lady Louisa Bountiful, roan, had a beautiful top, very cylindrical in form, and level make. Lady Pigot honoured the show by exhibiting, but we concluded the best animals were reserved for the Yorkshire Meeting next week. The sheep classes were highly respectable. Mr. Clarke, of Scopwick, obtained the great honours for rams with some excellent sheep; Mr. Abraham, Mr. Dudding, Mr. Iles, Mr. Cartwright, and others being competitors. In the pig classes were many very good animals, Mr. Richardson's two large boars in class 33 having defeated Mr. Harrison's boar which took first honour at Canterbury. One animal in this class was said to weigh 60 stones. There were several excellent animals in the small-breed classes. The poultry classes were not well represented in numbers. Some fine birds were shown, but nearly all the show was confined to a few exhibitors in the immediate district.

The Implement show was very superior; but one and all complain of the paucity of sales. Time was when it was no ordinary mart, but that is gone by; and the various Makers' chief business appeared to be to explain the peculiarly good qualities of their implements rather than to book sales. But this cannot be at all surprising; for go where you will you are sure to meet

with a pertinacious, persevering agent, who almost compels you to give him an order, with feelings something akin to those which induce you to throw a trifle out of the window to the noisy organ-grinder. Besides, the buyer says, "I shall give my order to your agent, my neighbour Jones," &c.; so that the discouraged manufacturer finds that he is merely exhibiting for the benefit of his agents. We did not observe any novelties of importance worthy of remark. The trials took place chiefly on Tuesday, but the continuous flow from the dense clouds made it extremely uncomfortable; and Wednesday was therefore taken to complete them. Wood's reaper here takes precedence of Burgess and Key's. Hornsby's ploughs compete against the county make (home-made ploughs), and in one instance got defeated by Cooke, of Lincoln. Mr. W. Foster's excellent thrashing-machine takes first prize. Mr. Speight's very superior horse-hoe for corn crops obtains the first honours. Mr. Bentall attended personally, and took first honours with his subsoil plough, his scarifier and root-pulper, as also honours with his harrows and chaff-cutter. Messrs. Ashby and Co. obtained first honours for their chaff-cutter, hay-tedder, horse-rake, and rotating harrows. Hornsby's drill appears against Coultas', which it defeats. W. Hunter takes honours with harrows for light land; as do also Amies and Barford for like use. The chain harrows of Hill and Co. obtain honours: they were shown by Woodrooffe, of Horncastle, who has a good and extensive show. Ruston, Procter and Co. obtained first honours for their steam engine. It would, however, be too invidious to point out consecutively how each exhibitor fared; we will let the prize award speak for itself. It may not be amiss just to enumerate the exhibitors who contributed to support and enhance the interests of the show, for without a show of implements these meetings would now lose much of their popularity. We will here name them alphabetically, as from our advertising columns their addresses may be readily known: Allcock, Thos.; Amies and Barford; Archer, Henry; Ashby, T. W. and Co.; Ashley, Thos.; Ashton, Wm.; Baker, John; Barton, Wm.; Bentall, E. II.; Bridges, Henry; Brooke, Thos.; Burn, R. S.; Butters, Thos.; Clarke, Jas.; Cooke, Jno.; Cooke, Wm.; Coultas, Jas.; Coultas and Son; Creasey, Henry; Crisp, R. H.; Cuthbert, R. and Co.; Day, John Wyatt; Drant, Jno.; Forrington, Jno.; Foster, Wm.; Gardner, Joseph; Gell, Thos.; Grant and Wright; Grantham, Charles; Grantham, Henry; Grantham, Thos.; Green, F.; Grounson, Jas.; Hodgson, John; Hunter, George; Hunter, William; Inman, Charles; Jackson and Stothard; Kemp, Jessie; Kendall, Jas.; Kittmer, Benjamin; Linley, G. A. F. and Son; Lyall, Thos.; Marshall, Wm. and Robt.; Marshall, Wm. and Son; Mason, Robt.; Mawer, Geo.; Page, Ed. and Co.; Peniston, Michael; Procter, Wm.; Ranby, Ed.; Rawby, Wm.; Ruston, Procter, and Co.; Samuelson, B.; Sandall, Ed.; Scaman, Matthew; Sharp, Ed.; Simpson, Thos., and Co.; Smith, F.; Spight, Jno.; Spencer, Jervis; Spencer, Jno.; Squires, Stephen; Thompson, Alex.; Toynebee, Miles; Trotter,

F. and R.; Tye, Jno.; Watkinson, Wm.; Watson, Philip; West, Jno.; Whitton, Wm.; Wilkinson, Wright, and Co.; Woodrooffe, Showler.

The show ground was pleasantly situated close to the town, and notwithstanding the recent heavy rains, was comparatively clean and comfortable. The day was fine, and everything appeared to go off harmoniously. We could only wish, for the above firms' sakes, that a greater amount of business had been done.

SHORTHORNS.

JUDGES.—Mr. S. Watts, Belton, Grantham.

Mr. Saml. Slater, Carlton, near Lincoln.

Mr. R. W. Thorpe, Witham Cottage, Boston.

[Mr. Thos. Outhwaite officiated in the absence of one of the Judges.]

For the best bull above one year old, £20, Richard Dudding, Panton House.

For the best bull three years old or upwards, £7, Richard Dudding, Panton House; second, £3, John Lyun, Stroxtan.

For the best two-year-old bull, £7, J. R. Kirkham, Audleby.

For the best yearling bull, £8, F. R. Marshall, Elsham; second, £4, Richard Dudding, Panton House.

For the best bull calf under a year old, £5, William Smith, West Rasen; second, £3, G. F. Heneage, Esq., M.P., Hainton Hall.

For the best cow, more than four years old, having produced a calf at its natural time, within nine calendar months of the time of showing, £8, Charles Clarke, White House, Lincoln; second, £4, J. B. Stanhope, Esq., M.P., Revesby Abbey.

For the best heifer, three years old, having produced a calf at its natural time, within nine calendar months of the time of showing, £7, T. C. Maidens, Brinkhill.

For the best two-year-old heifer, £6, William Smith, West Rasen; second, £3, G. F. Heneage, Esq., M.P., Hainton Hall.

For the best one-year-old heifer, £6, Richard Dudding, Panton House; second, £3, Richard Dudding.

For the best she-calf under one year old, £4, Richard Dudding, Panton House; second, £2, Richard Dudding.

For the best milk cow, having produced a calf within nine calendar months of, and in-milk at the time of showing, the property of a cottager, or mechanic, occupying not more than ten acres, £4, George Foster, Staunfield; second, £2, John Wattam, Stourton.

SHEEP.

JUDGES.—Mr. Jno. West, Melton Ross, near Brigg.

Mr. Wm. Seymour, Friskney, Boston.

Mr. J. C. Calthorp, Withern, Alford.

For the best ram of any age, £15, Charles Clarke, Scopwick.

For the best shearing ram, £10, Charles Clarke, Scopwick; second, £6, Charles Clarke; third, £3, Thomas Cartwright, Dunston Pillar.

For the best two-shear ram, £8, Charles Clarke; second, £3, Charles Clarke.

For the best three-shear ram, £6, Charles Clarke; second, £3, Charles Clarke.

For the best pen of ten ewes, having suckled lambs up to the 10th of July, £8, Robert Deunis, Greatham; second, £3, Henry Grantham, Sturton.

For the best pen of ten shearing gimmers, £7, Henry Grantham, Sturton; second, £3, William Abraham, Barnethy-le-Wold.

For the best pen of ten she lambs, £5, George Griffin, West Ashby; second, £2, Thomas Grantham, Stixwold.

HORSES.

JUDGES.—Mr. Jno. Wood, Market Overton, Rutland.

Mr. Brady Nicholson, Sturton Grange, Garforth, Leeds.

Mr. Wm. Uppley, Bonhy, Barton.

For the best mare for breeding draught horses, £7, William Wells Cole, Newstead; second, £3, Edward Wells, Moorby.

For the best mare for breeding roadsters, £5, Thomas Bourne, Claxby Pluckacre. Commended.—John Wattam, Stourton; and Samuel I. Wellitt, Farforth House.

For the best cart filly, three years old, £5, Tom Carr Young, Belleau.

For the best cart filly, two years old, £4, Tom Carr Young, Belleau.

For the best cart filly, one year old, £3, James Graburn, Thorethorpe.

PIGS.

JUDGES.—Mr. Jno. West, Melton Ross, near Brigg.

Mr. Wm. Seymour, Friskney, Boston.

Mr. J. C. Calthorp, Withern, Alford.

For the best boar, large breed, £4, Thomas M. Richardson Hibaldstowe; second, £2, William Richardson, Ashby Puerorum.

For the best boar, small breed, £4, William Richardson, Ashby Puerorum.

For the best sow, large breed, having had a litter since 1st of March, 1860, £4, Joseph Allison, Horncastle; second, £2, Charles Fletcher, Hemingby.

For the best three breeding pigs of the same litter, not exceeding six months old, large breed, £3, R. E. Duckering, Northorpe.

IMPLEMENT PRIZE LIST.

JUDGES.—Mr. Thomas Outhwaite, Goldsboro' House, Knaresboro'.

Mr. R. G. F. Howard, Bishop Norton,

Mr. Jn. Bramley, Langrick, Boston.

For the best portable thrashing machine, first prize £10, to Mr. Thomas Foster, Lincoln.

For the best plough for light land, first and second prize £3 and £1, John Lyal, Grantham.

For the best plough for heavy land, first prize £3, John Lyal, Grantham.

Second of £1, J. Cook, Lincoln.

For the best subsoil plough, first prize £2, E. H. Bentall, Heybridge.

For the best drag, or cultivator, first prize £3, John Barton, Boston.

Second of £1, Mr. Hunter, Barbrook.

For the best scarifier, or stable-paring plough, first prize £3, E. H. Bentall.

Second of £1, Mr. Fogobee, Coleby.

For the best drill for general purpose, first prize £5, John Lyal.

Second, of £2, James Coultas, Grantham.

For the best ridge drill, first prize £2, James Clarke, Lincoln.

Second of £1, Thomas Brook, Market Rasen, Louth.

For the best liquid manure drill, first and second prizes £2 and £1, Mr. Watkinson, Louth.

For the best horse hoe for corn, first prize £2, Isaac Speight, Brigg.

Second of £1, H. Archer, Barrowby, Grantham.

For the best horse hoe for turnips, prize of £1, John Barton.

For the best grubber, first prize £2, A. Thompson, Keelby.

Second of £1, W. Ashton, Horncastle.

For the best set of harrows for light land, first prize £2, Amies and Barford, Peterborough.

Second of £1, W. Ashton, Horncastle.

For the best set of harrows for heavy land, first prize £2, Mr. Hunter.

Second of £1, E. H. Bentall.

For the best set of chain harrows, prize of £2, S. Woodroffe, Horncastle.

For the best waggon for general purposes, first prize £3, J. West, Melton, Ross.

Second of £1, Mr. Gell, Hemingby.

For the best two horse cart, prize of £2, Thomas Butters, Goulceby.

For the best one horse cart, prize of £2, John Cooke, Lincoln.

For the best clod crusher, prize of £2, Amies and Barford.

For the best roller for general purposes, prize of £2, Amies and Barford.

For the best dressing machine, prize of £3, Charles Grantham, Fulstow.

Second of £1, W. and R. Marshall, Kirky-on-Bain.

For the best corn blower, prize of £2, Messrs. Simpson and Co., Lincoln.

For the best chaff cutter, prize of £3, Ashby and Co., Stamford.

Second of £1, F. H. Bentall.

For the best turnip cutter, prize of £2, B. Samuelson, Banbury, Oxon.

For the best cake breaker, prize of £1, Amies & Barford.

For the best and most economical general mill, for crushing agricultural produce, prize of £3, Amies & Barford.

Second of £1, W. Barton.

For the best and most economical steaming apparatus for general purposes, prize of £3, Amies & Barford.

Second of £1, Messrs. Simpson & Co.

For the best set of waggon harness for four horses, cost to be taken into consideration, prize of £2, E. Sharpe, Horncastle.

For the best collection of hand tools, prize of £2, Amies and Barford.

Second of £1, John Hodson, Louth.

For other agricultural implements, and articles not strictly agricultural (exclusive of steam engines for thrashing), and to be disposed of at the discretion of the Judges, £25, awarded as follows:—viz.:

For patent hay tedder, £1, Ashby & Co., Stamford.

For horse rake, £1, Ashby & Co.

For turnip and mangold wuzzel drill, £2, W. Barton.

For horse works and gearing, £1, W. Barton.

For kitchen range and cooking requisites, 10s., W. Barton.

For root pulper, £1, E. H. Bentall.

For a small seed drill, £2, James Coultas, Grantham.

For a corn drill, 12 coulters, £2, Messrs. Coultas & Son, Grantham.

For reaping and mowing machines, £5, John Wyatt Day, Uleby.

For portable mill, £2, John Tye, Lincoln.

For corn screen, £2; for straw shaker machine, 10s.; and for apple parer, 2s. 6d., S. Woodrooffe, Horncastle.

For rotary harrows, £1, Ashby & Co.

For butter prints, 10s., Henry Bridges, London.

For washing machine, 10s., R. S. Brown, Burgh.

For weighing machine, 10s., C. Grantham, Louth.

For hay and potato fork, and knife, 10s., Jackson and Stothard, Kirton-in-Lindsay.

For steaming apparatus, 10s., Simpson and Co., Lincoln.

For a lifting jack, 15s., William Ashton, Horncastle.

For sheep clipping shears, 15s., Linley and Son, Sheffield.

For two pair of horse shoes, 2s. 6d., William Cooke, Wyberton, Boston.

COMMENDATIONS.

Highly commended.—John Hodgson, Louth, plough for light land; Thomas Lyal, Grantham, plough for heavy land; and T. & R. Trotter, Lincoln, twitch elevator.

Commended.—Wm. Procter, Lincoln, two horse cart; E. Sandall, Lincoln, waggon harness for four horses.

DURHAM COUNTY AGRICULTURAL SOCIETY.

The nineteenth annual meeting of the above society was held on Thursday, July 26, at Bishop Auckland.

The decisions differed not a little from those at Canterbury, and it will be seen that Duchess 77th won that challenge cup *pro tem*, whose predecessor was last year permanently adjudged to Mr. Richard Booth. One of the twins stood second to her in her class, but the Canterbury decision was "corrected," and the white beat the roan this bout; the other Canterbury prize heifer only got a high commendation. Four such rare animals were perhaps never seen in one class before. Mr. Ambler's Prince Talleyrand was first in his class, and Mr. Fawkes's yearling bull Gardoni, who was only commended at Canterbury, as well as the highly commended Great Eastern, were put before Reformer, who had the second prize there. In fact, the positions of the three were exactly reversed. In the cow class, Lady Pigot's Duchess of Glo'ster held her Canterbury place with Woodbine, and Mr. Richard Booth's Soldier's Bride kept up the Warlabby prestige among the yearling heifers. Mr. Rarey exhibited during the week, and had large audiences.

JUDGES FOR CATTLE, SHEEP, AND PIGS.—Mr. Unthank, Netherscales, near Carlisle; Mr. Raine, Morton Timmouth; Mr. Wilson, Woodhall, Northumberland.

HORSES.—Mr. Jonathan Pattison, Norwood, near Gateshead; Mr. Gibbon, Burnfoot, near Carlisle; Mr. J. Booth, Killyby.

IMPLEMENTERS.—Mr. Thomas Wetherell, Mr. Givens, and Mr. Stratton.

The following is the list of prizes:—

CATTLE.

A PIECE OF PLATE OF THE VALUE OF ONE HUNDRED GUINEAS.

The prize to be held until the Society's Show next year by the owner of the best Shorthorned breeding animal (of either

sex) exhibited in the show-yard, and to become the absolute property of the person who shall win it three years in succession.—Captain Gunter's two-year-old heifer, "Duchess 77th."

A PIECE OF PLATE OF THE VALUE OF TWENTY-FIVE GUINEAS.

The prize to be held until the Society's Show next year by the owner of the best Shorthorned breeding animal (of either sex) the property of a tenant farmer in the county of Durham, exhibited in the show-yard, and to become the absolute property of the person who shall win it three years in succession.—Jeffrey Bulmer's aged bull, "Earl of Derby 2nd."

For the best Bull of any age, £20, Henry Ambler, Watkinson Hall, near Halifax, "Prince Talleyrand." Second prize, £5, Jeffrey Bulmer, Aislaby Grange Farm, near Yarm, "Earl of Derby 2nd." Highly commended, Mr. Lambert's "Squire Annandale."

For the best Bull under 2 years old, £15, F. H. Fawkes, "Gardoni." Second prize, £5, Mr. Henry Ambler, "Great Eastern." Commended.—F. H. Fawkes, Farnley Hall, near Otley, Yorkshire, "Reformer;" and Samuel Wiley, "Yorkshireman."

For the best Cow in-milk or calf, having had a calf within the last twelve months, £10, Lady Pigot, Branches Park, near Newmarket, "Duchess of Gloucester." Second prize, £5, Henry Ambler, "Woodbine." Commended.—Thomas Jolly, Warlabby, Northallerton, "Rosabel."

For the best 2 years old Heifer in-calf, £6, Captain Gunter, The Grange, Wetherby, "Duchess 77th." Second prize, £3, Captain Gunter, "Duchess 79th." Highly commended.—Captain Gunter's "Duchess 78th," Mr. Ambler's "Wood-rose," and Mr. Richard Booth's "Queen of the Vale." Commended.—Lady Pigot, "Stanley Rose;" Lady Pigot, "Empress."

For the best 1 year old Heifer, £5, Richard Booth, "Soldier's Bride." Second prize, £2, Jeffrey Bulmer, "Princess Royal 2nd."

For the best Bull Calf under 12 months old £3, Thomas Jolly, Rhessus. Second prize, £1, Joseph Dent, Neasham Hall Farm.

For the best Heifer Calf under 12 months old £3, Thos.

Jolly, Roseneath. Second prize, £1, Jeffrey Bulmer. Third, Princess Alice.

LEICESTER OR LONG-WOOLLED SHEEP.

For the best Ram of any age £5, Joseph Simpson, Spottforth Park. Commended: Joseph Simpson.

For the best Shearling Ram £5, James Newhouse, Caldwell, Darlington. Commended: James Newhouse.

For the best Per. of Five Shearling Gimmers £3, Samuel Wiley.

PIGS.

For the best Boar, large breed £3, H. Marshall, Sands House, Durham.

For the best Boar, small breed £3, George Mangles, Givendale, Ripon.

For the best Sow, large breed £2, Wm. Braithwaite, Freeholder's Home Darlington

For the best Sow, small breed £2, George Mangles, Givendale.

For the best Pig, the property of a Cottager £1, Robert Stockdale, Church Row, Darlington. Second prize, George Thornton, Brandon. Third prize, James Towers, West Auckland.

HORSES.

For the best Saddle Mare £5, Colonel Stobart, Etherley House, Bishop Auckland.

For the best Harness Mare £5, John Smith, Long Newton. Highly commended: Thomas Charlton, Sedgfield.

For the best Cart Mare £5, William Proud, Springwell House, Kirk Hammerton, York.

Sweepstakes of 5s. each, with £2 added by the Society for the best Foal for the Saddle, George Nellist, East Thiekley, Shildon.

Sweepstakes of 5s. each, with £2 added by the Society for the best Foal for Harness, J. W. Pease.

Sweepstakes of 5s. each, with £2 added by the Society for the best Cart Foal, John Turner.

For the best 3 years old Colt or Filly for the Field £5, J. W. Pease.

For the best 3 years old Cart Colt or Filly £5, John Edward Lee.

For the best 2 years old Colt or Filly for the Field £4, George Leng, Low Barn, near Barnardcastle.

For the best 2 years old Colt or Filly for Harness £4, John Wilkinson Humble, Hartburn, Stockton-on-Tees.

For the best 2 years old Cart Colt or Filly £4, William Dickman, Lumley.

For the best 2 years old Colt or Filly for the Field £3, Col. Stobart. Highly commended: John Robinson.

For the best Yearling Colt or Filly for Harness £3, Geo. Leng.

For the best Yearling Cart Colt or Filly £3, Joseph Linsley.

For the best Hunter, Mare, or Gelding under 8 Years of Age, qualified to carry 12 stones with Hounds, and warranted Sound at the time of entry £10, John Smith, Long Newton.

IMPLEMENTS:

William Sawney, Beverley, £1 for the best Blowing and Hariff Machine.

John Teasdale, Bemeston, Bedale, £1 for Corn Drill, Turnip Drill, and Mangold Wurtzel Drill.

North of England Implement Company, Stockton-on-Tees, £1 for Samuelson's Improved Double-action Hay-making Machine; and £1 for general stand.

Samuel Tuke Stephenson, 90, High-street, Stockton-on-Tees, £1 for warranted net work.

Ten Shillings was awarded to Mr. Cummins, for Garden Chairs.

AGRICULTURAL PROGRESS IN AUSTRALIA.

One of the results of the late Statistical Congress is the accumulation of a large amount of very valuable statistical information from different countries, and the presentation to the Government of many elaborate official papers connected with the progress of States and Colonies, furnished by the several delegates. These, we hope, will be published at an early date, and not slumber on the shelves of the Board of Trade. The great interest of these papers is their freshness and authenticity, the information, for the most part, being brought down to the close of last year, instead of being, like most official papers, two or three years in arrear; at least this is certainly the case as respects the colonial reports handed in by the delegates for Australia, the Cape of Good Hope, Ceylon, Mauritius, British Guiana, Jamaica, &c. The eight delegates from the Australian and New Zealand colonies (who made a collective report, to economize time at the meeting,) have wisely taken the matter of prompt publication in their own hands, and have placed before the public a most valuable and instructive condensed report of the social progress and present condition of the colonies with which they are identified. To this document, which will have only a limited circulation, we would direct the attention of our readers as containing many important facts which come stamped with authority. We need not advert to the historical details, mining progress, and other particulars, but shall refer chiefly to the agricultural condition of the colonies, identified

as they now are so closely with this country as producing and consuming States. One extraordinary fact we may primarily mention, that will startle many by its magnitude, and that is that the gold production of the Australian colonies since 1851 has already exceeded in value £101,000,000! The effect of this gold yield, and of the immigration it has induced, has been considerable, especially in Victoria. There the wages of skilled labour prior to the gold mining were 6s. or 8s. a-day; they rapidly advanced during two years, and for a short time stone-masons and some others were receiving 40s. a-day. After a rapid fall there has been, until lately, some degree of steadiness at about one-third of these singularly high rates. But one may infer that there is evidently another level yet to be reached to, under this continuous development of the colony, although the classes affected have the usual reluctance to regard their own case in its downward aspect. In New South Wales and other colonies these rates of wages have been less extravagant as well as fluctuating. The wages even at their highest rates were not unrequired. While some articles of the import market were even superabundant, other things, more dependent on colonial production, but not less necessary, bore enormous prices. Cottages at £400 a-year were the natural result of bricks at £12 per 1,000, instead of the previous rate of 20s.; while water at 5s. a cask, and firewood at several pounds a load, instead of scarcely as many shillings, made havoc of

those who were dependent on fixed salaries. The luxury of a cab at £6 a day or 10s. a drive was proverbially abandoned to the labourer and the gold-digger. Oats brought a guinea a bushel, cabbages assumed a new dignity at 2s. 6d. each, and in a great pastoral country fresh butter sold for 5s. a pound. These were town prices, those of a seaport, with a large external trade; what then were the prices of the far interior, now alive with mining population, in addition to its previous pastoral occupants? The interior indeed was well nigh inaccessible under this state of things. When the price of flour was £25 a ton at Melbourne, it was £200 at the great gold field of Bendigo, one hundred miles inland, where in 1852 no less than 50,000 mouths had to find sustenance. Long lines of heavily-laden drays were dragged by teams of oxen through the winter's rain and mud at a charge of 20s. per ton per mile. The country hotels left a very unfavourable impression in more respects than one upon the traveller's finances. 40s. a night for a horse gave to the animal even a greater account than his master in the morning's bill of fare. If our countrymen will boast, as they sometimes will, that a bottle of English porter is equal to the best champagne, they enjoyed in Victoria the pleasure at least of being charged an equal price. All these difficulties are now comparatively only in the past. Bendigo has now a large incorporate town (Sandhurst), with churches and schools, banks and hotels, theatres and racecourses, and a macadamized road has long bridged the space that separated Melbourne, while a substantial railway makes rapid approaches between the same points; but the difficulties that followed the gold discoveries were serious, and long felt by some of the established interests of the country. The pastoral settlers, who had already overspread all available tracts within the colonial boundary, were crossing the Murray, and ascending far up the Darling with their flocks and herds, when the disorders of the new era suddenly overtook them. The pioneers halted or retraced their steps from regions that had become practically isolated from every market. The labouring class deserted in large numbers, and the sheep everywhere caught infectious diseases, owing to the continual movement of the flocks indiscriminately, healthy or otherwise, to meet the urgent wants of the large mining population. From other causes, therefore, of a less satisfactory character than the increased consumption of animal food, there was a serious diminution in the quantity of sheep and in the production of wool, and that too in the face of a large importation which had commenced from New South Wales. But now, with past difficulties in great measure overcome, and a more promising future in view, we recall an incident in colonial enterprise that has had no small share in this promise of the future. The river Murray debouches within the South Australian territory; and that colony, taking possession, as it were, of the noble stream, adopted the first measures for its inland navigation. In 1853 the first steambot made its way to a point 150 miles above Swan Hill in Victoria, and not less than 1,000 miles

from the sea mouth. Subsequent attempts were still more successful; and a small fleet of steamers and lighters now periodically receives from more than twenty townships the wool and other produce of the adjacent parts of the three colonies.

The area of land under crop has been rapidly extending, especially in the younger colonies. The crops include artificial hay. The extent under crop for 1858 was, in

	Acres.
New South Wales	217,443
Victoria (taken March, 1859)	298,960
South Australia	264,462
Tasmania.....	229,480
New Zealand	140,965

Total

1,151,319

The cultivation of the vine is already considerable; the number of acres for 1858 being, in New South Wales, 1,180; in South Australia, 1,626; and in Victoria, 547. Several of the wines of New South Wales took a distinguished place at the Great Paris Industrial Exhibition of all Nations, when brought into competition with the choicest growths of European vineyards. The cultivation of maize, an article of increasing importance in commerce, is now very large, and attended with great success in New South Wales.

One fact of interest is the large proportion of wheat lands as compared with that of other countries; arising, no doubt, chiefly from the fact of the great extent to which the native grasses are made use of for the live stock, as yet almost to the exclusion of cultivated food. The wheat of the Australian colonies obtained first-class medals at the Paris Exhibition, and was most favourably reported upon. For South Australia the wheat acreage is 71 per cent. of the whole area of land under crop; while in Ireland it is 11 per cent., and in Scotland only 6 per cent. The yield of wheat is remarkably small; as, for instance, 12 bushels per acre in South Australia in 1857. The previous year, however, which was more favourable as to moisture, gave 18 bushels. New South Wales ranges between these quantities. Victoria illustrates the importance of genial seasons. The following yield per acre of wheat for four years shows a gradual annual diminution, caused by diminished or less seasonable supplies of rain:

Year	1856.	1857.	1858.	1859.
Bushels, per acre ..	26.9	23.2	20.7	19.9

The average in Scotland in 1856-7 was 27½ bushels per acre.

A striking peculiarity of Australia is the large area of its naturally-grassed country. Most of the waste lands therefore are, in their unimproved state, available for pasturage, and are leased to the pastoral or squatting interest, yielding now a considerable rental. Suitability of climate and country have increased the live stock of these colonies from a few imported specimens at the commencement, to 350,000 horses, 3½ millions of cattle, and 19 millions of sheep; and the produce of the Australian wool has become of vital importance to commerce and manufactures, the quantity exported annually to the United Kingdom and other

places amounting to nearly sixty millions of pounds weight. The high average weight of a fleece, to be inferred from this statement, is in some measure to be accounted for by the fact that a portion of the wool from these colonies is exported in the grease.

It may be not uninteresting to trace the progress of this staple article from the first introduction of merino sheep into New South Wales, by the late John Macarthur, in the year 1797.

In the year 1807 New South Wales exported to the United Kingdom	245
In 1820	99,415
In 1835, New South Wales and Tasmania to all countries	5,500,000
In 1845, Australian colonies to United Kingdom only	24,177,315
In 1855, ditto	49,142,306
In 1859, ditto	53,700,542

The quantities for 1845, '55, and '59 are taken from the Board of Trade Returns, and are therefore for the

United Kingdom only, excluding the amount exported to France and the United States.

Here, then, are important facts for reflection and consideration. These infant colonies, for such they really are (although strapping bantlings), are the wonders of the age; and are not only able to shift for themselves, but also to give us a helping hand with gold and wool in return for the labour they have taken from us. The external trade of these Australian colonies (imports and exports) now exceeds 46 $\frac{3}{4}$ million pounds, with a population of little more than a million. They have upwards of £12,000,000 deposits in their banks, and a local coinage exceeding £5,500,000, with a united annual public revenue of five and a-half millions sterling. These statistics indicate a substantial advancement, and best testify to the industry of these distant and scattered British settlements. We can but echo the motto of the elder colony, and say, "Advances Australia."

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

A CATALOGUE OF THE IMPLEMENTS EXHIBITED AT THE CANTERBURY MEETING.

HARE and Co., of 31, Essex-street, Strand, London.

Specimen of an illuminated title page, show card, or circular; specimens of agricultural machinery printed in colours; specimen illustrations of agricultural implements and machines; specimen of an advertising sheet, suitable for railway stations, &c., designed, lithographed, and printed by the exhibitors.

SAML. E. RANSOME and Co., of 31, Essex-street, Strand, London.

Long's non-poisonous specific, price 4s. 6d. per gallon, ready for use; Long's foot-rot and general lotion, price, pints 2s. 6d., half pints 1s. 3d. each, invented by Joseph Long, of London, improved and manufactured by Barry Brothers, of Meriton's-wharf, London; specimen of sheepskin with fleece; improved wrought iron sheep dressing fork, price 15s., manufactured by the exhibitors; Schaeffer's patent steam gauge of 60lbs. pressure, in broad brass case, price £3 5s.; Schaeffer's patent steam gauge of 60lbs. pressure, in narrow brass case, price £2 15s.; Schaeffer's patent steam gauge of 100lbs. pressure, 4 inches diameter, price £2 15s.; and Schaeffer's improved counting machine with four figures, price £2 13s. 6d., invented and manufactured by Schaeffer and Co., of Magdeberg; British patent steam pressure gauge, in iron case, price for either 4, 5, or 6 inches diameter £2 15s., invented, improved, and manufactured by Wallis, Langford, and Co.; (new implement) portable hoisting and travelling cranes, on wheels, price, to lift 4 cwt. £3 10s., 7 cwt. £12, 10 cwt. £17, invented and manufactured by J. Joyce; model of self-acting alarm whistle for steam boilers, price £2 7s., invented by Wm. Johnson, and manufactured by the exhibitors; sample of patent boiler composition for destroying and preventing incrustation in steam boilers, price £2 5s. per cwt., invented and manufactured by W. Buckingham; sample of Newcastle vulcan cement for all kinds of steam joints and pipes, price £32 per ton; set of patent Argand fire bars, price 18s. per cwt., invented and manufactured by Martin and Co., of London (commended by the judges at the Warwick Meeting of the Royal Agricultural Society, in 1859); lifting jack, with brass bush and cast iron frame, price, to lift two tons £1 16s.; and a lifting jack, in cast iron frame, with wrought screw and iron bush, price, to lift four tons £2, manufactured by the exhibitors; patent English knuckle washing machine, price £3 5s., invented by Grey and Co., and manufactured by the exhibitors; improved roller washing machine, price £2 12s. 6d.,

invented, improved, and manufactured by the exhibitors; wringing and mangling machine, price £3 10s., manufactured by the exhibitors; wringing machine, with elliptic springs and adjusting screw, price £2 5s.; nest of two corn bins, price, six bushels £1 6s. 6d., eight ditto £1 11s. 6d.; and a nest of two flour bins, price, two bushels 16s., four bushels £1 1s., manufactured by the exhibitors; patent filter or purifier, with enamelled case and brass tap, price £1; and a patent filter or purifier, in earthen case, with brass tap, price £1 5s., invented and manufactured by Frederick Ransome, of London; a pocket or sportsman's filter, price 3s. 6d., invented and manufactured by the exhibitors; Nye's patent mincing and sausage making machine, price £1 10s. and upwards, invented and manufactured by S. Nye; Lyon's patent mincing and sausage making machine, price £1 10s. and upwards, invented and manufactured by A. Lyons; suet chopper or vegetable chopper, prices, 3s. 6d., 5s., and 6s.; (new implement) registered mouse trap, price 6s. 6d.; (new implement) improved rat trap, price 7s.; and (new implement) improved mole trap, price 2s., invented and manufactured by Colin Pullinger; (new implement) Ransome's "Gem" knife cleaner, price £1 1s., invented and manufactured by Robert James Ransome, and improved by the exhibitors; Loysel's patent hydrostatic percolator, in plain tin, prices, one pint 6s., two pints 7s. 6d., three 9s., four 11s. 6d., six 14s., and upwards, invented by E. Loysel, of Paris; patent air pressure churn, invented by S. C. Salisbury, New York, and manufactured by the exhibitors.

WILLIAM THOMSON, of 46, Canal-street, Perth.

Registered four wheeled dog cart, price 55 guineas; and waggone, convertible into a four wheel dog cart, price 60 guineas, invented and manufactured by the exhibitors.

W. AUGUSTUS MUNN, of Throwley House, near Faversham, Kent.

(New implement) reaping machine (new patent for knife, finger guides and beam, reel, platform sheaf and swathe, and side delivery), price, without the rake at side £36 10s., if rake £2 10s. extra, also as a grass or clover mower or reaper, extra £7 10s. for knives, &c., invented and improved by the exhibitor, and manufactured by Mr. J. B. Sharp, engineer, &c., of Faversham, Kent; (new implement) horse hoe or turnip thinner and insect destroyer, price £12, invented and improved by the exhibitor, and manufactured by Frederick Tindall,

machine maker, of Preston, near Faversham, Kent (commended at the Warwick Show by the judges of the Royal Agricultural Society of England, in July, 1859).

FREDERICK TINDALL, of Preston, near Faversham, Kent.

Corn and seed drill, price £17 10s., seed barrel 15s. extra, if with five 5-in. hoes and three 13-in. ditto for hoeing £1 5s. extra, invented, improved, and manufactured by the exhibitor (obtained the prize at the Kent Show, 1853 and 1859); nine rowed Suffolk drill, price, including nine shares, with wrought stems for flect drilling, and shares for deep drilling, double tins, and seed barrel, £24, for carriage extra £4 10s., improved and manufactured by the exhibitor; two-rowed one horse manure, mangold, and turnip seed drill, price £6, invented, improved, and manufactured by the exhibitor; corn dressing machine, price £8 8s. and upwards, improved and manufactured by the exhibitor; blowing machine, price £5 5s., improved and manufactured by the exhibitor; two horse driving gear, price £14 14s., manufactured by the exhibitor; one horse driving gear, price £12, improved and manufactured by the exhibitor; improved chaff cutter, by Picketsley and Sims, of Leigh, price £7 7s.; patent horse hoe and insect destroyer, price complete £12, invented by Major Munn, of Throwley House, and manufactured by the exhibitor (commended at the Royal Agricultural Society's meeting at Warwick, 1859, and highly commended at the Kent Cattle and Implement Show, 1859).

W. M. CRANSTON, of 58, King William-street, London Bridge.

Wood's improved grass mowing machine, price £22 (received the first prize of the Chicago Agricultural Society in 1859. Not worked at Warwick); Wood's prize combined reaping and mowing machines, price £35, invented and manufactured by W. A. Woods, of New York.

BURGESS and KEY, of 95, Newgate-street, London.

Reaping machines, price at the works £42 10s., invented by C. H. McCormick, of Chicago, improved and manufactured by the exhibitors (the Society's prizes were awarded in 1855, '56, '57, and in 1859 the prize of 1000 f., the gold medal, and great gold medal of honour at Paris; prizes of the Highland, Yorkshire, Lincolnshire, North Northumberland, Hexham, and Kent Societies); Grass mowing machine, price at the works £30, invented by J. A. Allen, of New York, improved and manufactured by the exhibitors (obtained the following medals: First prize of the Royal Agricultural Society of England; first prize of the Highland and Agricultural Society of Scotland, and also of the Norfolk Society); patent American churn, price, to make 3lbs. £1 10s., 4lbs. £1 15s., 8lbs. £2 2s., 10lbs. £2 5s., 12lbs. £2 10s., 14lbs. £2 15s., 18lbs. £3, and 20lbs. £3 3s., invented by C. J. Anthony, of America, improved and manufactured by the exhibitors (received prizes at all the meetings of the Royal Agricultural Society since its introduction, including the last one at Chester, also the Great Exhibition in 1851); force and lift pump, or farm fire engine, price on stand and wheels £21 5s., invented by Kase, of America, improved and manufactured by the exhibitors; single action turnip cutter, price £4 10s., and double action turnip cutter, price £5 10s., invented by the late James Gardner, of Banbury, improved and manufactured by the exhibitors; galvanized iron lift pump, price £2 10s., improved and manufactured by the exhibitors; package of adjustable scythes, price 10s. each, invented by Robert Otway, of Lambeth, and manufactured by the exhibitors; packet of Boîtes-à-Houppes, price 2s. 6d. each, invented by Ouin and Franc, of Paris, and manufactured by the exhibitors.

JAMES TASSELLI, of Perry-court, near Wye, Kent.

(New implement) two horse hop garden nidget, improved by the exhibitor, and manufactured by John Ladd and Edward Haycock of Wye, price £5 5s.; one horse hop garden nidget, price 3l. 3s.

GEORGE ELGAR TOOMER, of Hoaden House, Ash-next-Sandwich, Kent.

(New implement) iron Kent turn-rise universal plough, invented by the exhibitor, and manufactured by Druy & Biggleston, of Canterbury, price 6l.

POWIS, JAMES, and Co., of 26, Watling-street, City, and Victoria Works, Blackfriars-road, London.

Patent combined machine for mortising, tenon cutting, and boring, price 21l.; hand sawing machine, complete with heavy framing and two saws, also fitted with new patent for prevention of breakage to saws, 38l.; circular-saw bench, price, with 24 in. saw, 40l.; patent steam power mortising machine, price, with tools, 70l., and high pressure horizontal steam engine, of four horse power, improved and manufactured by the exhibitors, price 60l.; and two horse portable steam engine, invented, improved, and manufactured by James Haywood, jun., of Derby, price 70l., horse shafts 30s., pulley 15s. extra.

The Right Hon. Lord LEIGH, of Stoneleigh Abbey, near Kenilworth, Warwickshire.

Field gate, improved and manufactured by the exhibitor, price 1l. 4s.

F. McNEILL and Co., of The Asphalted Roofing Works, near Baulhill-row, London.

Patent asphalted roofing felt, manufactured by the exhibitors, price 1d. per foot; several models and specimen framings of roofs.

EBENEZER THORNTON, of Huddersfield, Yorkshire.

Patent washing, wringing, and Mangling machine, invented by John Rowbottom, of Halifax, improved by John Rowbottom and exhibitor, and manufactured by John Rowbottom, price 12l. and upwards.

JOHN WARNER and Sons, of Crescent, Jewin-street, London.

(New implement) double action 3 in. force pump, mounted on barrow with wheels, price 6l. 6s.; (new implement) double action 3 in. force pump, for water cart, price 5l.; overshot water wheel and double action pump, price 20l.; large horse wheel frame, with wheel and pinion, price 38l. 10s.; horse wheel frame, with double crank, slings and guides, price 25l. 10s.; small horse wheel frame, with double crank, slings and guides, price 20l.; cast iron engine frames, with flywheel and handle, price 10l. 10s. and upwards; cast iron frames, with a 3½ in. brass force pump and copper air vessel, price 18l. 10s. and upwards; 3 in. treble full water way pump, price 28l.; 3½ in. double full waterway brass pump, price 19l. 10s. bright, 18l. 10s. plain; 3 in. full waterway brass deep well pump, price 11l.; double barrel 5 in. force pump or irrigator, on four strong wheels, price 21l.; double barrel 5 in. liquid manure or sewage pump, price 27l.; irrigator, to be worked by horse power, price 45l.; 3½ in. brewers' force or jig pump, price 11l. 10s.; ornamental pump case, price 6l.; pendulum motion pump case, price 6l.; 3 in. working barrel, price 1l. 8s.; 3 in. working barrel, with double doors, price 1l. 15s.; suction rose, for a 3 in. pump (No. 32), price 7s.; 3½ in. garden pump (No. 34), price £3; 3 in. pump case, for deep wells, price £1 15s.; patent 2½ in. cast iron lift pumps, price £1 10s. each, and upwards; portable 4½ in. liquid manure and general pumps, price £2 15s. each, and upwards; 4½ in. liquid manure pump, in galvanized iron, price £2 5s.; 2½ in. brass deep well pumps, on square tail, price £4 1s. and upwards; hydraulic water ram, price £11 10s.; patent beer or cider engine, with opal handle, price £2 12s.; strong wheel and pinion frame, with 6 in. pump, fitted with rigger for steam power, or two handles for manual labour, price £56; 24 gallon oval oak tub garden engines, with registered spreader, price £6 18s. and less, according to size; patent conservatory pump, price £2 12s.; portable fire engine in galvanized iron pail, price £5; metallic string, price 10d. to 1s. 2d. per lb.; board of syringes, price 9s. to 20s.; hand fire engine, price £3 3s.; fire engine for 4 or 6 men, in galvanized iron cistern, price £24; swing water barrows, price £3 3s. each; board of fountain designs, price from 5s. to 25s.; coil of ½ in. Indiarubber and canvas hose pipe, with Warner's spreader, price £1 17s. 6d.; straight brass branch pipe and spreader, with globe barrel cock, price 7s.; improved branch pipe with internal cock and spreader, price 9s.; bundle of taper branch pipes (all sizes), price from 5s. to 45s.; bundle of indiarubber hose pipe, price from 5d. to 5s. per foot; bundle of sheep and cattle bells with leather straps and buckles, price 12s. to 38s. per set; and alarm bell mounted on iron frame, price £5 15s., all improved and manufactured by the exhibitors.

THOMAS BRADFORD, of Cathedral-steps, Manchester, and 63, Fleet-street, London.

Patent washing machines, price 3*l.* 10*s.* and upwards; patent combined washing, wringing, and mangling machines, price 8*l.* 8*s.* and upwards; patent wringing and mangling machine, price 3*l.* 3*s.*, all invented, improved, and manufactured by the exhibitor; patent wringing and mangling machines, price 4*l.* 4*s.* and upwards, all invented and manufactured by the exhibitor; the original mangle, with rack motion, price 10*l.* 10*s.*, and improved portable boiler with copper pan, price 4*l.* 4*s.*, both improved and manufactured by the exhibitor; patent churn, price 5*l.* 15*s.*, and patent knife-cleaning machine, price 8*l.* 8*s.*, both invented and manufactured by the exhibitor; the London cooking range, with double or single oven, price 18*l.* 18*s.*, invented and manufactured by The Cooking Range Company, London; two horse power portable steam engine, with vertical cylinder, pipe with boiler felted and lagged 75*l.*, horse shaft 30*s.*, pulley 15*s.* extra, invented, improved, and manufactured by Jas. Haywood, jun., of Derby.

HENTON and SON, of 7, Bridge-street (Surrey side), near Westminster Bridge, London.

Six patent elastic saddles, price 5*l.* 10*s.*, and three ladies' patent side saddles, price 8*l.* 8*s.* and 9*l.* 9*s.*, all invented and manufactured by the exhibitors; two side saddles, price 8*l.* 8*s.* and 9*l.* 9*s.*, improved and manufactured by the exhibitors; two New South Wales saddles, price 4*l.* 4*s.* and 4*l.* 10*s.*; one Cape saddle, price 4*l.* 10*s.*; one single Brougham harness, price 11*l.*; and twelve Melton stands for drying saddles, price 12*s.* each, all manufactured by the exhibitors; patent gutta percha jockings, price 3*l.* each; patent straps to prevent a horse from crib biting, price 18*s.* each; patent safety vulcanized india-rubber springs, price 4*s.* and 6*s.* each; patent vulcanized india-rubber spring, price per pair of girths with patent springs 10*s.*, a girth strap with patent spring 3*s.*; and patent vulcanized india-rubber spring hook, price double action springs 9*l.*, 1*s.* 3*d.*, to 1*s.* 9*d.* each, all invented and manufactured by S. Blackwell, of 259, Oxford-street, London.

PHILIP and HENRY PHILIP GIBBONS, of Wantage, Berkshire.

Portable combined thrashing machine for preparing the grain for market, price 112*l.*; portable combined double blower thrashing machine, price 105*l.*; portable combined double blower thrashing machine for small occupations, price 83*l.*; and portable combined single-blower thrashing machine, price 65*l.*, all invented, improved, and manufactured by the exhibitors.

THOMAS HALLOWS, of Tunbridge, Kent.

Bundle of hop poles, cresoated in 1853, and in constant use ever since, charge for dipping 3*s.* 6*d.* per 100; two sheep gates, cresoated in 1852, made of oak blindrod, the gates in constant use, charge for dipping 1½*d.* per gate.

THOMAS BIGG, of Leicester House, Great Dover-street, near Southwark, Surrey.

Improved sheep-dipping apparatus on wheels, complete, with crave and cradles, price 14*l.*, and sheep-dipping apparatus, with iron bar drainer, price 6*l.*, both invented, improved, and manufactured by the exhibitor; sheep-dipping apparatus, with wooden bar drainer, price 3*l.*, invented and manufactured by the exhibitor.

BURNEY and BELLAMY, of Mill-wall, London.

Wrought iron corn cilo, or granary, price 9*s.* per quarter, invented and manufactured by the exhibitors; wrought-iron cistern, price 2*d.* to 5*d.* per gallon, manufactured by the exhibitors; wrought iron cattle trough, 50 gallons (commended at the Salisbury show), price 1*l.* 10*s.*, and strong wrought iron corn bin, price 3*l.*, both invented and manufactured by the exhibitors; galvanized wrought iron cistern, price 5*d.* to 9*d.* per gallon; wrought iron pig trough, price 3*s.* 6*d.* per foot; and wrought iron melter for tar or cresote, price 20*l.*, all manufactured by the exhibitors; galvanized iron cistern with patent inner reservoir of filtered water, price 5*l.*, invented by James Rae, of London, and manufactured by the exhibitors; wrought iron liquid manure or water cart, price 20*l.*, and wrought iron sheep drinking trough on wheels, contents 125 gallons, price 4*l.*, both improved and manufactured by the

exhibitors; wrought iron cattle troughs, contents 75 gallons, price 2*l.*, 115 gallons 2*l.* 15*s.*

ARTHUR LYON, of 32, Windmill-street, Finsbury, London.

Machine for pulping raw roots, price 6*l.* 16*s.*; machines for pulping steamed roots for feeding pigs, &c., price 7*l.* and upwards; machine for cutting carrots, &c., for horses, and mixing food for hounds, price 6*l.* 10*s.*; machine for cutting meat and making sausages (fourth size, three specimens), price 6*l.* 6*s.* and less; machine for mincing meat, fish, and vegetables, also making sausages (first size, 14 specimens), price 1*l.* 10*s.*; machine for the dinner table, to assist digestion, price 2*l.* 2*s.*; knife and board for chopping suet, parsley, &c. (fourth size, eight specimens), price 6*s.* 6*d.*; knife for slicing cucumbers and potatoes, &c. (twelve specimens), price 1*s.*; machine for paring, coring, and slicing apples (six specimens), price 8*s.* 6*d.*; canteen or picnic case (six specimens), price 8*s.* 6*d.*; set of handsome bronzed iron fruit plates (six specimens), price 5*s.*; and bundle of shop or butchers' knives (three specimens), price 1*s.* 8*d.* each, all invented, improved, and manufactured by the exhibitor; set of lady's garden tools (four specimens), price 6*s.* 6*d.*, manufactured by Johnson of Sheffield; bread cutting machine (two specimens), price 15*s.*, invented, improved, and manufactured by the exhibitor; improved horse brush (four specimens), price 5*s.* 6*d.*, and patent improved cloth brush (four specimens), price 3*s.* 6*d.*, both invented, improved, and manufactured by Mr. Childs, of Providence-tow, Finsbury.

THE TRUSTEES of W. CROSSKILL, of Beverley Iron Works, Beverley, Yorkshire.

Five horse power portable bolting, thrashing, and straw shaking machine, price with driving gear and extra carriage for thrashing part £82 10*s.*, invented, improved, and manufactured by the exhibitors; portable corn mill, for steam or water power, price £45, improved and manufactured by the exhibitors; patent compound action mills, price £15 and upwards, invented by J. Patterson, of Beverley, and manufactured by the exhibitors; improved Yorkshire bone mills, for steam or water power, price £85 and £165, or with extra shaft, gear, and fly wheel, for driving with a strap from a portable steam engine, £185 (awarded by the Royal Agricultural Society of England the first prize of £10 at Chester); and improved bonedust mill, price £75 (awarded the first prize of £5 by the Royal Agricultural Society of England at Chester), improved and manufactured by the exhibitors; (new implement) improved bonedust mill, price £80, invented, improved, and manufactured by the exhibitors; improved reaping machine, price £42, with two complete knife bars and six extra knives (awarded by the Royal Agricultural Society of England the first prize of £20 at the adjourned trial—two days—of the Gloucester meeting at Pusey, £20 at the adjourned trial—two days—of the Chelmsford meeting at Boxed Ledge, and £6 at Salisbury), invented by the Rev. P. Bell, of Carmylie, and improved and manufactured by the exhibitors; (new implement) improved root cutter, price £8 10*s.*, invented, improved, and manufactured by the exhibitors; (new implement) patent root pulper, price £6 15*s.*, (new implement) patent metal horse collar, price £1 10*s.*; and (new implement) patent plough drill, price £2 5*s.*, if with wood plough fitted with wheels £5 10*s.*, invented by Charles Lambert, of Sunk Island, and improved and manufactured by the exhibitors; improved patent clod crusher and roller, price—2 feet 6 inches diameter and 6 feet 6 inches wide £18, 6 feet wide (the size exhibited) £16 10*s.*, 5 feet 6 inches wide £15, 5 feet wide £13 10*s.*, travelling wheels £2 extra (awarded by the Royal Agricultural Society of England the first prize of £20 and the silver medal at Southampton, £10 at Shrewsbury, the special gold medal at a meeting of the Council after the Newcastle show, the silver medal at Carlisle, £5 at Chelmsford, and £2 at Warwick); also awarded the Council great medal at the Great Exhibition of 1851), invented and improved by W. Crosskill, and manufactured by the exhibitors; improved field roller, price—6 feet wide £15 10*s.*, 5 feet 4 inches wide (the size exhibited) £14 10*s.* (awarded by the Royal Agricultural Society of England the first prize of £5 at Warwick), improved and manufactured by the exhibitors; pair of patent cart wheels and axle, price £7 and upwards (awarded by the Royal Agricultural Society of England the silver medal, for combining good workmanship with cheap-

ness, at Derby, and again at Newcastle, improved by W. Crosskill, and manufactured by the exhibitors; Newcastle prize or model one horse cart, price £15 15s., or without shelving £14 5s. (awarded by the Royal Agricultural Society of England the silver medal at Lincoln, and the first prize of £5 at Newcastle), invented by W. Crosskill, improved and manufactured by the exhibitors; Lincolnshire prize one horse cart, price £14, with harvest ladders £1 10s. extra (awarded the first prize of the North Lincolnshire Agricultural Society at Grimsby, 1859), and improved two horse cart, price £17 10s., improved and manufactured by the exhibitors; York prize one horse cart, price £13 10s., or without shelvings £12 (awarded by the Yorkshire Agricultural Society the first prize in 1853), invented by W. Crosskill, improved and manufactured by the exhibitors; improved Bedfordshire one horse cart, price £15 10s., improved and manufactured by the exhibitors; improved harvest cart, price £14 (awarded the first prize of the Highland and Agricultural Society of Scotland, at Edinburgh, 1859), invented by J. Hannam, Esq., of Burecott Park, Oxon, improved and manufactured by the exhibitors; improved pony cart, price £9 10s.; light crank axle spring cart, price £13; light spring cart, price £12 15s. (awarded the first prize of the Highland and Agricultural Society of Scotland, at Edinburgh, 1859); improved market cart, price £17 10s.; and improved Whitechapel cart, price £18 18s., improved and manufactured by the exhibitors; improved pair horse waggon, price with single shafts or pole £29 10s., double break £3 extra (awarded by the Royal Agricultural Society of England the first prize of £10 at Norwich, £10 at Exeter, £5 at Lewes, and £10 at Gloucester), invented by W. Crosskill, improved and manufactured by the exhibitors; improved Yorkshire waggon, price with single shafts or pole £30 10s., deep side and endboards to put on for carrying bones, soot, &c., £2 extra; improved Wiltshire waggon, price £25 10s.; and improved light waggon, price £22 10s., improved and manufactured by the exhibitors; improved liquid manure or water cart, price—to hold 100 gallons (the size exhibited) £17, 200 gallons £22, apparatus for watering in four rows 15s. extra, pumps extra (awarded by the Royal Agricultural Society of England the silver medal at Cambridge); improved portable pump, price with 7 feet of leather hose and 3 feet of copper tube £5 15s., portable tripod stand 15s. extra (awarded the first prize of the Highland and Agricultural Society of Scotland at Edinburgh, 1859); improved street watering cart, price—to hold 100 gallons £18, 200 gallons (the size exhibited) £23, 250 gallons £25, pumps extra; improved portable pump, price £7 7s., portable tripod stand 15s. extra; and improved fixture pump, price £3 5s. and upwards, invented by W. Crosskill, improved and manufactured by the exhibitors; patent portable farm railway, price 4s. per running yard, turn table £5 10s., trucks to tip sideway or endway £5 10s. each (awarded by the Royal Agricultural Society of England the silver medal at Norwich, and again at Exeter), invented and improved by W. Crosskill, and manufactured by the exhibitors; Archimedeon root washer, price £5 10s. (awarded by the Royal Agricultural Society of England the silver medal at York), invented by Captain Carr, improved and manufactured by the exhibitors; patent pig trough, price—3 feet wide £2 15s., 3 feet 6 inches wide (the size exhibited) £3 5s., 4 feet 6 inches wide £4, invented by W. Torr, Esq., of Aylesley, improved and manufactured by the exhibitors; and improved corn dressing or winnowing machine, price £8 10s. (awarded the first prize by the Royal North Lancashire Agricultural Society, 1859), improved and manufactured by the exhibitors.

W. and M. BAYLISS and Co., of Monmore Green, near Wolverhampton, Staffordshire.

(New implement) patent wrought iron sheep hurdle, price 4s. 6d., and (new implement) patent wrought iron strong cattle hurdle, price 5s. 2d. and upwards, recently invented by W. Bayliss, and manufactured by the exhibitors; wrought iron hand gate, price 12s. 6d., manufactured by the exhibitors; strong wrought iron vertical bar hurdle, price 6s. per lineal yard, invented and manufactured by the exhibitors; wrought iron sheepfolding hurdle, price 17s. 6d.; strong wrought iron gameproof ox hurdle, price 5s. 3d. per yard; wrought iron gameproof cattle hurdle, price 4s. 6d. per yard; wrought iron ornamental gameproof garden hurdle (Nos. 1, 2, and 3), price 4s. 6d., 4s. 3d., and 6s. 3d. per lineal yard; specimen length

of continuous sheep or light cattle fence, price 2s. 2d. per yard; specimen length of continuous ox fence, price 2s. 10d. per yard; improved footpath gate, price 17. 3s.; specimen of continuous deer fence, price 3s. 7d. per yard; wrought iron ornamental tube gate, price complete 47.; pair of strong wrought iron entrance gates, price complete 77., and every description of gate at similar low prices; wrought iron tree guards, price 18s. and upwards; and wrought iron sack barrow, or truck, price 12s., manufactured by the exhibitors; strong wrought iron truck, price 37. 10s., invented and manufactured by the exhibitors; wrought iron heating barrow, for tar, &c., price 37.; wrought iron galvanized wheelbarrow, for stables, price galvanized 17. 13s., painted 17. 11s.; self-relaxing chain rack, price 37. 10s.; length of light wrought iron fencing, price 3s. 6d. per yard; set of wrought iron garden stakes, price—2 feet high 2s. 6d., 3 feet 6s., 4 feet 9s., 5 feet 13s. 6d., 6 feet 24s. per dozen; straining pillar, with double stay, price 18s.; machine for tightening and straining wire fencing, price 17. 5s.; and wrought iron straining screw, price 6d., manufactured by the exhibitors; coil of best prepared fencing wire, price 12s. 6d. per cwt.; wrought iron corner hay racks, price black 8s. 6d., galvanized 11s. 6d.; wrought iron folding garden or camp stools, with elastic galvanized wire seats, price 4s. 6d. each; roll of galvanized wire netting, sparrow proof, price 3½d. per superficial foot; and samples of machine-made staples, price—black 2 inch 10s., 1½ inch 8s., 1½ inch 6s., 1¼ inch 5s., 1 inch 4s. per thousand, if galvanized extra.

EDWARD HUMPHRIES, of Pershore, Worcestershire.

Portable combined thrashing, shaking, riddling, barley-horning, winnowing, and sacking machine, invented, improved, and manufactured by the exhibitor, price £83 and upwards; six horse power portable steam engine, invented, improved, and manufactured by Clayton, Shuttleworth, and Co., of Lincoln, price £200; patent riddle for combing machine, price, if containing no more than 16 superficial feet, 60s., and pair of cider press screws, price £6, invented, improved, and manufactured by the exhibitor.

BENJAMIN FOWLER, of Whitefriars Iron-works, Whitefriars-street, Fleet-street, London, E.C.

Cast iron bored pump, improved and manufactured by B. Fowler and Co., price 33s., and upwards; improved cast iron straight-body fluted-head pump, price 40s. and upwards; cast iron bored pump, with detached barrels for wells over 30 feet deep, price 80s.; wrought iron portable pumps, price, with 4 in. barrel, and 7 feet under spout, painted, 52s. 6d., with 19 feet under spout 61s. 6d.; garden watering engine, price 70s.; portable garden force pump, price £7; brass force pump, on brass foot, price £5 10s. and upwards; water tank on wheels, price 50s. and upwards; and (new implement) new improved double barrel pump, price £7 10s., invented, improved, and manufactured by B. Fowler and Co.; bundle of India-rubber tube, price 8d. per foot; Holman's patent double-barrel fire or irrigating engine, invented by S. Holman, of Deptford, and improved and manufactured by B. Fowler and Co., price £25; lift pump, on plank, price 89s. 6d. and upwards, manufactured by B. Fowler and Co.; Holman's patent double barrel force pump, in frame, price £23, and (new implement) Holman's double action pump, for steam power, price £9 10s. and upwards, invented by S. Holman, and improved and manufactured by B. Fowler and Co.; improved hydraulic ram, improved by Freeman Roe of Wandsworth, and manufactured by B. Fowler and Co., price £15 15s.; model hydraulic ram, with tanks, price £5 5s.; wrought iron back standard, with slings and guide rod, price 20s. and upwards; improved horse gear, with speed motion and fly wheel, price, with single crank arm, strap head, slings, and guide for single barrel pump, £28, pole and swirl yoke 30s. extra.; double barrel deep well pump, price £17; copper portable pump, price £10; valve box for a Holman's double action pump, manufactured by B. Fowler and Co., price for a 4-inch pump with iron barrel, 12-inch stroke, and fitted with valve boxes as above, £20; improved 3-inch sluice valve, price 63s.; portable fire engine, in galvanized iron pail, price £5; bundle of vulcanized wire suction hose, price from 2s. 6d. per foot; vulcanized india-rubber suction hose, price 33s.; bundle of yard or stable pails, price 4s. each; bundle of large wrought iron baskets, price 6s. 8d.

each; throttle valve, price for 3 inch pipes 14s.; model of a patent double barrel horizontal pump, invented by S. Holman, and manufactured by B. Fowler and Co.

COLEMAN AND SON, of Chelmsford, Essex.

Patent double five prong cultivator, for steam power, price £12, and patent clod crusher, invented by Richard Coleman, of Chelmsford, improved and manufactured by the exhibitors, price £20; patent potato digger, invented by John Hanson, of Doagh, improved and manufactured by the exhibitors, price £17 10s.; patent five prong cultivator, grubber, or scarifier, invented by Richard Coleman, of Chelmsford, and manufactured by the exhibitors, price £5 15s. 6d. and upwards, and (new implement) patent lever hoe, invented by Richard Coleman, of Chelmsford, and manufactured by the exhibitors, price £7.

CHARLES CLAY, of Walton and Oakenshaw Iron Works, near Wakefield, Yorkshire.

(New implement) patent hop nidget, price £6 15s.; patent prize cultivator and eradicator, price £10 10s., levers for regulating depth of work £1 1s. extra; and (new implement) new patent turnip hoe, price £2 2s., chain harrow 10s. 6d. extra; all invented and manufactured by the exhibitor.

JAMES EASTWOOD, of Blackburn, Lancashire.

Compound action churns, from 16 to 2 gallons, for hand power, price 16 gallons, £3 18s., 12 do. £3 5s., 8 do. £2 12s., 6 do. £2 5s., 4 do. £2, 3 do. £1 18s., 2 do. £1 13s.; and (new implement) compound action egg whisks, to beat up 6, 12, and 32 eggs, prices to break up 6 eggs £1, 12 do. £1 7s. 6d., 32 do. £1 15s.; all invented, improved, and manufactured by the exhibitor.

RUSTON, PROCTOR, and Co., of Sheaf Iron Works, Lincoln.

Eight horse power portable steam engine, price 225*l.*; seven horse power portable steam engine, price 210*l.*; six horse power portable steam engine, price 199*l.* 10s.; eight horse power horizontal fixed steam engine, price 195*l.*; six horse power horizontal fixed steam engine, price 182*l.* 15s.; patent portable combined thrashing and dressing machine, price 115*l.*; patent portable thrashing machine, price 100*l.*; improved portable grinding mill, price 42*l.*; improved portable circular sawing bench, price 35*l.*; and improved portable circular sawing bench, price 14*l.* 14s.; all invented, improved, and manufactured by the exhibitors.

JAMES COULTAS, jun., of Spittlegate, near Grantham, Lincolnshire.

Six feet six inches general purpose drill, price 42*l.* 15s.; 6 feet 6 inches 12-row corn and seed drill, price 25*l.*, if with small seed cylinder 1*l.* 10s. extra, obtained the first prize at Hull 1859; 7 feet 6 inches 14-row corn and seed drill, price 28*l.*, if with small seed cylinder 1*l.* 10s. extra; 26-row clover and rye grass seed drill, price 25*l.*; and improved fore carriage steerage, price 4*l.* 10s.; all invented, improved, and manufactured by the exhibitor.

JOSEPH GARDNER, of Banbury, Oxford.

Several patent chaff machines, price 5*l.* and upwards, invented, improved, and manufactured by the exhibitor; and patent turnip-cutting machine, price 4*l.* 10s., invented by the late James Gardner, of Banbury, and manufactured by B. Samelson, of Banbury.

BARNARD, BISHOP, and BARNARDS, Norwich, Norfolk.

Patent root pulper (marked No. 1), price 4*l.* 10s.; and patent root pulper and turnip cutter, price, pulper 4*l.* 10s., cutter plates 1*l.* 5s. and upwards, invented and manufactured by the exhibitors; root grater or turnip cutter, price 4*l.* 10s., improved and manufactured by the exhibitors; improved turnip slicer, price 4*l.*, invented and manufactured by the exhibitors; Gardner's turnip cutter for sheep, price 4*l.* 10s. and upwards, invented by James Gardner, Banbury, improved and manufactured by the exhibitors; patent barley hummeller or aveller, price 5*l.* 10s., invented by R. R. Holben, Barton, Cambridge, improved and manufactured by the exhibitors; wrought iron hay rack or crib for cattle or horses, price 1*l.* 10s., improved and manufactured by the exhibitors; wrought iron lattice field

or carriage gate, price 1*l.* 5s.; wrought-iron sheep fold or hurdle, on wheels, price 19s.; sample of strained wire fencing, price 6*l.* per yard; sample of galvanized wire strand fencing, price 1s. 2½*l.* per yard; registered poultry troughs and fountains, price 10*l.* and upwards; cast iron troughs for dogs, sizes and prices, 10-inch diameter 2s. 6*l.*, 12 ditto 3s. 6*l.*, 21 inches long 3s. each; strong wrought iron garden chairs, price 18s. 6*l.* and upwards; garden chair, price 1*l.* 2s. 6*l.*; garden seats, stools, &c., price 15s. and upwards; and wrought iron table for garden or camp, price 1*l.* 4s.; all invented and manufactured by the exhibitors; patent self-rolling mangle, price 7*l.* 7s.; invented by Charles Bernard, of Norwich, and manufactured by the exhibitors; cottage mangle, price 3*l.* 10s.; several rolls of galvanized wire netting, price 4½*l.* per lineal yard and upwards; several descriptions of strong pig troughs, price 9s. 6*l.* and upwards; three cast iron window frames and casements, sizes, 36 inches by 42 inches, 18s.; 36 inches by 28 inches, 14s.; 36 inches by 14 inches, 10s., invented and manufactured by the exhibitors.

JACOB HARRY SLACK, of Norwich, Norfolk.

Five horse power vertical steam engine, price £140, invented, improved, and manufactured by the exhibitor.

HENRY HAYES and SON, of Stamford, Lincolnshire.

Improved one horse Scotch cart, price £14 (highly commended by judges of Royal Agricultural Society at Salisbury, obtained the prize of the North Lincolnshire Agricultural Society 1857, and at Grantham 1858); improved two horse Scotch cart, price £15 (awarded the prize of the North Lincolnshire Agricultural Society 1858); light spring lorrie or dray, price £30; and improved pair horse waggon, price £42 10s.; all invented, improved, and manufactured by the exhibitors.

RICHARD READ, of 35, Regent Circus, London.

Patent double lever agricultural fire engine, complete, price £24 (silver medal was awarded for this engine at the Exeter Meeting); a patent watering engine, complete, price £5 5s. and upwards; patent injecting instrument for horses, cattle, &c., price £2 10s. (highly commended at several of the Royal Agricultural Society's Meetings); hollow probang for relieving hoven or choked cattle, price 10s. and upwards; patent hand watering machine, price £2 2s. and upwards (highly commended by the judges at several of the Society's meetings); patent greenhouse pump, complete, price £3 10s.; and patent greenhouse syringe, price £1 8s.; all invented, improved, and manufactured by the exhibitor.

JAMES SAVORY, of Tewkesbury, Gloucestershire.

(New implement) portable combined thrashing machine, with double blower, price £100, less 5 per cent. for ready cash; (new implement) portable thrashing machine, with single blower, price £95, less 5 per cent. for ready cash; both invented, improved, and manufactured by the exhibitor.

SPEAR and JACKSON, Etna Works, Sheffield, Yorkshire.

Set of hand tools used in hop grounds and hand tillage, price £3 5s.; bundles of solid cast steel half bright digging spades, with eye handles, price 4s. 6d. each and upwards; bundles of solid cast steel grafting tools, price 4s. 10d. each and upwards; bundles of solid cast steel shovels of all descriptions, price 4s. 2d. each and upwards; bundles of riveted cast steel bright spades of all descriptions, price 4s. each and upwards; bundles of solid cast steel digging forks for all purposes, price 5s. 9d. each and upwards; all improved and manufactured by the exhibitor.

RICHMOND and CHANDLER, Manchester and Liverpool.

Several chaff cutting machines, price £7 and upwards to £16 (awarded at Carlisle, 1855, the Royal Agricultural Society's prize of three sovereigns, also a premium of two sovereigns at the Society's last contest at the Chester meeting, 1858); (new implement) chaff cutting machine, price £5 10s.; chaff cutting machine, price £2 10s.; bean and oat mill, price £5 5s. and upwards; corn crusher, price £10 12s.; linseed and oat mill, price £6 10s.; and set of one horse driving power, price £14 10s.; all invented, improved, and manufactured by the exhibitors; three horse power portable

steam engine, with vertical cylinder, price £92 5s., fitted with horse shafts and pulley, invented, improved, and manufactured by James Haywood, jun., of Derby; root washer, price £1 4s.; and steaming apparatus, price £6 9s.; both invented, improved, and manufactured by the exhibitors; patent kneading machine, price £10, invented by John Hodgkinson, of Atherton, and improved and manufactured by the exhibitors; sack truck and holder combined, price £1 12s., invented by Dr. Gilbert, of London, improved by Joshua Gooch, of Haverston, and manufactured by the exhibitors; patent disintegrator, price, fitted with casing complete, £19, invented by Thomas Carr, of Birkenhead, and improved and manufactured by the exhibitors.

JAMES HAYES, of Elton, near Oundle, Huntingdonshire.

Patent portable straw elevator, price £59; portable corn grinding mill, price £18 10s. and upwards; and a flour dressing machine, price £16; all invented, improved, and manufactured by the exhibitor; churn, price £1 10s., invented and improved by B. A. Ferryman, of Wavenhoe, and manufactured by J. Gamm, of Oundle (awarded a silver medal at the Meeting of the Royal Agricultural Society at Salisbury, July 20th, 1857).

The Busby Agricultural Implement Company, of Newton-le-Willows, near Bedale, Yorkshire.

Farm gate, invented, improved, and manufactured by J. B. Booth, Esq., of Killeby, near Catterick, price 25s.; one horse cart, invented by W. Lister, Esq., of Duns Bank, Richmond, improved by William Busby, of Newton-le-Willows, and manufactured by the exhibitors, received a prize of £10 at the Exeter Meeting in 1850, a Council Medal at the Great Exhibition in 1851, a prize of £10 at Lewes in 1852, a Silver Medal at Lincoln in 1853, and the Bath and West of England's Society's prize for three years in succession, and a prize of £4 at Salisbury in 1857, price £13, harvest raves 40s. extra; two wheeled plough for general purposes, invented and improved by William Busby, of Newton-le-Willows, and manufactured by the exhibitors, received the award of the Council Medal of the Great Exhibition of 1851, a first-class Medal at the Paris Exhibition, and also six head prizes from the Royal Agricultural Society of England in eight years, £10 at the Rotherham Meeting 1856, and prize at Warwick, 1860, price with steel breast, skim, chain, clasp, and weight £5 2s. 6d.; double breast or ridging plough, invented, and improved by William Busby, of Newton-le-Willows, and manufactured by the exhibitors, price 8s.; Tennant's grubber, manufactured by the exhibitors, price 90s.; chain harrow for grass lands, with spiked links, price £6 6s.; horse hoe with three tines, price 40s.; horse hoc with expanding harrow, price 55s.; five tined grubber or horse hoe, invented and improved by William Busby of Newton-le-Willows, and manufactured by the exhibitors, price 67s. as grubber, with 7s. 6d. for tines, for hoeing.

ROBERT CUTHBERT and Co., Newton-le-Willows, Bedale, Yorkshire.

Light reaping machine, for one of two horses, invented by Hussey, and improved and manufactured by the exhibitors, received a prize at every show it competed at in 1838 and 1859, price £22, extra knives 30s., side delivery 30s. extra; grass mowing and reaping machines, combined, invented, improved, and manufactured by the exhibitors, price £30; two horse reaper, invented by Hussey, and improved and manufactured by the exhibitors, price £24, extra set of knives 30s.

ROBERT BOBY, Bury St. Edmund's, Suffolk.

Large patent corn screen, was awarded the first prize of the Royal Agricultural Society at Chester, price £9; patent corn dressing machine, price £15; small patent corn screen, with improved extra separator, invented by T. C. Bridgman of Bury St. Edmund's, improved and manufactured by the exhibitors, price £8 10s.; patent corn screen, with blower, invented, improved, and manufactured by the exhibitor, price £12; (new implement) new improved barley aveller, invented and manufactured by the exhibitor, price 90s.

JAMES BRAGGINS, Banbury, Oxford.

(New hinge) wood park gate, fitted with Braggins' patent

hinge, for regulating the hanging of field and park gates, invented and manufactured by the exhibitor, price 100s.; wood park gates, price 50s. and upwards, and pair of small garden or field gates and hanging posts, fitted with Braggins' patent hinge as above, price 52s.

THOMAS, ROBERT, AND REUBEN HUNT, of Earls Colne, near Halsted, Essex.

Improved machine for hulling clover and trefoil seed, improved and manufactured by the exhibitors; received the prize of the Bath and West of England Show in 1855, and the Society's silver medal the same year at Carlisle, price £40; corn dressing machine, improved and manufactured by the exhibitors, prices £8 8s.; one horse gear, price £11 11s.; one-row cup drill, price 50s., and bundle of Essex improved scythes, invented, improved, and manufactured by the exhibitors, price 11s. 6d.

ISAAC JAMES, of Tivoli Works, Cheltenham, Gloucestershire.

(New implement) prize liquid manure distributor, invented, improved, and manufactured by the exhibitor, awarded the £2 prize at the Royal Agricultural Society at Salisbury, price £24; (new implement) improved liquid manure pump, invented, improved, and manufactured by Warner, of London, price 60s., suction pipe, best, 2s. 3d. per foot, second best 2s. per foot; (new implement) patent washing, wringing, and mangling machine, invented, improved, and manufactured by the exhibitor, price £3 10s. and £7.

HUGH CARSON, of Wiltshire Foundry, Warminster, Wilts.

Chaff cutting engine, for steam power, invented, improved, and manufactured by the exhibitor, it was highly commended at the Bath and West of England Society in 1855, 1856, and 1857, and was awarded the prize at their Cardiff meeting in 1858, was also highly commended at the Chester meeting of the Royal Agricultural Society in July, 1858, price £13 13s., pulley for power and change wheel extra; chaff cutting engine, for horse or steam power, price £11, extra as above; chaff cutting engine, for hand power, price 80s. and upwards; Moody's patent turnip cutter (No. 1), for hand power, on iron frame, invented by Edmund Moody, late of Maiden Bradley, improved and manufactured by the exhibitor, price 90s. and upwards; wrought iron horse hoe, invented, improved, and manufactured by the exhibitor—these are of all sizes and prices from 55s. upwards (they received the following prizes: from the Royal Agricultural Society of England at Salisbury, 1857, the Bath and West of England Society at Yeovil, 1856, at Newton Abbott 1857, and at Cardiff 1858, from the Royal Improvement Society of Ireland at Londonderry, 1858); single cheese press, with double lever and pulley, price 55s.; double cheese press, with double lever and pulley, price £5 5s., invented, improved, and manufactured by the exhibitor—these presses have received prizes from the Royal Agricultural Society of England at Chester 1858, and a silver medal at Salisbury, 1857, from the Bath and West of England Society at Newton Abbott, 1857, and at Cardiff, 1858, and from the Highland Agricultural Society of Scotland at Aberdeen, 1858.

JOHN EATON, of Twywell Works, Kettering, Northamptonshire.

Field gate, price, with fastenings complete, 21s., with oak gate-post as exhibited, 6s. extra, improved and manufactured by the exhibitor; (new implement) patent turnip thinner, price £5, invented and improved by the exhibitor; (new implement) patent turnip thinner and hoe combined, price £6, invented by the exhibitor; winnowing machine and blower combined, price £7 7s. and upwards; sheep cribs, price with an extra frame for horse-feeding if required and without a cover, 22s. 6d., with an extra projecting cover that will secure the food from driving rains for sheep-feeding, 30s. and upwards, according to size; one horse cart for general farm purposes, price £10 10s. (obtained the prize at the York meeting, 1848), and lifting jacks, price £3 and upwards, invented by the exhibitor; screw jack, price 25s. 6d., invented and manufactured by the exhibitor.

WILLIAM FOSTER, of Lincoln.

Combined portable thrashing machine for preparing the

grain for the finishing dressing machine, price £110; double cylinder ten horse power portable steam engine, price £280; single cylinder eight horse power portable steam engine, price £230; portable circular-saw bench, price £20, and rotary corn screen and riddle, price £10 10s., manufactured by the exhibitor.

JOHN REYNOLDS, of 57, New Compton-street, Soho, London, W. C.

(New article) twisted wrought iron rosary, price £1 10s.; (new article) wrought iron and spiral wire rosary, price £16, and (new article) spiral wire garden archway, price £2s.; (new article) twisted iron and wire flower stands, price 10s. the pair and upwards, invented and manufactured by the exhibitor; suspending wire flower baskets, price 3s. the pair and upwards, invented and manufactured by the exhibitor; ornamental japanned birdcages, price 5s., 6s., and 7s. each; (new article) improved wire sieve, price 2s. 6d., invented and manufactured by the exhibitor; wove wire dish-covers, price 17s. 6d. the set of six; patent glass birdcage, price 30s. and upwards, invented and manufactured by Messrs. Dobson and Pearce, of London.

FREDERICK MASON, of Ipswich, Suffolk.

Improved portable boiler, on wheels, with registered steaming apparatus attached, price 50s.; (new implement) portable boiler, with registered steamer attached, price £5, and portable boiler, on wheels, price £3 10s., invented and manufactured by the exhibitor.

ROBEY and Co., of Lincoln.

Complete set of patent steam-ploughing tackle, price, exclusive of plough, £545, invented and improved by Chandler and Oliver, of Bow, and manufactured by the exhibitors; patent three-furrow balance plough and cultivator combined, price £61; invented and improved by Chandler and Oliver, of Bow, and manufactured by J. and F. Howard, of Bedford; working model of Chandler and Oliver's system of steam ploughing; seven horse power patent portable steam engine, price £215, invented, improved, and manufactured by the exhibitors; double-blast machine for preparing the corn for the finishing dressing machine, price £105, subject to 2½ per cent. discount for cash, invented, improved, and manufactured by the exhibitors.

SMITH BROTHERS, of Thrapston, Northamptonshire.

Improved cake mills, price £3 5s. and upwards, invented, improved, and manufactured by the exhibitors; improved chaff machines, price £3 15s. and upwards, invented, improved, and manufactured by the exhibitors; improved bean mill, price £2 10s.; improved combined bean and cake mill, price £3; improved five-rowed steerage corn drill, price £10 10s. (received the first prize of £5 at the Royal Show at Waterford, August, 1857; the first at Londonderry, 1858; the first prize at Manchester, and the first prize at Ulverstone, 1858; improved two-row turnip and mangold drill, price £7 10s.; patent horse rake, price £7 10s. (received a prize at the Manchester and Liverpool Agricultural Society's Show at Wigan; also a prize at the Royal Show, Salisbury, 1859); patent horse rake, price £7 15s.; new patent haymaker, price £15; ornamental circular sheep crib, price £1 5s., invented, improved, and manufactured by John Eaton, of Twywell; and new four-horse portable steam engine, price £120, invented, improved, and manufactured by the exhibitors.

THOMAS SMITH and GEORGE TAYLOR, of the Vulcan Iron Works, Ipswich, Suffolk.

Patent self-acting counterbalance lever horse rake, price £8 and upwards, invented by Thomas Smith, improved and manufactured by the exhibitors (it was highly commended at the Salisbury meeting of the E. A. S. in 1857, and received the first prize at the Stonehaven meeting of the Kincardineshire Society in 1859); (new implement) patent cultivator and drag harrow combined, price £10 10s. and upwards, invented, improved, and manufactured by the exhibitors; set of patent excelsior harrows, price £4 4s. and upwards, invented by Joseph Seaman, of Basingstoke, and manufactured by the exhibitors, patent wrought iron tubular shaft, price £1 per pair, invented and manufactured by Messrs. Clarke, of Shiffnal, Salop; garden chair, price 18s., invented and manufactured by Barnard and Co., of Norwich.

WILLIAM HENRY ELY, of Frindsbury, near Rochester, Kent.

Four-horse turn-rest Kent plough, price £12 12s., improved and manufactured by George Ossenden, of High Halstow, Kent.

WILLIAM SMITH, of Kettering, Northamptonshire.

New patent steerage horse hoe, price £7 10s., if fitted with lever £1 extra (awarded a prize of £2 at Salisbury, a special prize at York in 1857, a prize medal at the Royal Highland Society at Edinburgh in 1860, commended by the judges at Carlisle in 1855, received a first-class medal at Paris in 1855 and 100 fr. in 1856, also a prize of £6 at Athlone in 1856); and improved double-blast winnowing machine, price £11 11s. invented, improved, and manufactured by the exhibitor (awarded a prize of £5 at the Yorkshire Agricultural Society's meetings, and also three prizes at other meetings).

WILLIAM SNOWDEN, of Longford, Gloucester.

Pairing plough, price £5 16s. 6d., invented by William Woofe, of Gloucester, improved and manufactured by the exhibitor (received prize medal at Warwick in 1859, prize medal at Chester, and 14 other prizes, in 1858 and 1859); stubble and leys parer, price £5 5s.; chaff and litter cutter, price, ten lengths, £10 10s., five ditto, £8 18s. 6d.; and mill for cleaning and bruising oats, malt, linseed, &c., price £6, invented, improved, and manufactured by the exhibitor; double stubble parer, price £7 17s. 6d., invented by William Woofe, of Gloucester, improved and manufactured by the exhibitor.

JOHN WHITMEE & Co., of 11, Ray-street, Clerkenwell, and 18, Fenchurch Buildings, City, London.

Oat and bean crusher, price £2 15s.; corn crusher, price £4 and upwards; smooth-surfaced crushing mill, price £4 15s. and upwards; corn-grinding mill, price £6 and upwards; stone corn mill, price of the size exhibited with 2 ft. 8 in. French burr stones and turned pulley complete for steam or other power £41; domestic flour mill, price £6 10s. and upwards; and sausage and mincing machine, price £2, invented, improved, and manufactured by the exhibitor; washing and wringing machine, price £6 10s., invented, improved, and manufactured by William Trenter, of 44, Clerkenwell Green.

BONDS & ROBINSON, of Halesworth, Suffolk.

Portable steam engine of 8 horse power, price £210; improved lever horse drag rake, price with extra wheels, £7 17s. 6d., without extra wheels £6 16s. 6d. and Halesworth beet or furrow hoe, price 35s., improved and manufactured by the exhibitors; thirty knife Gardner's turnip cutter, invented by the late James Gardner, of Banbury, improved and manufactured by the exhibitors, price 84s.; chaff cutter for hand or horse power, improved and manufactured by the exhibitors, price £7 7s., if without crotch and safety lever, £6 10s.; Cartwright's patent self relieving chain harrow, 7 feet 6 inches by 7 feet 6 inches, invented by John Cartwright, of Shrewsbury, and manufactured by the exhibitors, price 95s.; garden chair 4 feet long, price 13s. 6d.

CHARLES FRANCIS QUINTIN, of 1, St. James's-square, Cheltenham, Gloucestershire.

Patent bread kneading or mixing machines, invented, improved, and manufactured by the exhibitor, price 50s., 63s., 84s., and £5 5s.

JAMES SMYTH & SONS, of Peasenhall, Suffolk, and Witham, Essex.

Machine for protecting turnip and other plants from the ravages of the fly, invented by W. F. Padwick, Esq., of Haying Island, Hampshire, improved and manufactured by the exhibitors, price £34.

THE AGRICULTURAL ENGINEERS COMPANY (Limited), of Swan-lane, Upper Thames-street, London.

(New implement) calorific air engine, price £130, invented by Captain Ericsson, of United States, N.A., and improved and manufactured by the Caloric Engine Company, of South Grotton, United States; portable steam engine, three horse power, price, felted, cased, with governors, water gauge, two gauge cocks, stoking tools, waterproof cover, &c., £120, invented, improved, and manufactured by Barrett,

Exall, and Andrews, of Reading; portable steam engine, two horse power, price, fitted with governors, &c., complete, £20, invented, improved, and manufactured by E. R. and F. Turner, of Ipswich; horizontal fixed steam engine, four horse power, price, complete with boiler, £110, without boiler, £70, invented, improved, and manufactured by Barrett, Exall, and Andrews (the ten horse power fixed engine of this firm obtained the first prize of the Royal Agricultural Society at Chester, being the last trial, and a £10 prize at the Carlisle Meeting, the prize of 250 francs and gold medal of the Paris Universal Exhibition, the gold medal of honour at Vienna, and the grand prize diploma at Pesth); independent steam engine, two horse power, price £85—without governor, or felting and casing to boiler, £75, invented, improved, and manufactured by E. R. and F. Turner, of Ipswich; (new implement) patent combined thrashing machine, price £60, invented, improved, and manufactured by Barrett, Exall, and Andrews, of Reading; patent two horse portable thrashing machine, with patent horse gear, price, as a fixture, £32—as shown, portable, with poles, &c., complete, £10, invented, improved, and manufactured by Barrett, Exall, and Andrews, of Reading (received prizes and medals from almost every agricultural society in England and Ireland, first prizes and gold medals at Paris, Vienna, Pesth, &c., the prize medal of the Great Exhibition of 1851, &c.); horse gear, for one or two horses, with intermediate motion, price £13 10s.—horse gear £10, intermediate motion £3 10s., invented, improved, and manufactured by E. R. and F. Turner, of Ipswich; patent corn dressing machine (No. 119), price £13 10s., invented, improved, and manufactured by R. Hornsby and Sons, of Grantham (awarded the council medal of the Great Exhibition of 1851, eight prizes of the Royal Agricultural Society, and others by local agricultural societies too numerous to mention); improved corn dressing machine (No. 5), price £9, improved and manufactured by R. Garrett and Sons of Saxmundham (received the first prize of the Royal Agricultural Society at Chester, first class prizes from the German Landowners' Society, Brunswick, the Adelaide (Australian) Agricultural Society, and from numerous local agricultural societies); patent corn screen, price £9, invented by T. C. Bridgman, of Bury St. Edmunds, and improved and manufactured by Robert Boby of Bury St. Edmunds (obtained the first prize of the Royal Agricultural Society at Chester, the silver medal at Chelmsford, and many other prizes from local societies); corn blowing machine, price £3 17s. 6d., improved and manufactured by the exhibitors; reaping machine, price £42 10s. at the works, invented by C. H. McCormick of Chicago, U.S., and improved and manufactured by Burgess and Key of Brentwood, Essex (has been awarded several prizes by the Royal Agricultural Society); combined reaping and mowing machine, price £35, invented, improved, and manufactured by W. A. Wood, of Hoosick Falls, State of New York, U.S. (has been awarded upwards of 100 first class prizes); grass mowing machine (for 2 horses), price for 1 horse machine, £22, invented, improved, and manufactured by W. A. Wood; patent baymaking machine, (double action), price £16 16s., invented, improved, and manufactured by W. N. Nicholson of Newark-upon-Trent (similar in construction to the machine which received the first prize at the Salisbury Meeting of the Royal Agricultural Society); patent haymaking machine (double action), price £15 15s., invented and improved by the late firm of Smith and Ashby of Stamford, and manufactured by T. W. Ashby and Co. of Stamford (obtained the first prize of the Royal Agricultural Society for 10 successive years); registered haymaking machine (double action), price £14 14s., invented, improved, and manufactured by Barrett, Exall, and Andrews of Reading (awarded a prize by the Royal Agricultural Society at the Salisbury Meeting); patent iron horse rake, price £7 17s., invented, improved, and manufactured by Barrett, Exall, and Andrews, of Reading; patent iron horse rake, price £3 10s. (marked H H), invented, improved, and manufactured by J. and F. Howard of Bedford; patent iron horse rake, price £8 10s., invented, improved, and manufactured by Thomas Smith of Bredfield; patent iron self acting horse rake, price £9, invented, improved, and manufactured by J. Marychurch and Sons of Haverfordwest; patent wheel hand rake, price £2, invented and improved by the late firm of Smith and Ashby of Stamford, and manufactured by T. W. Ashby and Co. of Stam-

ford; bundle of tubular iron hand hay and corn rakes, price 16s. 6d. each; and a bundle of wood framed hand drag rakes, price 10s. and upwards each, if made to take to pieces 6d. each extra; both invented, improved, and manufactured by Warren Sharman of Melton Mowbray; patent wrought iron plough, price £5 0s. 6d. and upwards, invented, improved, and manufactured by R. Hornsby and Sons of Grantham (their newly invented ploughs have received two first class prizes at the last meeting of the Royal Agricultural Society at Warwick); patent wrought iron plough, price, with two wheels, £4 7s. 6d.; steel breast 7s. 6d. extra, skim coulter 5s. 6d., drag chain 2s., complete £5 2s. 6d., invented, improved, and manufactured by J. and F. Howard of Bedford (the Messrs. Howard have received 14 first prizes for their ploughs from the Royal Agricultural Society, besides others from local and foreign societies too numerous to mention); patent wrought iron plough, price, with two wheels, £4 7s. 6d., steel breast 7s. 6d. extra, skim coulter and drag chain 7s., ridging body £1 17s. 6d., complete, with ridging body, £6 19s. 6d., invented, improved, and manufactured by Ransomes and Sims of Ipswich (received a prize at the Warwick meeting of the Royal Agricultural Society); Scotch swing plough, price £4 15s., improved by John Gray of Uddington, and manufactured by John Gray and Co.; American turnvest plough, price £3 3s., manufactured by J. and F. Howard of Bedford; patent ridging plough, price, including two arms and cutters, £2 14s. 6d., marker 6s., harrow 9s., complete, to form ridging plough or single ridge hoe with harrow, £3 9s. 6d., invented, improved, and manufactured by E. H. Bental of Heybridge, near Maldon; patent subsoil plough and pulverizer, price £5s. 5s., invented by Mr. Reed of London, and improved and manufactured by Barrett, Exall, and Andrews of Reading (it has received six prizes from the Royal Agricultural Society); patent Archimedian subsoil and pulverizing plough, price £6 12s. 6d., invented by Lord C. Beauclere, and manufactured by Ransomes and Sims of Ipswich (received the prize of the Royal Agricultural Society at Chelmsford); patent paring plough, price £7 7s., invented and improved by William Woofe of Weston Birt, and manufactured by William Snowden of Longford, near Gloucester (it has received the prizes of the Royal Agricultural Society at Chester and Warwick, and 15 other prizes from various agricultural associations); set of patent iron harrows, price £4, improved and manufactured by J. and F. Howard of Bedford (for their harrows the Messrs. Howard have received 12 first prizes of the Royal Agricultural Society, and numerous other prizes and medals of English and foreign societies); set of patent iron harrows (marked No. 346 light), price £4 13s. 6d., invented, improved, and manufactured by E. H. Bental of Heybridge, near Maldon (received a prize of the Royal Agricultural Society at Chelmsford, and many other prizes and medals from English and foreign associations and exhibitions); (new implement) set of patent excelsior harrows, price 4l. 4s., invented by Seaman, late of Bedford, and manufactured by Wallis and Haslam of Basingstoke; (new implement) set of patent revolving harrows, price 6l., invented by Marritt, improved and manufactured by A. and E. Crosskill of Beverley; set of patent chain harrows, price 3l. 15s., invented by John Cartwright of Shrewsbury, improved and manufactured by Wm. Cambridge of Bristol; patent broadshare and cultivator, price 7l. 17s. 6d., invented, improved, and manufactured by Edward Hammond Bental of Heybridge, near Maldon (have been awarded two prize medals of the Great Exhibition of 1851, the prize medal of the Paris Universal Exhibition of 1855, several first class prizes of the Royal Agricultural Society, and a great number of first class prizes by nearly all the local societies of the United Kingdom, on the Continent, and in the Colonies, and the first prize of the Royal Agricultural Society at Warwick as the best cultivator for light land); patent broadshare, cultivator, and subsoil plough, price 6l. 16s. 6d., invented, improved, and manufactured by Edward Hammond Bental of Heybridge, near Maldon (it was awarded two medals at the Great exhibition, one as a subsoil plough, and one as a cultivator; it also received the first prize of the Royal Agricultural Society at Lincoln as the best cultivator, and the first prize of the same society at Chelmsford as the best subsoil plough); patent cultivator with five prongs, price 9l., invented by Richard Coleman of Chelmsford, improved and manufactured by Coleman and Sons of Chelmsford (received several first-class prizes of the Royal Agricultural Society, including

the first prize for heavy land cultivators at Warwick, and in all upwards of fifty first class prizes; Tennant's grubber on one wheel, price with three wheels 6*l.*, with one wheel 5*l.*, invented by Tennant of Shields, Ayrshire, and manufactured by Richmond and Chandler of Salford; small grubber, price 3*l.* 5*s.*, invented and improved by William Busby, of Newton-le-Willows, manufactured by the Busby Implement Company, of Newton-le-Willows; patent prize horse hoe, price 19*l.*, invented, improved, and manufactured by R. Garrett and Sons, of Saxmudham (has been awarded every prize offered by the Royal Agricultural Society, and numerous other prizes and medals); small horse hoe, price as a three-tined horse hoe 2*l.*, with tines to convert into grubber 2*l.* 7*s.* 6*d.*, fitted with Norwegian harrow 2*l.* 10*s.*, with expanding harrow 2*l.* 15*s.*, invented and improved by Wm. Busby, and manufactured by the Busby Implement Company, of Newton-le-Willows; improved lever corn drill, for eleven rows, with fore-carriage steerage, price of drill 24*l.* 15*s.*, fore-carriage steerage 4*l.* 10*s.*, seed delivery barrel extra, complete 29*l.*, improved and manufactured by R. Garrett and Sons of Saxmudham (was awarded a prize of 10*l.* by the Royal Agricultural Society); patent prize corn and seed drill, for eleven rows, with fore-carriage steerage, price 11-row drill 24*l.*, fore-carriage steerage 4*l.* 10*s.*, additional barrel for depositing seed 1*l.* 10*s.*, complete 30*l.*, invented, improved, and manufactured by R. Hornsby and Sons of Grantham (several first-class prizes of the Royal Agricultural Society, the Council medal of the Great Exhibition, gold medals at the Paris exhibitions, and other prizes too numerous to specify have been awarded to this machine); patent turnip or mangel and manure drill, for two rows, price 15*l.* 10*s.*, invented, improved, and manufactured by James Smyth and Sons, Peasehall; turnip or mangel drill for one row, price 2*l.* 10*s.*, invented, improved, and manufactured by T. R. and R. Hunt of Earl's Colne; grass or turnip seed-sowing machine (broadcast), price 5*l.* 3*s.*, invented, improved, and manufactured by Barrett, Exall, and Andrewes, of Reading; Crosskill's improved clod crusher, price 6 feet wide 30 inches diameter 17*l.* 10*s.*, travelling wheels 2*l.*, complete 19*l.* 10*s.*, invented by Wm. Crosskill of Beverley, improved and manufactured by A. and E. Crosskill of Beverley (gained the gold medal of the Royal Agricultural Society in 1846, and to the implement as now exhibited, with A. and E. Crosskill's patented improvements, was awarded the first prize of the Royal Agricultural Society at Warwick); Cambridge's patent clod crusher, price without travelling wheels 1*l.*, invented and improved by Wm. Cambridge of Bristol, and manufactured by Barrett, Exall, and Andrewes, of Reading; horse tip shovel, price 4*l.*, invented by W. Fisher Hobbs, Esq., of Boxted, price 4*l.*, improved and manufactured by B. Matthews of Myland, near Colchester; portable grinding mill, price 22*l.* 10*s.*, invented, improved, and manufactured by Barrett, Exall, and Andrewes, of Reading; patent combined mill for crushing and grinding, price as a crushing or grinding mill 23*l.*, or with apparatus for splitting beans, independently of the stones 31*l.*, invented, improved, and manufactured by E. R. and F. Turner of Ipswich; prize roller mill for crushing or bruising oats, linseed, malt, barley, &c., splitting beans, &c., price 15*l.* and lower according to power, invented, improved, and manufactured by E. R. and F. Turner of Ipswich (awarded the first prizes at the Royal Agricultural Society's meetings at Norwich, Gloucester, Lincoln, and Carlisle); the paragon universal bruising and crushing mill for grain and malt, and splitting beans, &c. (marked J. C.), price 5*l.* 15*s.* 6*d.*, invented, improved, and manufactured by Barrett, Exall, and Andrewes, of Reading (obtained the prize medal of the Great Exhibition); bean and oat-crushing mill, price 6*l.* 10*s.*, invented, improved, and manufactured by Richmond and Chandler of Salford; prize oilcake breaker, price 5*l.* 5*s.*, invented, improved, and manufactured by Edward Hammond Bontall of Heybridge, near Maldon (received the first prize of the Royal Agricultural Society at the last trial of this class of implements); oilcake breaker, price 3*l.* 10*s.*, invented, improved, and manufactured by E. R. and F. Turner of Ipswich; prize oilcake breaker, price 3*l.* 10*s.*, invented, improved, and manufactured by W. N. Nicholson of Newark (was awarded the prize at the Chester meeting of the Royal Agricultural Society); patent turnip cutter, price 5*l.* 10*s.*, invented by the late James Gardner of Banbury, improved and manufactured by B. Samuelson, of Banbury (has received seven first-class prizes of the Royal Agricultural Society); patent prize root pulper, price 8*l.* 8*s.*, invented, improved, and manufactured by Ed-

ward Hammond Bontall of Heybridge, near Maldon (has in every case obtained the first prize where tried in competition, obtained the first prize of the Royal Agricultural Society); patent chaff cutter, price 47*l.*, pulley for power 9*s.* extra, change wheels to vary cut 6*s.* per pair, patent stop motion for throwing out of gear 15*s.* extra; and patent chaff cutter, price 4*l.* 10*s.*, both invented, improved, and manufactured by Richmond and Chandler, of Salford; patent safety chaff cutter for steam power (received the high commendation of the Royal Agricultural Society at three meetings), price fitted with 2 pulleys and clutch for reversing or stopping the feed, 45*l.* 15*s.*, invented, improved, and manufactured by Barrett, Exall, and Andrewes, of Reading; improved chaff cutter, price 22*l.* 12*s.* 6*d.*, manufactured by Edward Hammond Bontall, of Heybridge, near Maldon; improved chaff cutter, price 41*l.* 11*s.*, invented, improved, and manufactured by E. R. and F. Turner, of Ipswich; improved chaff cutter, price 43*l.* 15*s.*, improved and manufactured by T. W. Ashby and Co., of Stamford; light one horse or pony cart, price 49*l.* 10*s.*, improved and manufactured by the exhibitors; Newcastle prize cart for one horse with curved raves, price 44*l.* 10*s.*, without raves 42*l.* 10*s.*, invented by W. Crosskill, late of Beverley, Yorkshire, and improved and manufactured by his Trustees; improved iron liquid manure or water cart with pump and hose, price 42*l.* 15*s.*, to hold 100 gallons 47*l.*, pump and hose pipe 45*l.* 15*s.*, invented by W. Crosskill, late of Beverley, and improved and manufactured by A. and E. Crosskill of Beverley; pair of extra strong wrought iron wheels, price 41*l.* 11*s.*; wrought iron wheelbarrow, price 4*l.* 6*s.*; and wooden farm wheelbarrow with loose top, price 4*l.* 10*s.*, without moveable top 4*l.* 4*s.*, all manufactured by the exhibitors; registered sheep crib, price 4*l.* 2*s.*, invented, improved, and manufactured by John Eaton, of Thrapston; sample bundle of feeding troughs, price 7*s.* 6*d.*, upwards, invented and manufactured by Barnard and Bishop of Norwich; sample bundle of feeding troughs, price round hog trough 8 partitions to hold 9 gallons 18*s.*, ditto 10 partitions 16*s.*, pig trough 8 to 10 partitions to hold 6 gallons 13*s.*, pig or sheep trough 8 to 10 partitions to hold 3 gallons 7*s.* 6*d.*, invented, improved, and manufactured by Edward Hammond Bontall, of Heybridge near Maldon; two water or feeding troughs for cattle, price 42*l.* 2*s.* each, improved and manufactured by Edward Hammond Bontall, of Heybridge, near Maldon; set of two round water or feeding troughs for cattle, price 7*s.* each; set of agricultural harness for shaft and lead horses, price 47*l.*, improved and manufactured by Holgate and Co., London; (new implement) model of a patent self-regulating wind engine, invented by W. H. Jahn, of America, and improved and manufactured by John R. Peill, 17, New Park-street, Southwark, London; (new implement) patent agricultural pump filter, price of filtering apparatus capable of supplying from 1000 to 2000 gallons per day 42*l.* 10*s.*, exclusive of pump, invented and manufactured by F. Danchell, London; bundle of digging forks, and forks of all descriptions, price from 3*s.* 6*d.* each upwards, invented and manufactured by W. A. Lyndon, Birmingham; set of draining tools, price set complete 41*l.* 19*s.* 6*d.*, invented, improved, and manufactured by W. A. Lyndon, Birmingham (obtained the prize of the Royal Agricultural Society at the Northampton meeting, 1847); bundle of loose pillars and caps for stack stands, each pillar 5*s.*, invented, improved, and manufactured by Edward Hammond Bontall, Heybridge, near Maldon; set of three corn bins, price to hold 4 bush. 41*l.* 10*s.*, 6 bush. 41*l.* 15*s.*, 8 bush. 42*l.*, improved and manufactured by the exhibitors; portable forge, price with bellows 43*l.* 5*s.*, improved and manufactured by A. Wright, London; bundle of specimen iron fencing wire, various, price from 13*s.* per cwt.; set of wire fencing tools, price 65*s.*, invented and manufactured by Thomas Kennan and Son, Dublin; agricultural or emigrants' tool chest, price 47*l.* 14*s.*, larger and more complete chests may be had at 41*l.* 11*s.* and 45*l.* 7*s.* 6*d.*, manufactured by Taylor Brothers of Sheffield; bundle of pattern hurdles, price from 3*s.* 6*d.* each; tubular iron field gate, price with fixings 42*l.*; (new implement) light iron field gate with hangings and fastenings complete, price 24*s.* 6*d.*, invented and manufactured by the exhibitors; Green's 18-inch hand lawn mowing machine, price including guard for keeping the wheels clean and preventing accidents, and set of tools in box for sharpening and keeping the machine in order 47*l.* 10*s.*, invented, improved, and manufactured by Thomas Green of Leeds; Shauks' 19-inch hand lawn mowing machine, price complete 47*l.* 12*s.* 6*d.*, invented, improved, and manufactured by Alexander Shauks and Son, Arbroath, N.B.; Boyd's

22-inch lawn mowing machine, price complete £7 7s., invented by Boyd, and improved and manufactured by Samuelson of Banbury; ornamental garden roller, price 18 inches long by 18 inches diameter £2; water carrier and distributor, price as a water carrier £1, brass spreader for water or liquid manure 20s. extra, invented, improved, and manufactured by Richmond and Chandler of Salford; improved swing water barrow, price complete £4 17s. 6d., invented, improved, and manufactured by John Warner and Sons, Crescent, Jewin-street, London; improved oak oval tub garden engine, price 14 gallons £5 15s., invented, improved, and manufactured by John Warner and Sons; board of assorted syringes, price 9s. upwards, improved and manufactured by J. Warner and Sons; patent vibrating standard lift and force pump, price 3-in. barrel £7 5s., invented, improved, and manufactured by J. Warner and Sons; patent long-barrel cast iron lift pump, price 52s., and improved liquid manure and general portable pump, price of stand and pump, with screwed tail pipe, fitted with strong brass union for suction pipe, 53s., invented, improved, and manufactured by John Warner and Sons; sample bundle of galvanized iron pails, price 2s. 6d. and upwards; 24-inch patent endless band saw, price £24, invented, improved, and manufactured by Barrett, Exall, and Andrewes, of Reading (was awarded the silver medal of the Royal Agricultural Society, at Chelmsford meeting); (new implement) improved new pattern circular-saw bench, price £25, invented, improved, and manufactured by Barrett, Exall, and Andrewes, of Reading; improved circular-saw bench, price, with 26-inch saw, £18, invented, improved, and manufactured by E. R. and F. Turner, of Ipswich; double box drain pipe and tile machine, price, including one receiving table and cutting off apparatus (but exclusive of dies or screens), £28, if with apparatus for steam or horse power, £6 6s. extra, invented, improved, and manufactured by John Whitehead, of Preston, Lancashire; improved brick pressing machine, price £16 16s., iron pug mills for preparing the clay for this machine £10, larger £14, iron clay rollers from £28 upwards, socketing machines from £9 upwards, invented, improved, and manufactured by John Whitehead, of Preston, Lancashire; improved crab or lifting machine, price £6 10s., and screw lifting jack, price £3 3s., improved and manufactured by Barrett, Exall, and Andrewes, of Reading; lifting jack, price £3; screw lifting jack, price £1 10s.; manufactured by John Eaton, of Thrapston; patent sackholder and truck combined, price £1 12s., without wheels £1 3s., invented by Dr. Gilbert, of London, improved and manufactured by Richmond and Chandler, of Salford; improved sack barrow, price 12s. 6d., manufactured by the exhibitors; domestic flour mill, with dressing apparatus, price £7 7s., without dressing apparatus, £4 4s., manufactured by the exhibitors; patent bread kneading machine, prices—machine for 3½ lbs. £1 10s., 21 lbs. £3 3s., 56 lbs. £4 4s., 84 lbs. £5 5s., 3 bush, £10 10s., 5 bush, £15 to £18 according to size of fly-wheel, invented, improved, and manufactured by C. F. Quinton, of Cheltenham; improved sausage-making and mincing machine, price, medium size, £2 2s., a smaller size 30s., and a larger £3 3s., invented by S. Nye and John Gilbert, of London, improved and manufactured by S. Nye, of Soho, London; weighing machines, price £2 2s. and upwards, invented, improved, and manufactured by Avery & Co., of Birmingham; American box churn, price, to make 6 lbs., £1 10s., invented by J. Dolphin, of the United States, and manufactured by the exhibitors; packet of boîtes-à-bouffe, price 2s. 6d. each, invented by Guin and Franc, of Paris, and manufactured by Deane & Co., of London; set of blocks and pulleys, price £2 5s., manufactured by the exhibitors; sample bundle of leather driving bands, prices—single, 3-inch 1s. 2d., 4-inch 1s. 8d., 5-inch 2s. 1d.; double, 4-inch 3s., 5-inch 3s. 9d., 6-inch 4s. 10d., manufactured by Holgate & Co., of London; sample bundle of leather hose, price from 2s. 7d. per foot upwards; improved jointed ladder, price £1 15s., invented, improved, and manufactured by Thos. Kennan and Sons, of Dublin; improved enamelled wrought iron hayrack, manger, and water trough, price £3 10s., manufactured by Clarke & Co., of Wolverhampton.

E. R. & F. TURNER, of St. Peter's Iron Works, Ipswich, Suffolk.

Two horse power portable steam engine, price £98; three horse power portable steam engine, price £125; combined bolting, thrashing, shaking, riddling, winnowing, and barley avelling machine, with elevators, price £65; portable thrashing, shaking, riddling, winnowing, and barley avelling

machine, price £15; oat bruising and linseed-crushing mill, price 95s.; malt mill, suitable also for bruising oats and linseed, price £6 10s.; crushing or bolting mills for oats, linseed, malt, barley, &c., price £8, £12, and £18; (new implement) a crushing mill for bruising oats, linseed, &c., price 55s.; combined mills for crushing and bruising oats, linseed, malt, &c., splitting beans, &c., prices £10 10s. and upwards; patent combined mill for crushing or bruising oats, linseed, malt, barley, &c., splitting beans, and for grinding beans, peas, barley, wheat, &c., to fine meal, price £31; bean splitting mill, price 90s.; mill for grinding Indian corn, beans, barley, &c. to meal, price 90s.; oil cake breakers, price 60s. and 70s.; chaff cutter for horse or steam-power, price £11 11s.; pulley for steam-power 12s. extra; chaff cutter for hand or power, price £7, pulley for power 10s. extra; gear work for one horse, price £10, if fitted for two horses, 20s. extra; intermediate motion for horse gear, price 70s., invented improved and manufactured by the exhibitors; (new implement) patent metallic grinding mill, price £6 10s. and upwards, invented and improved by James Fry, of Wrotham, Kent, and manufactured by the exhibitors; (new implement) patent portable smiths' and carpenters' bench, price complete, £6, invented and improved by T. H. Dodd, of Pimlico, London, and manufactured by the exhibitors.

JOSEPH GILBERT, of Evesham, Worcestershire.

Improved patent portable combined thrashing machine, price £95, invented, improved, and manufactured by the exhibitor; improved seven horse portable steam engine, price £210, invented and manufactured by Ruston, Proctor, and Co., of Lincoln; improved three-row corn drill, price 85s., extra nuts fitted 1s. and upwards, and grass and seed distributor, price 63s., invented, improved and manufactured by the exhibitor.

JAMES HAYWOOD, Jun., Phoenix Foundry and Engineering Works, Derby.

Seven horse power portable steam engine, price £215, invented, improved, and manufactured by the exhibitor; (new implement) patent portable combined thrashing and finishing machine, price £110, if fitted with Boby's patent screen £10 extra, if with patent drum £3 extra, invented by the exhibitor and Thomas Claridge his engineer, and manufactured by the exhibitor; four horse power portable steam engine, with vertical cylinder, price complete ready for working £130, horse shafts 30s., small pulley 15s. extra; three horse power portable steam engine, with vertical cylinder, price complete ready for working £90, horse shafts 30s., pulley 15s. extra; three horse power portable combined thrashing machine, price £75; two horse power portable steam engine, with vertical cylinder, price £70, horse shaft 30s., pulley 15s. extra; two horse improved portable combined thrashing machine, price £50; portable grinding mill, with 24 stones, price, with Derbyshire Peak stones, £22, French stones £27; portable grinding mill, with 18 stones, price with Derbyshire Peak stones, £17 10s., with French stones £22 10s.; flour dressing machine, price £11; portable circular saw, price £15; four horse power fixed steam engine, with vertical cylinder, price complete, £105; liquid manure pump, double barrel, price £35; specimens of brass boiler fittings, price from 2s. 6d. to 35s. each; pair of Medici vases and pedestals in cast iron, price, vases 70s., pedestals 50s. each; several pair of cast iron vases and pedestals, price, vases from 20s. to 45s. pedestals from 15s. to 30s. each; cast iron ornamental garden chairs, oak pattern, price 30s. each; cast iron ornamental garden chairs, wood seats, price 30s. each; cast iron ornamental single garden chairs, price 17s. 6d. each; cast iron ornamental garden chair, octagon shape, price £7 10s.; cast iron ornamental tables, with revolving top, price 35s.; assortment of cast iron fruit plates, price 2s. 6d. each, and pair of cast iron ornamental vases and pedestals, price, vases 30s., pedestals 15s. each, invented and manufactured by the exhibitor.

T. W. ASHBY and Co., of Stamford, Lincolnshire.

Patent hay-making machine, price £15 15s. (all the prizes of the Royal Societies of England, Scotland, and Ireland for ten years in succession were awarded to this machine, and every haymaker prize of all the provincial societies wherever competed for; also all the last seven prizes offered since 1857;

making in all, no less than thirty-eight first prizes); combined patent haymaking machine, thistle cutter, and manure distributor, price, with knives only, £17 7s., with manure forks and knives complete, £18 18s.; patent steel semi-angular tooth horse-rake, for hay, corn, twitch, or scutch, stubble, &c., price £3 and upwards (no less than twenty-eight prizes have been awarded to this rake, including the first prizes of the Royal Society of Ireland two years in succession, and the first prize at Grimsby show last August, 1859), invented by Smith and Ashby, of Stamford, improved and manufactured by the exhibitors; two-and-a-half horse portable steam engine on Smith and Ashby's patent wrought iron wheels, price £70 15s., fitted with patent pressure-gauge £3, with wrought iron ashpan £3 extra; Smith and Ashby's new four-horse power portable steam engine, price £110, pulleys 30s. extra, fitted with patent pressure gauge £3 extra, with wrought iron ashpan £1 extra; new improved patent combined thrashing, shaking, and riddling machine, price £45, fitted with elevators for bagging the corn £5 extra; and improved iron frame circular-saw bench, price £13 10s., if with planed top £2 extra, improved and manufactured by the exhibitors; improved portable grinding mill, fitted with Peak stones, price £18 10s., fitted with French stones £3 extra, invented by Smith and Ashby, of Stamford, improved and manufactured by the exhibitors; four-horse portable flour mill, with French stones, price if fitted with Peak stones £35, French stones £7 extra, invented, improved, and manufactured by the exhibitors; 13-inch three-knife chaff cutter, for horse or steam power, price £14, for cutting litter also, £2 20s., additional pulley 15s., and shackle 5s. extra (has received several prizes, the first prize of the Bath and West of England Society, at Plymouth, and the prize medal of the Great Exhibition of all Nations in London, 1851); patent safety, two-knife chaff cutter, for horse or hand power, price £9 10s., if with change wheels 5s., with additional handle 5s., pulley 10s., and shackle 3s. 6d. extra (obtained the first prize of the North Lincolnshire Society at Grimsby, July, 1859, in addition to many other prizes previously announced); patent presser hand-power chaff cutter, price £6 15s., with extra handle 5s., and change wheels 5s. extra; and patent presser hand power chaff cutter, price £6, change wheels 5s. extra, invented by Smith and Ashby, of Stamford, improved and manufactured by the exhibitors; chaff cutter with two knives, price £2 12s. 6d. and upwards; double-action registered oilcake mill, for sheep and oxen, price £3 10s. (took the prize medal of the Royal Society of Scotland last August, 1859; the prize of the Bath and West of England Society two years' in succession; the certificate of high commendation from the Royal Dublin Society at Dublin, 1855); and steam power double-action oilcake mill, for sheep and oxen, price £5 5s., invented by Smith and Ashby, of Stamford, improved and manufactured by the exhibitors; (new implement) pair of new patent rotating harrows, price £7 7s.; and (new implement) new patent single rotary harrow, price £3 10s., improved and manufactured by the exhibitors.

THOMAS AVELING, of Rochester, Kent.

(New implement) eight-horse power patent locomotive engine, price £316; patent combined thrashing, riddling, straw shaking, and winnowing machine, price £110; patent straw elevator, price £48, invented by James Hayes, of Elton, improved and manufactured by Clayton, Shuttleworth, and Co.; wrought iron portable creosote tank, price £37 10s., improved and manufactured by the exhibitor; eight-horse patent portable steam engine, price £240, invented, improved, and manufactured by Clayton, Shuttleworth, and Co.; iron land roller, price £14, improved and manufactured by the exhibitor; one horse gear, price for one horse £13, for two ditto £14, extra connecting rod to drive two machines £1, invented by Ransomes and Sims, of Ipswich, improved and manufactured by the exhibitor; chaff cutting machine, price £10, invented, improved, and manufactured by Richmond and Chandler, of Salford; universal mill, price £12 10s., invented, improved, and manufactured by Ransomes and Sims, of Ipswich; patent reaping machine, price £42 10s., invented by M'Cormick, of America, improved and manufactured by Burgess and Key, of London; patent iron horse rake, with steel teeth, price £8 10s., invented, improved, and manufactured by Howards, of Bedford.

JOHN BAKER, of Wisbeach, Cambridgeshire.

(New implement) combined blowing and dressing machine,

for cleaning any kind of grain, price £9, invented, improved, and manufactured by the exhibitor.

I. J. and T. R. HOLMAN, of Canterbury, Kent.

Corn-grinding mill, price £40 and upwards; flour-dressing machine, price £21; flour-dressing machine cylinder, price £12 5s.; flour-dressing machine, price £12 5s.; improved feed roll, feed gate, riggers, and hopper, for flour-dressing machine, price £3; bolter reel and case, with hopper attached, for dressing flour, price £17 10s.; two-horse waggon, price £28; improved one-horse cart, price £12 10s.; and improved pony cart, price £9, all manufactured by the exhibitors.

J. HUGHES and SONS, of Great Dover-street, London.

French bedstone for grinding wheat, price £8 and upwards, improved and manufactured by the exhibitors; (new implement) patent smut machine, price £45, invented by Walworth & Harrowby, of Bradford, improved and manufactured by the exhibitors; iron proving staff, price £3; mahogany staff, price £1 12s. 6d.; mill bills or chisels for dressing millstones, price 1s. per lb., thrifts or handles for the same 2s. each; assortment of machine brushes, price, single groove 1s. 6d., ditto about 1s. 9d., double in single groove 2s., ditto in double ditto 2s. 6d. per foot; coil of leather mill band, price 2s. 1d. per foot; set of iron blocks, price £2, if fitted with brass sheaves 7s. 6d. extra—other sizes in proportion, improved and manufactured by the exhibitors; assortment of socket screws, price from 2s. per dozen, invented, improved, and manufactured by the exhibitors.

HUNT and PICKERING, of the Goulding Implement Works, Short-street, Church-gate, Leicester.

Corn crusher or kibbling mill, price £4 4s. and upwards; oilcake breaker, price £3 3s. and upwards; six-knife disc root pulper, price £4 10s.; eight-knife disc root pulper, price £5, pulley for power 6s. 6d. extra; twelve-knife disc root pulper, price £5 10s., pulley for power 6s. 6d. extra; patent iron light land plough, price £4, steel furrow turner 6s. extra; patent iron general purpose plough, price £4 5s.; 4 ft. steel furrow turner 7s. 6d. extra; wood beam plough price £3 3s., steel furrow turner 7s. extra; strong wood beam plough, price £3 18s.; (new implement) pair of patent oil-box plough wheels, price, with standards, 12s. 6d. per pair; set of wood whittle-trees, price 12s. 6d. and upwards; bundle of twitch rakes, price 3s. handled; bundle of wood drag rakes, price 9s. 6d., invented, improved, and manufactured by the exhibitors; curd breaker, price £1 2s. 6d. and upwards; iron sack barrow, price 12s. and upwards, improved and manufactured by the exhibitors; Leicester garden seats, price 16s. and upwards, invented and manufactured by the exhibitors; improved farm cart, price £15 10s., invented, improved, and manufactured by William Glover, of Warwick.

MAGGS and HINDLEY, of Bourton Foundry, Bourton, Dorset.

Combined portable thrashing machine, price £40 and upwards; four horse power portable steam engine, price £135; 3 $\frac{1}{2}$ horse power portable steam engine, price £100; and 2 $\frac{1}{2}$ horse power portable steam engine, price £70, invented, improved, and manufactured by the exhibitors; (new implements) patent straw thatch making machines, price £10 10s. and upwards, invented by Charles Peter Moody, of Holway, Sherborne, improved and manufactured by the exhibitors; (new implement) patent self expanding chain harrow, price 80s.; patent washing machine, price 94s.; and patent cheese press, price 52s. 6d., invented by Oliver Maggs, of Bourton, improved and manufactured by the exhibitors; and screw and lever cheese press, price 52s. 6d., invented, improved, and manufactured by the exhibitors.

THOMAS NALDER, of Challow Works, near Wantage, Berkshire.

Portable combined single blatt thrashing, shaking, riddling, winnowing, and barley horning machine, price on wood wheels, including spanners, ladders, and wheel blocks, £95, invented, improved, and manufactured by the exhibitor; patent corn separator and blower, price £8 8s. and upwards (obtained a silver medal at the Carlisle meeting, as attached to Clayton and Co.'s combined thrashing machine), invented by J. H. Nalder, of Alvecotte, improved and manufactured by the exhibitor; and (new implement)

patent corn separator and blower, price £16 10s., invented, improved, and manufactured by the exhibitor.

Messrs. PICKSLEY, SIMS, and Co., of Bedford Foundry, Leigh, near Manchester.

Chaff cutting machine, price 45s. and upwards to £5; combined litter and chaff cutter, price £16, pulleys for power if required 20s. extra; linseed and malt mill, price 95s.; bean and kibbling mill, price £6; oat mill, price 9s., pulley if required 10s. extra; and corn crusher, price £10, double pulley if required 20s. extra, invented, improved, and manufactured by the exhibitors; (new implement) steel grinding mill for hand power, price £9 10s. and upwards; and (new machine) patent furze, gorse, or whin preparing machine, price £18 10s., invented by Jno. Hardley, of the Isle of Wight, improved and manufactured by the exhibitors; turnip slicer, price 75s. and upwards, invented, improved, and manufactured by the exhibitors; (new implement) turnip pulper price 84s.; (new implement) root pulper, price £6 10s.; double action turnip slicer and stripper combined, price 100s. and upwards; and oil cake mill, price 70s. and upwards, invented and manufactured by the exhibitors; improved lawn mower, price £6, invented by Budding, improved and manufactured by the exhibitors; washing, wringing, and mangling machine, price £5 5s.; and wringing and mangling machine, price 45s. and upwards; patent lawn mowing machine, price, including case, £5 10s. and upwards; invented, improved, and manufactured by the exhibitors; one horse bone mill, price £25, and (new implement), two horse bone mill, price £42, invented by Robt. Burns, Leigh, improved and manufactured by the exhibitors; cheese maker, price 57s.; curd cutter or mill, price 40s., invented and manufactured by the exhibitors; patent mangle, price £11, invented by Baker, of London, improved and manufactured by the exhibitors; (new implement), one horse gear, price £13, invented and manufactured by the exhibitors; five horse power engine, price £180, invented, improved, and manufactured by W. Cambridge, of Bristol; cheese press, price 55s., invented, improved, and manufactured by H. Carson, of Westminster; field roller, price £11; and garden roller, price 30s. and upwards, invented, improved, and manufactured by the exhibitors; garden chair, wood seat and back, price 10s. 6d. and upwards, invented and manufactured by the exhibitors; revolving pig trough, price 12s. 6d. and upwards, invented, improved, and manufactured by the exhibitors; poultry pot, price 2s. 9d. and upwards; stench trap, price 1s. 9d.; rick stand pillar, price 3s. 6d., invented, improved, and manufactured by the exhibitors; Windsor rocking chair, price 20s.; and Windsor arm chair, price 18s., invented, improved, and manufactured by Windsor, of Oswestry; bundle of picnic stools, price 4s. 6d. each; blacksmith's water fire iron, price 32s. and upwards; Leamington range, price £6 12s.; ship stove, price £5 5s.; garden bordering, price 1s. 6d. each; garden grid, price 1s. 3d. and upwards, invented, improved, and manufactured by the exhibitors.

WILLIAM SAWNEY, of Beverley, Yorkshire.

Corn dressing machine and blower, price £6 10s.; the Yorkshire corn dressing machine, price £8; corn dressing machine and blower combined, price £10 16s.; blowing machine with registered cliver apparatus, price £7 15s., invented, improved, and manufactured by the exhibitor; oscillating self cleaning screen, price £8 10s., invented, improved, and manufactured by Robert Boby, of Bury St. Edmund's; set of patent chain harrows, price 95s., invented by John Cartwright, of Shrewsbury, and manufactured by the exhibitor; patent excelsior harrows, price 84s., invented by Joseph Seaman, of Basingstoke, and manufactured by the exhibitor.

EDWARD PAGE and Co., of Bedford.

Chaff cutting machines, price complete 2l. 15s. to 15l. 15s., improved and manufactured by the exhibitors; six-horse fixed high-pressure horizontal steam engine, price complete 75l., manufactured by the exhibitors; wrought iron plough (marked Eclipse), price complete 2l. 15s. to 5l., invented and manufactured by the exhibitors; double breast ridge or bouting plough, price 77s. 6d., as a swing 65s., with one wheel 70s., two wheels 75s., marker to regulate the width of ranges 7s. 6d.,

improved and manufactured by the exhibitors; combined horse-hoe, moulding plough, and scuffer, price 50s., if without bouting plough body 20s. less; one-wheel one-row horse hoe with three tines, price 40s., if with two wheels 50s.; two-wheel horse hoe with five tines, price 60s., invented and manufactured by the exhibitors; four-wheel wrought-iron lever, scuffer, or scarifier, with five tines, price 5l., scarifier, tines, and broad feet 3s. 6d. extra; four-wheel wrought-iron lever, scuffer, or scarifier, with seven tines, price 6l., scarifier, tines, and broad feet 3s. 6d. extra; four-wheel wrought lever, scuffer, or scarifier, nine tines, price 7l., scarifier, tines, and broad feet 3s. 6d. extra; and four-wheel wrought lever, scuffer, or scarifier, eleven tines, price 8l., scarifier, tines, and broad feet 3s. 6d. each extra, improved and manufactured by the exhibitors; improved leverage horse rake, price 7l. 10s., invented by W. Williams of Bedford, and improved and manufactured by the exhibitors (a prize was awarded to it at the meeting of the Royal Agricultural Society held at Southampton in 1844, Norwich 1846, Dublin 1851, highly commended at Salisbury 1857, and the only English prize at Edinburgh 1859); improved leverage horse rake, price 8l., improved and manufactured by the exhibitors; sets of 4-beam patent diagonal iron harrows, price 2l. and upwards; invented by S. L. Taylor of Cotton End, and improved and manufactured by the exhibitors (obtained a prize at the Royal Agricultural Society's Meeting at Derby 1843, Southampton 1844, Shrewsbury 1845, Northampton 1847, Norwich 1849, prize medal at the Great Exhibition 1851, Lewes 1852, Gloucester 1853, Dublin 1853, Lincoln 1854, Carlisle 1855, Chelmsford 1856, Salisbury 1857, Warwick 1859, and Edinburgh 1859); draining pipe and tile machine (marked No. 1), price, with cutting off stage, 1 die, &c., complete, 13l. 13s. and upwards, invented by W. Williams of Bedford, and improved and manufactured by the exhibitors (was awarded the prize of £25 at the Royal Agricultural Society's meeting at Northampton 1847, and the prize of 6l. at the Edinburgh meeting of the Highland Society 1859); improved double box draining pipe and tile machine, price 36l., invented and manufactured by the exhibitors; pug mill, price 12l. 12s. and 16l. 16s., invented and manufactured by the exhibitors; set of whippetrees, price 11s. 6d., manufactured by the exhibitors.

The ST. PANCRAS IRON WORKS COMPANY, of Old St. Pancras-road, London.

Full sized model of a stall, fitted up to show the patent wrought iron stable fittings, price, including boarding, but exclusive of tiles and gutters, £9 13s. 6d., manufactured by the exhibitors; patent wrought iron stall division, consisting of iron post, ramp, cill, and boarding, price, wrought post 25s. 6d., ditto cill 7s. 6d., ditto ramp 45s., boarding 63s., if plain ramp 12s., invented and manufactured by the exhibitors; set of enamelled iron plates, price 2s. 6d. per foot superficial, manufactured by the exhibitors; patent enamelled manger, rack, and water trough, with curved plate, price 70s., patent halter guide and rein, 10s. extra, seed box 6s. extra; specimen of patent wrought iron stable gutter, price 2s. 6d. per foot run; sanitary horse pot trapped, price 7s. twelve inches square; patent wrought iron stall division, price, wrought iron stable post 37s. 6d., ventilating ramp, patent bars 47s. 6d., wrought iron cill 12s. 6d., wood work extra; patent enamelled top plate manger, rack, and water trough, with noiseless halter guide, price 90s.; set of patent enamelled iron head stall plates, price 2s. 6d. per square foot; horse pot, price, 12 cill, with one inlet, tops cast, 8s. 6d., ditto with two inlets 9s. 6d., ditto with three inlets 10s. 6d., ditto with four inlets 11s.; full size model of a loase box, price according to style and pattern of division about £30; loose box division, price, wrought iron stall post 47s. 6d. each, wrought ventilating grating including capping and intermediate cill, with patent waved wrought bars 8s. 6d. per foot, wrought bottom cill 1s. 3d. per foot, wood work extra; loose box door and fittings, price of iron work with fastenings, hinges, and hangings 32s. 6d., wood work according to style; patent corner manger, rack, and water trough, enamelled, price, with patent enamelled top plate 90s., wood work extra, invented and manufactured by the exhibitors; specimen of paviers, laid in cement, price 80s. per 1000; specimen of clinkers, laid in cement, price 42s. per 1000; specimen of grooved paviers, price £7 7s. per 1000; cart horse manger, rack, and water trough, with curved top plate, price, with

plain brass plug and washer 62s. 6d. each; patent manger, self-acting rack, and water trough, with curved plates, enamelled, price £7 11s. 6d.; manger, rack, and water trough, with guard roller, enamelled, price 77s. 6d.; common corner manger, price 9s. 6d. and upwards; set of patent harness brackets, price 11s. 2d.; board of harness room fittings, prices—patent saddle and harness bracket combined, 15 inches long 4s., ditto ditto 16½ in. long, galvanized 6s., ditto ditto 18 inches long, gutta percha 17s. 6d., light harness bracket, plain, 1s. 3d., iron stable hook, plain 1s., and head plates and bolts, price 4s. 6d., invented and manufactured by the exhibitors; stand of chains for stable use, price—japanned pillar chain with 2 spring hooks 1s. 6d., ditto with spring hook and screw ring 1s. 3d., bright pillar chain with 2 spring hooks 1s., ditto with brass spring hook, ring, and tee 3s. 9d., japanned rack chain 10d.; improved pipe pillar rein, with strong German silver spring hook, price 6s.; pair of best town made bright steel pillar chains, price 10s.; improved pipe halter rein, fitted with German silver or bright steel spring hook, price 7s. 6d.; star plate and ring, price 4s.; collection of ornamental name plates, price, according to size and design, from 2s. 6d. to 6s. each; variety of ventilators, prices—12 inches 5s. 6d., 15 inches 9s., 18 inches (oblong) 5s.; pair of improved coach-house door hinges, price 36s. per pair; portable enamelled wash-stand and top, price 21s.; harness room stove and boiler, price 40s.; improved saddle ailer, price 9s. 6d.; improved harness horse, price 32s.; wrought iron corn bin, price 30s. and upwards; set of superior town made corn measures, iron bound, price—half quarter 4s. 8d., quarter 5s. 4d., half peck 6s. 8d., peck 8s. 8d., half bushel 13s. 4d., bushel 25s.; strong sack truck, price made of wood 18s.; and corn sieve, price 20 inches diameter (42 hole) 3s. 6d., manufactured by the exhibitor; improved carriage setter, price with leather friction piece to prevent chafing the carriage 18s., invented and manufactured by the exhibitors; stable lantern, price 2s. 6d., manufactured by the exhibitors; improved stable bucket, price 3s. 9d.; patent collar-bar sheep hurdle, price 6 feet long 3 feet high 1s. 2d. and upwards according to strength (received the silver medal of the Royal Agricultural Society of England at Salisbury, 1857; and the high commendation of the Royal Agricultural Society of Ireland at Waterford, 1857), invented and manufactured by the exhibitors; wrought iron rational or foot gate, price 16s.; wrought iron tree guard, of improved design, price 18s.; wrought iron flat-barred field gate, price 28s. and upwards; and pair of cast iron posts for field gate, with caps and bases, price 34s., manufactured by the exhibitors; and roll of galvanized wire netting, price 5½d. and upwards per lineal yard.

JOHN SMITH, Jun., of Coven, near Wolverhampton, Staffordshire.

Steam plough locomotive or traction engine, &c., of ten horse power, price £730 (for prize class), invented, improved, and manufactured by the exhibitor.

ADAM C. BAMLETT, of Middleton Tyas, near Richmond, Yorkshire.

(New implement) reaping and mowing machine, price £90, invented, improved, and manufactured by the exhibitor; reaping machine, price £25; and model of an improved cultivator, price £8, improved and manufactured by the exhibitor.

WILLIAM BROWN and CHARLES N. MAY, of North Wilts Foundry, near Devizes, Wiltshire.

Eight horse power portable steam engine, price £210, invented, improved, and manufactured by the exhibitors; model of a patent steam rotary cultivator, price £700, invented and improved by Robert Roman, of Canada West, and manufactured by the exhibitors; 2½ horse power portable steam engine, price £70, manufactured by the exhibitors; patent brickmaking machine, price £175, invented by Joseph P. Oates, of Erdington, improved and manufactured by the exhibitors; nine inch patent sluice cock, or valve, price 91s. 6d.; and two inch patent sluice cock, or valve, with brass fall, price 25s., invented, improved, and manufactured by the exhibitors; and patent heat indicator, price 33s., invented by Charles N. May, of Devizes, and manufactured by George Salter, of West Bromwich.

JAMES CORNES, of Barbridge Works, Nantwich, Cheshire.

Registered chaff cutting machine, price 95s. and upwards, (this machine gained the first prize for hand power given by the Royal Agricultural Society of England for three years in succession), invented by John Cornes, sen., of Barbridge, improved and manufactured by the exhibitor; registered chaff cutting machine, price 55s. and upwards, and cheese making apparatus, price 47s. 6d. and upwards; curd mill, price 40s., invented, improved, and manufactured by the exhibitor.

ROBERT and JOHN REEVES, of Bratton Iron Works, Westbury, Wilts.

Patent liquid manure drill, six feet wide, price £39 10s., without the drop levers £28 10s., Chambers' drop levers 55s. each (awarded a silver medal and five first-class prizes by the Royal Agricultural Society), invented by Thomas Chandler, of Aldbourne, improved and manufactured by the exhibitors; two or three row patent liquid manure seed drill, 4½ feet wide, price £23 10s.; (new implement) patent drill for drilling manure with turnips, mangold wurtzel, &c., price £18; patent broadcast dry manure distributor (received the prize of 100s. at the Royal Agricultural Society's Show at Salisbury, has also received six first prizes by other societies during the last three years to the amount of £33), price £10; patent manure distributor, in rows or broadcast, price £10; patent economical drill for dry manure and seed, six feet wide, price £13, with iron travelling wheels £12 (received a silver medal at the Royal Agricultural Society's Show at Salisbury); and improved small occupation seven row corn drill, price £14 10s., invented, improved and manufactured by the exhibitors.

WILLIAM HENHAM, of East Peckam, near Tonbridge, Kent.

Plough on the turnrise principle, price £9, improved by the exhibitor, and manufactured by William Weeks, of Maidstone.

ROBERT MAYNARD, of Whitesford, Cambridgeshire.

Patent portable sifting chaff engine for accompanying a portable steam thrashing machine, price £34, improved and manufactured by the exhibitor; spare riddle for the above price 14s., but gratis if supplied with preceding article; spare knife wheel, price 60s.; powerful oilcake crusher, price £6 10s. and upwards; invented and manufactured by the exhibitor; and extra fly wheel, price 15s., manufactured by the exhibitor.

HOLMES and SONS, of Prospect Place Works, Globe-lane, Norwich.

New combined portable thrashing machine, with one winnowing, price 100l., including six large bags for chaff, water-proof cover, and other tools, invented, improved, and manufactured by the exhibitors; eight horse power portable steam engine, price 230l., improved and manufactured by the exhibitors; improved circular-saw table, price 60l., with carriage wheels 5l. extra; portable seed sheller with dressing apparatus, price 50l., shells and barrel for trefoil seeds 15l. extra; (new implement) machine for cleaning corn chaff from seeds, dust and straw, price 6l. 10s. (was awarded the special prize of 5l. by the Norfolk Agricultural Society at Swaffham, 1859); corn dressing and winnowing machine, price 9l. 9s.; corn dressing or winnowing machine for small occupations, price 110s.; prize manure distributor, price £14, with side hilly improvement 30s. extra (had the last year of competition the three prizes awarded to it at Salisbury, Norwich, and Newton Abbott); general purpose lever seed and manure drill, price £30 10s.; four row lever seed manure drill, price £2, with swing steerage 21s. extra; the prize economical seed and manure drill, ridge or flat, received many prizes from the Royal and Bath and West of England Societies, price £13 13s., swing steerage 21s., and side hill motion 30s. extra; (new implement) ridge turnip and mangold wurtzel drilling machine, £7 14s.; the Salisbury prize corn and seed drill, fitted with foresteering, obtained the highest prize of the Royal Society at Salisbury, price £25, iron levers 2s. extra, forecarriage steerage 90s. extra, to lighten at both ends 10s. extra; nine row small occupation corn drill for hilly lands, price £17 17s., improved steerage 40s. extra; twenty-six row lever drill for grass, seeds, and sainfoin, price £23, for sainfoin

barrel 9s. extra; (new implement) broadcast barley and small seed sowing machine, price £10, with axle to lessen the width £12 10s., and one horse light wrought iron roll, price £6 10s., invented, improved, and manufactured by the exhibitor.

MANNING PRENTICE, of Stowmarket, Suffolk.

(New implement) combined mowing and reaping machine, price, as a mower, £30, with the reel and necessary apparatus, £6 extra and upwards, invented and improved by Wm. Harwood, of Mendlesham, and manufactured by Thomas Prentice and Co., of Stowmarket; cereal manure, price £8 10s. per ton; mangold manure, price £8 per ton; patent turnip manure, price £6 10s. per ton; superphosphate of lime, price £6 per ton; asphaltic flooring, price for $\frac{3}{4}$ inch ls. 6d. per square yard and upwards, fuel and sand being provided by employers, manufactured by Thomas Prentice and Co., of Stowmarket; kiln tiles, price 75s. per hundred; white bricks, price 60s. per thousand; white and red pantiles, price 5s. per thousand, improved and manufactured by C. O. Fison, Stowmarket.

GEORGE WILLIAM ROBINSON, of Barton-upon-Humber, Lincolnshire.

(New implement) patent two horse clod crusher and press wheel roller, price £14 and upwards, invented, improved, and manufactured by the exhibitor.

WILLIAM WEEKS, of Maidstone, Kent.

Nidget, adapted for the general cultivation of hop lands, price 84s. and upwards; Canterbury pattern hop pressing machine, price £13; Kent pattern hop pressing machine, price £14; (new implement) apparatus adapted for drying hops, price £20, invented by Patrick Simpson Pannett, Esq., of Chart Sutton, and improved and manufactured by the exhibitor; apparatus for drying hops, price £15, improved and manufactured by the exhibitor; four horse power portable steam engine, price £155, fitted with patent steam indicator and whistle, extra; combined portable single blast thrashing machine, price £80; three horse power portable steam engine, price £120; combined portable thrashing machine, price £60; (now implement) sulphurating machine, price £15; (new implement) portable wrought iron tank, price £37; four horse power steam engine, price £155, patent steam indicator and whistle extra; combined portable single-blast thrashing machine, price £80; three horse power portable steam engine, price £125, and combined portable thrashing machine, price £50, improved and manufactured by the exhibitor.

HILL AND SMITH, of Brierly Hill Iron Works, near Dudley, Staffordshire.

Set of Smith's patent harrows, for general use, price £4 and upwards, invented by Henry Smith, of Brierly Hill Iron Works, and manufactured by the exhibitors; set of patent self-relieving chain harrows, price 95s., invented by John Cartwright, of Salop, and manufactured by the exhibitors; wrought iron stable paring skim (No. 1), price £5 and upwards—if fitted with grubbing tines 10s. extra, invented and manufactured by the exhibitors (obtained a prize from the Royal Agricultural Society at the Derby meeting); wrought iron cultivator, price £8; wrought iron horse hoe, price 65s. (has obtained the silver medal of this Society); premium wrought iron light land roller, in two parts, with patent hollow axle, price £10 10s. (obtained the prize as a light land roller at the Chelmsford meeting of the Royal Agricultural Society, and also at the Warwick meeting last year); wrought iron barley roller, price £8; wrought iron universal field roller, large size, in two parts, price £18 10s. (obtained the prize at the Warwick meeting of the Royal Agricultural Society, as a heavy land roller); chaff cutting machines, price £6 10s. and upwards—invented and manufactured by the exhibitors; chaff cutting machine (No. 5), price £13—each length of cut is charged 5s., and fast and loose pulleys 20s. extra, invented by Mr. Cornes, of Baccbridge, improved and manufactured by the exhibitors (it has on repeated occasions obtained the Royal Agricultural Society's prize); horse works, price £12 12s.—if made for a pair of horses, £14; granary or warehouse crane, price £7 10s. and upwards (obtained a prize from this Society); rotary gravel screen, price £6 16s. and upwards—if without

wheels 10s. less; iron lifting jack, for carriages, carts, &c., price 20s.; iron sack barrow, or truck, price 15s.; iron portable force, price £5 5s.; iron portable Smith's work bench, with vice attached; iron wheelbarrows, price 27s. 6d. and upwards; iron heating barrow, for tar, &c., price 60s.; iron swing barrow, price 50s.; iron sheep rack, price £6 6s.; wrought iron sheep trough, price 30s. (obtained the silver medal of this Society at the Salisbury Show); and wrought iron galvanized sheep trough, price 35s.—flap 15s. extra, invented and manufactured by the exhibitors; wrought iron sheep folding hurdle, price 16s., portable wheel 10s., invented by Henry Gilbert, of London, and manufactured by the exhibitors; wrought iron patent sheep hurdle, price 1s. and upwards; improved pig trough of iron, price 15s. and upwards; cattle drinking troughs, prices, 2 to 10 feet long, containing twelve to sixty-eight gallons, from 12s. to 65s.; iron water tank, price 75s.; wrought iron cattle crib, price 67s. 6d.; specimen of patent black varnish, price 1s. 6d. per gal.; "light" japanned game-proof wire netting, price 6d. per lineal yard and upwards, according to strength, invented, improved, and manufactured by the exhibitors; galvanized poultry netting, price $\frac{7}{8}$ d. per lineal yard and upwards, invented and manufactured by the exhibitors; galvanized sheep netting, with flexible selvages, price 11d. per lineal yard; wrought iron tree guard, price 18s.; game proof plant guards, price per dozen 23s. to 56s.; improved iron garden roller, with balanced handle, prices 65s., 50s., 85s., and £5 10s.; wrought iron ornamental garden seat, prices, to hold two persons, with foot-stage, 35s., three persons ditto 40s., four persons ditto 47s. 6d., three persons without footstage 32s. 6d.; rustic table flower stand, price 30s.; iron and wire ornamental garden seat, galvanized, price 30s.; wrought iron folding chair with arms, for one person, price 18s. 6d. and upwards; wrought iron ornamental garden stakes, prices, with straight or pronged feet, from 3s. 6d. and 4s. 6d. to 26s. and 30s. per doz.; wrought iron standards or stakes for wire netting, price, 2 feet high out of ground 4s. 6d., $2\frac{1}{2}$ feet 6s. 6d., 3 feet 8s. 6d. per doz.; wrought iron field gate and wrought iron posts, with self-fixing basement, price 50s. (received the silver medal of the Society, the first prize of the Royal Agricultural Society of Ireland, and nine other premiums from different provincial societies); (new implement) wrought iron field gate, with hangings and fastenings for wood posts (No. 40), price 20s. and upwards; wrought-iron entrance gate, with side-gates and pillars (No. 43) self-shutting, price of the set complete £11 15s., large gate and pair of pillars £8; pair of strong wrought iron ornamental entrance gates and pillars, price of pair of gates £14 14s., with pillars £22 14s., brass locks extra 21s.; patent field stile, invented by Thomas Lyne, of Malmesbury, improved and manufactured by the exhibitors, price 40s. and upwards; wrought iron footpath or turnstile gate and posts, price 45s.; wrought iron wicket gate, fitted to self-fixing cast iron pillars, price 37s. 6d.; strong wrought iron hurdle, price per yard 4s. 7d.; strong wrought iron game-proof ox hurdle, price per yard 5s. 3d. and upwards; strong wrought iron game-proof ox hurdle, price per yard 5s. 3d.; specimen length of patent continuous sheep or light cattle fence, price 2s. 1d. per yard; specimen length of patent continuous sheep or light cattle fence, price 2s. 2d. per yard; specimen length of premium continuous light cattle fence, price 1s. 10d. per yard, and upwards, invented and manufactured by the exhibitors; specimen length of patent continuous deer-park fence, invented by Henry Smith, and manufactured by the exhibitors, price 3s. 10d. per yard; specimen length of premium continuous deer-park fence, price 4s. 2d. per yard; premium wrought iron hurdle, with six bars, invented and manufactured by the exhibitors, price 4s. 3d. each; set of tools for erecting strained wire fences, complete, with box, price delivered at any station 22s., invented and manufactured by the exhibitors; length of ornamental wrought iron hurdle fencing, price 4s. 9d. per yard, invented and manufactured by the exhibitors; iron vermin-proof rickstand, 16 feet diameter, invented, improved, and manufactured by the exhibitors, price, 12 feet to 22 feet diameter on 8 to 23 pillars, from £4 to £12 10s. pair of cast iron vermin proof rick stand pillars, and caps for wood frame top, prices, at Brierly Hill Works, large size 4s. 8d., small 3s. 6d. each; set of iron poultry hurdles, price 5s. 2d. each hurdle, or 31s. for the pen complete, and 5s. extra for door; stall division, price, without wood work 32s. 6d.

with $1\frac{1}{2}$ in. deal panels, 72s. 6d., with $1\frac{1}{2}$ in. oak 82s. 6d. and upwards; loose box, prices per lineal foot, with $1\frac{1}{2}$ in. deal panelling 11s., $1\frac{1}{2}$ in. oak 14s., without woodwork 6s. 6d., posts per pair 20s., spandril over door 5s.; galvanized corner manger, prices, in loose plain box 9s., galvanized 15s. 6d., enamelled 22s. 6d.; corner rack, prices, plain 8s. 6d., galvanized 11s. 6d.; rack and manger, prices, plain, either right or left hand, 30s., galvanized 52s. 6d., enamelled 42s. and upwards; ventilator and air brick, price 12s. 6d.; drain and trap for stalls, price 14s. 6d. complete; improved cast iron drain, prices, surface drains 2s. 6d. per foot, T pieces and angle pieces 3s. 6d. each; improved iron double harness bracket, prices, plain, galvanized, and covered, cast iron double harness bracket 15 in. projection 4s., 4s. 6d., and 7s. 6d. each; 18 in. do. 6s., 7s. 6d. and 10s. 6d.; light 1s. 3d., 1s. 6d., and 3s. each; improved iron collar bracket, price, plain 2s., galvanized 2s. 6d.; specimen of four qualities of fencing wire for strained fences, prices, iron No. 0 to No. 4 gauge, bright wire, best quality, specially prepared, 14s. 9d. per cwt., black tough wire 10s. 9d. per cwt., black charcoal annealed wire 13s. 9d. per cwt.—patent galvanized strained or cable wire 40s. per cwt.—all invented and manufactured by the exhibitors.

AMIES and BARFORD, of Queen-street Iron Works, Peterborough, Northamptonshire.

Stanley's registered roller mill, for crushing corn, malt, and linseed, and splitting beans, price £12, with bean splitting apparatus 40s. extra, invented by the late W. P. Stanley of Peterborough, improved and manufactured by the exhibitors (obtained a medal at the Great Exhibition 1851, at the Paris Exposition 1855, and prizes at more than fifty local shows during the last ten years); (new implement) registered combined sack barrow and elevator, price 60s. and upwards, invented, improved, and manufactured by the exhibitors; Stanley's registered farmers' portable steaming apparatus, price, with improved galvanized pans, £18 10s., invented by the late W. P. Stanley of Peterborough, improved and manufactured by the exhibitors (received a prize of 300 francs and a gold medal at the Paris Exposition 1855, also prizes at the Royal Agricultural Society's meetings at York and Lincoln, and many local shows); (new implement) cast iron clod crusher or land roller, price £8 and upwards, invented by William Cambridge of Bristol, improved and manufactured by the exhibitors; set of registered roller scrapers, price 40s., invented and improved by W. P. Stanley of Peterborough, and manufactured by the exhibitors; (new implement) improved wrought iron cylinder land roller, price £6 and upwards, invented, improved, and manufactured by the exhibitors; patent field stile, price 42s. and upwards, invented and improved by Thomas Lyte of Malmesbury, and manufactured (under licence) by the exhibitors; set of iron outlet drainage pipes, from three to ten inch bore, price 60s. per set; and a set of well and sump covers, price 63s. per set, both invented by J. Bailey Denton, Esq., of Stevenage, Herts, improved and manufactured by the exhibitors; bundle of cast steel diamond prong American dung forks, price 3s. each and upwards, invented, improved, and manufactured by W. A. Lyndon of Birmingham; bundle of No. 4 soft iron fencing wire, price 12s. 6d. per cwt.; and a set of improved pattern single Norfolk pig troughs, price 3ft. 9s., 4ft. 12s., 5ft. 15s., 6ft. 18s. each, both manufactured by the exhibitors.

JAMES NEWPORT, of Elmsted Court, near Ashford, Kent.

(New implement) Kent plough, price £8 10s., manufactured by Stokes Howland, of Wye.

WILLIAM TASKER, SEN., WILLIAM TASKER, JUN., and ROBERT TASKER, of Waterloo Iron Works, near Andover, Hampshire.

Four horse power portable thrashing machine, price £55; patent combined portable single fan thrashing, straw shaking, riddling, barley honing, and winnowing machine, price £110; and a patent steam power combined thrashing machine, price £120; all invented, improved, and manufactured by the exhibitors; eight horse power outside double cylinder portable steam engine, price £255, invented, improved, and manufactured by Clayton, Shuttleworth, and Co., of Lincoln; portable grinding mill, for steam power, price £65; bruising mill, for oats, beans, malt, &c., price £9 and upwards; winnowing machine, price £10 10s.; corn drill for thirteen rows,

price, if fitted with an improved steerage, £30 10s., without steerage £26; patent iron plough, price £5, with skim coulter 6s. extra, and upwards; and an iron plough, price 90s., with skim coulter 6s. extra, invented, improved, and manufactured by the exhibitors; set of four-beam diagonal iron harrows, price 75s. and upwards, invented by Lawrence Taylor, of Cotton End, and manufactured by the exhibitors; set of iron tube whippettes, price complete for a pair of horses 14s.; and iron plough, price 10s. 6d., improved and manufactured by the exhibitors.

WILLIAMSON BROTHERS, of Canal Iron Works, Kendal, Westmoreland.

Patent vortex turbine of seven horse power, price with moveable guide blades £48, or with fixed guide blades £38, invented by Professor Thomson, improved and manufactured by the exhibitors; six horse power patent vertical column engine, price £130, invented and manufactured by the exhibitors; improved five horse power horizontal fixed steam engine, price £90; and three horse power fixed steam engine, price (engine and boiler complete) £50, invented, improved, and manufactured by the exhibitors.

WILLIAM C. CAMBRIDGE, St. Phillip's Iron Works, Bristol.

Eight horse power portable steam engine, price £230; patent portable combined thrashing machine, price £105; three horse power portable steam engine, price £140; portable combined thrashing machine, price £74; patent improved winnowing machine, price £10 10s.; patent double action press wheel roller and clod crusher, price £12 5s. and upwards; (to this roller was awarded the Royal Agricultural Society's prize of £3 at the Warwick meeting in 1859); wheel roller and clod crusher, price £10 5s. and upwards; and patent jointed self expanding chain harrow, price 75s. and upwards, invented, improved, and manufactured by the exhibitor; and set of three four-beam patent Exceelsior harrows, price 63s. and upwards, invented by Joseph Seaman, of Basingstoke, improved and manufactured by the exhibitor.

GEORGE FOORD, Engineer, of Elwick Works, Ashford, Kent.

Seven horse power outside single cylinder portable steam engine, price mounted on wooden travelling wheels with patent oil box axles £215, if fitted with C. S. and Co.'s patent extra safety valve (under lock and key) and steam pressure gauge £5 extra; and combined portable single blower finishing machine, price mounted on wood travelling wheels with patent oil box axles, also inclusive of waterproof cover, £110, invented, improved, and manufactured by Clayton, Shuttleworth, and Co., of Lincoln; improved portable straw elevator, price £59, if with wood travelling wheels £5 extra, invented by James Hayes, of Elton, improved and manufactured by Clayton, Shuttleworth, and Co.; chaff cutting machine, price 50s. and upwards, invented and manufactured by Richmond and Chandler, of Salford; corn crusher, price £5 5s. and upwards, invented, improved, and manufactured by Richmond and Chandler; patent iron plough, with two wheels, price 82s. 6d., if with steel breast 7s. extra, if with skim coulter and drag chain 7s. 6d. extra, larger sizes at higher prices, invented and manufactured by Jas. and Fred. Howard, of Bedford; set of patent iron harrows, price 57s. 6d. and upwards; and patent horse rake, price with steel teeth £8 10s. and upwards, invented, improved, and manufactured by Jas. and Fred. Howard; patent double action haymaking machine, price £16 10s. (this machine received the first prize at the Royal Agricultural Society's meeting at Salisbury, 1857), invented by W. N. Nicholson, of Newark, and manufactured by Ransomes and Sims, of Ipswich; two horse gear, price £13; Kent turnip plough, price £7 10s.; and Scotch turnip and mangold drill, price £8 10s., improved and manufactured by the exhibitor; patent five prong cultivator, grubber, or scarifier, price £7 (the Royal Agricultural Society of England awarded first prizes to it at Gloucester in 1853, and at Chelmsford in 1856), invented, improved, and manufactured by Richard Coleman, of Chelmsford; three row horse hoe, price £6 15s., improved and manufactured by the exhibitor; bundle of India-rubber driving bands, price 43d. per foot and upwards, invented by Parmelee, manufact-

tured by the North British India Rubber Company, of Edinburgh; Rasthall school desk, price 30s. and upwards, improved and manufactured by Russell and Bugler, of A-Isford.

JAMES GEORGE, of Selling, near Faversham, Kent.

Two-wheel turric plough, price 10*l.*, improved and manufactured by the exhibitor.

EDWARD HAMMOND BENTALL, of Heybridge, near Maldon, Essex.

Improved chaff cutter, price 2*l.* 12s. 6d. and upwards to 13*l.* 13s., improved and manufactured by the exhibitor; patent bean kibblers, price 3*l.* 3s. each; patent corn and seed crusher, price 6*l.* 6s. and upwards; improved oilcake mill, price 2*l.* 2s. and upwards, invented, improved, and manufactured by the exhibitor (this mill obtained the first prize of 5*l.* at the Royal Society's meeting at Chester 1858); patent Gardner's turnip cutters, single action, price 4*l.* 10s. each and upwards, invented by James Gardner of Bunbury, improved and manufactured by the exhibitor; patent prize root pulper, price 4*l.* 4s. and upwards, invented, improved, and manufactured by the exhibitor (obtained the only prize of 5*l.* awarded to root pulpers at the Chester meeting of the Royal Agricultural Society 1858); patent prize light subsoil plough, price 3*l.* 10s. (this subsoil plough gained the prize as the best subsoil plough at the Bath and West of England meeting 1857); patent prize light broadshare and subsoil plough, price 6*l.* 6s.; patent prize light broadshare, cultivator, scarifier, and subsoil plough, price 7*l.* 17s. 6d. and upwards (obtained three prizes at the Chelmsford meeting in 1856, namely, 3*l.* as a cultivator adapted for heavy land, 3*l.* as a cultivator adapted for light land, and 2*l.* as a scarifier or prarer); patent light iron broadshare, price 5*l.* 15s. 6d.; patent prize subsoil plough, price 4*l.* 4s.; patent light broadshare plough, price 5*l.* 5s.; and patent broadshare and subsoil plough, price 6*l.* 6s., invented, improved, and manufactured by the exhibitor; original Goldhanger plough, price 2*l.* 7s. 6d., invented by the late Wm. Bentall of Goldhanger, improved and manufactured by the exhibitor; patent plough, price with coulter and staff 2*l.* 13s. 6d.; patent plough, price with two wheels, staff, and coulter, 3*l.* 10s. (obtained two prizes of 4*l.*, and 2*l.* at the Chelmsford meeting in 1856); double-tom plough, price 2*l.* 17s. 6d.; patent mangel plough, price 2*l.* 17s. 6d., if fitted with a double-tom 3*l.* 15s.; wood-beamed mangel hoe, price 2*l.* 2s.; patent potato plough, price 2*l.* 2s. to 2*l.* 12s. 6d.; patent combined ridging plough and horse hoe, price including arms and cutters or hoe blades 2*l.* 14s. 6d., harrow 6s., marker 9s. extra; patent single ridge horse hoe, price 2*l.* 2s., harrow 6s. extra; patent Salisbury prize double-ridge horse hoe, price 3*l.* 13s. 3d., harrow 6s. extra, for 12s. 6d. extra it may be turned into a capital ridging plough (awarded a prize of 1*l.* 10s. at the Salisbury meeting of the R. A. S. in 1857); patent light three-tined grubber and cultivator, price 2*l.* 7s. 6d. (received the first prize of 5*l.* as the best grubber at the Great Yorkshire Agricultural meeting at Northallerton in 1858); patent prize light broadshare and cultivator, price 4*l.*, extras for converting it into a double-ridge hoe and double mould-board plough 1*l.* 10s.; patent prize light broadshare and cultivator, price 4*l.* 10s. (obtained the first prize at the Norfolk Association meeting at Swaffham 1857); set of patent four-beamed heavy or drag harrows, price 4*l.* 5s.; set of patent three-beamed medium harrows, price 4*l.* 14s. 6d.; set of patent four-beamed light harrows, price 3*l.* 13s. (obtained a prize of 2*l.* at the Chelmsford meeting in 1856); set of patent four-beamed light seed harrows, price 2*l.* 18s. 6d.; round feeding or water trough, price 7s.; oblong feeding or water trough, price 9s.; improved circular hog trough, price 16s.; improved circular pig trough, price 10s.; and improved circular pig or sheep trough, price 7s. 6d., invented, improved, and manufactured by the exhibitor.

J. B. BROWN and Co., of 18, Cannon-street, City, London.

(New implement) Chaplin's new patent roadway self-propelling steam engine, price 250*l.*, invented, improved, and manufactured by Alex. Chaplin and Co.; improved 4-horse power portable combined thrashing, shaking, and winnowing machine, price 50*l.*, invented, improved, and manufactured by William-son Brothers of Kendal; Shauks's new patent lawn mowing, rolling, collecting, and delivering machines for 1860, price 6*l.*

5s. and upwards, invented, improved, and manufactured by Messrs. Shanks and Son; wrought iron hurdles, price 5s. 3d. each and upwards; specimen of wrought iron continuous round bar fence, price 3s. 4d. per yard; wrought iron field and other gates, price 1*l.* and upwards, cast iron pillars for ditto 15s.; specimens of ornamental rabbit-proof portable fences, price 5s. 6d. to 7s. each; bundle of galvanized fencing wire, price 16*l.* 10s. per ton; ornamental cast iron vase, price 2*l.* 2s., pedestal for ditto 2 ft. 2 in. high 1*l.* 1s.; ornamental cast iron bronzed garden seat, price 2*l.* 7s. 6d.; ornamental garden seats, price 1*l.* 5s. and upwards; wrought iron and wire work arch, for gardens, &c., price 2*l.* 5s. and upwards; improved circular flower stand, price 1*l.* 2s. 6d.; ornamental 3-tier flower stand, price 19s. 6d.; roll of strong japanned wire netting, price 6d. per yard and upwards.

JOHN GLIDDON, of Williton, near Taunton, Somersetshire.

Five feet 6 inches prize open fire kitchen-range or cooking apparatus for 5 feet 2 in. opening, price £6 16s. (obtained the two last prizes of the Bath and West of England Society), and 4 feet 6 in. prize open fire kitchen range or cooking apparatus, price £10, invented, improved, and manufactured by the exhibitor, and double hearth cottage cooking stove, price £3 17s. 6d., invented by W. Bradshaw, and manufactured for the exhibitor.

JAMES JACKSON, of Brighton, Sussex.

Patent combined portable steam thrashing machine, price £120, invented by Messrs. Ransomes and Sims, of Ipswich, improved and manufactured by the exhibitor; eight horse portable steam engine, price £250, if fitted with copper exhaust steam and feed piping, copper mountain to boiler, and extra clack and patent piston (Molineux & Nicols), £17 extra, invented, improved, and manufactured by the exhibitor.

GREENING and Co., of the Victoria Iron and Wire Works, 81, Oxford-street, Manchester.

(New pattern) improved strong wrought iron farm gate, price, including fittings for wood or stone posts, £1 5s.; strong wrought iron farm gate, price of gate £1 1s.; extra strong wrought iron farm gate, price of gate £1 6s.; strong wrought iron farm gate, price £1 5s.; extra strong wrought iron farm gate, price £1 10s.; pair of fine wrought iron entrance gates, price £6 10s., or with handsome cast iron piers £8 10s., if with side gate complete £12 12s.; pair of fine wrought iron entrance gates, price £16 16s.; (new design) single wrought iron gate for entrance, price £8 10s.; fine wrought iron wicket gate, price, with pillar complete, £4 4s.; (new design) fine wrought iron garden wicket gate, price £2; set of best wrought iron sheep hurdles, price, with horizontal bars, 1s. 11d. 5 ditto 2s. 1d., 6 ditto, 2s. 3d. per yard; set of best wrought iron cattle hurdles, price, with four horizontal bars 2s. 3d., five ditto 2s. 6d., six ditto 2s. 9d. per yard; (new pattern) set of improved wrought iron hurdles, price per yard more than ordinary hurdles 6d.; set of ornamental fine wrought iron garden hurdles, price 5s., 5s. 6d., 6s., and 6s. 6d. per yard lineal; set of wrought iron continuous bar fences, price for sheep 2s. 1d., for cattle 2s. 4½d., for oxen (extra strong) 2s. 9d. and 3s. 2d. per yard; (new pattern) set of improved best wrought iron bar fences (continuous), price 6d. per yard additional; strained wire fence, price 1s. 9d. per yard; improved wire rope fence, price 2s. 4d. per lineal yard; (new pattern) improved iron chain fence, price 4s. 6d. per lineal yard; moveable wire hurdle fence for poultry, price 2s. per yard; patent machine-made iron wire horse, cattle, and sheep fence, price 1s. per lineal yard; patent extra strong wire ox fence, price 1s. 9d. per lineal yard; patent hare and rabbit proof fence, price 24 inches high 1s., 30 inch ditto 1s. 3d., 36 ditto 1s. 6d. per lineal yard; patent iron wire sheep-fold fence, price 9d. per lineal yard; patent double-mesh pattern fence, price 1s. 6d. per lineal yard; patent poultry and chicken-proof fence, price 2s. 6d. per lineal yard.; patent sheep fence, price 8d. per yard; patent double-mesh pattern fence, price 1s. 4d. per yard; patent cemetery fence (machine-made), price 2s. 6d. per yard; patent machine-made Australian sheep fence, price £80 per mile; set of samples of various wire fences, price from 6d. to 2s. per yard, various ornamental garden fences, from 1s. 6d. per yard; set of sample rolls of hexagon pattern wire netting, prices per yard 2 feet high, japanned, 1½ in. mesh 10d., 2 in. ditto 7½d., 2½ in. ditto 6d.,

3 in. 5d.; galvanized, 1½ inch mesh, 1s., 2 in. ditto 9½d., 2½ in. ditto 8d., 3 inch ditto 6d.; (new pattern) improved tree guard, price 15s. each; pair of circular tree guards, price 10s.; set of assorted sizes wire plant guards, prices, 21 by 9 in. 1s., 21 by 18 in. 2s., 27 by 12 in. 1s. 6d., 27 by 24 in. 3s. each, more ornamental patterns extra; and ornamental wire garden border, price 10 in. high 9d., 16 in. high 1s. per yard, manufactured by the exhibitors.

GEORGE HOWE, Dartford and Farmingham, Kent.

Reaping machine, price £42 10s. (the Royal Agricultural Society's first prize was awarded to this machine in 1855, and their prize of £15 in 1856, it also received the prize at Salisbury in 1857), invented by C. H. McCormick, Chicago, U.S., improved and manufactured by Burgess and Key, London; horse drag rake, with 24 steel teeth, price £8, (received the first prize of the Royal Agricultural Society's meeting at Salisbury in 1857), invented, improved, and manufactured by Ransomes and Sims, Ipswich; Howard's patent iron Kent plough, price £5 10s.; and set of Howard's patent iron harrows, price 70s., invented, improved, and manufactured by J. and F. Howard, Bedford; chaff cutting machine, price 50s. and upwards, invented, improved, and manufactured by Richmond and Chandler, Salford; oat and bean crusher, price £5 5s., invented, improved, and manufactured by Richmond and Chandler, Salford; patent bean cutter on an iron stand, price 80s., invented, improved, and manufactured by G. A. Biddell, Ipswich; improved oilcake breaker, price 73s. 6d., invented, improved, and manufactured by E. H. Bentall, Heybridge, Essex; Gardner's double-action turnip cutter, price £5 10s., invented by J. Gardner, Banbury, improved and manufactured by Ransomes and Sims, Ipswich; Bentall's patent prize root pulper, price £6 6s., invented, improved, and manufactured by E. H. Bentall, Heybridge, Essex; weighing machine, price 70s., improved by the exhibitor, and manufactured by Kingston and Trowbridge, London; six bushel corn bin, price 32s. 6d., improved by the exhibitor, and manufactured by Perkins and Son, London; registered atmospheric churn, 8 quarts, price 31s. 6d., invented, improved, and manufactured by B. Samuelson, Banbury.

MAPPLEBECK and LOWE, Birmingham.

Chaff cutting machine, with two knives, price 50s. and upwards, improved and manufactured by the exhibitors; patent turnip cutter, price 80s., if fitted with wheels and handles 12s. extra (a silver medal was awarded to the exhibitors for this machine at the Northampton Meeting of the Society); patent double action turnip cutter, price 100s., if fitted with wheels and handles 12s. extra, invented by the late James Gardner, improved and manufactured by the exhibitors; patent combined oat and bean mill, price £5 15s., invented by G. A. Biddell, improved and manufactured by Ransomes and Sims, Ipswich; improved corn crusher, price 90s. and upwards, improved and manufactured by the exhibitors; improved corn crusher, price £6 10s., invented, improved, and manufactured by Richmond and Chandler, Salford; improved oilcake breaker, price 63s., improved and manufactured by the exhibitors; registered double-action oilcake breaker, for sheep and oxen, price 70s., invented, improved, and manufactured by Smith and Ashby, Stamford; improved hand road scraping machine, price 70s., invented, improved, and manufactured by Bourne and Harris, Somerset; single lever cheese press, price 50s., improved and manufactured by the exhibitors; oak barrel churn, price 65s., manufactured by the exhibitors; improved lifting jack, price £5, larger for ten tons £10; double-action mangle, price £10 10s., cottage mangle, price 70s., and linen press, price 55s., improved and manufactured by the exhibitors; weighing machines, price 27s. 6d. and upwards, improved and manufactured by W. and T. Avery; Mercote balance scarifier or tormentor, price 45s., invented by the late Luke Pearman, of Mercote Hall, improved and manufactured by the exhibitors; chain harrow, price 70s. (a prize was awarded to the exhibitors at the Warwick Meeting of the Royal Agricultural Society in 1859, for this implement); patent root pulper, price £5 5s., invented and manufactured by E. H. Bentall, of Heybridge; fourteen knife root pulper, price with two handles £5 5s., invented, improved, and manufactured by Golding and Co., of Leicester; double row turnip and mangold wuzzel drill, price 90s., and ex-

panding horse hoe, price 40s., improved and manufactured by the exhibitors; set of improved trussed whippetrees, price wood 9s. 6d., iron 10s. 6d. per set, invented by E. W. Harding, of Old Springs, and improved and manufactured by the exhibitors; set of cast iron stable furniture, price stall post and rails 37s. 6d., rack and manger 27s. 6d., drain and trap 15s.—in all 80s. and upwards; board of harness room fittings, contains saddle bracket 4s. 6d., harness bracket 1s. by 18 inches 3s. 6d., ditto 15½ by 8½ inches 2s. 9d., ditto 11 by 10 inches 1s. 6d., light harness bracket 12 by 12 inches 8d., ditto jointed 2s., double stable hook 1s. 2d., single ditto 6d., heel for batting into wall 2s., black pillar chain 9d., galvanized 1s., black rack chain 9d., galvanized 1s., black head stall chain 1s., galvanized 1s. 3d., each; improved Leamington kitchen range, price £8 5s.; pair of best warranted extra leather double nailed Smiths' bellows, price 63s.; improved portable forge, price 84s.; pair of iron arms and boxes, price 28s. per cwt.; mail patent axle, with long bolts, prices 1½ inch 25s., and 1½ inches 27s. 6d.; bundle of best fencing wire, price 13s. per cwt., and bundle of iron and wood sack carts, prices, iron, small 9s. 6d., large 16s. 6d., wood, small 12s. 6d., large 15s., wood for barrels 16s., manufactured by the exhibitors; set of patent draining tools, price 39s. (the prize was awarded to the exhibitors for these tools at the Northampton Meeting of the Royal Agricultural Society in 1847, also at Lewes in 1852, and again at Warwick in 1859), invented by Josiah Parkes, of London, improved and manufactured by W. A. Lyndon, of Birmingham; bright and black patent spades, prices, black, Nos. 1 3s. 3d., 2 3s. 6d., and 3 3s. 9d., bright, Nos. 1 3s. 9d., 2 4s., 3 4s. 3d.; patent shovels, price, Nos. 1 3s., 2 3s. 3d., 3 3s. 6d.; cast steel digging forks, price, four prong 3s. 9d., five prong 4s. 6d., and cast steel boy's digging, border, potato, and couch grass forks, price, boys digging forks 3 prongs, 2s. 8d., 4 prongs 3s. 2d., 5 prong 5s., border forks 4 prong 2s. 8d., 5 prong 3s. 4d., potato fork 3 prong 3s. 4d., 4 prong 3s. 10d., couch grass fork 4 prong 2s. 11d., 5 prong 3s. 4d., each, improved and manufactured by W. A. Lyndon, of Birmingham; cast steel manure forks, price, 3 prong 2s. 11d., 4 prong 3s. 7d.; American pattern hay forks, price, hay forks 4 feet long 1s. 10d., 4 feet 6 inches 2s., unloading fork 2s. 6d., pitching fork 3s. each; pair of hand drag rakes, price, No. 1, best 12s. 6d., No. 2 8s. 6d., each; instrument for straining wire, price 42s.; brewer's hop press, price, small 28s., large 40s.; pair of pheasant feeders, price, No. 1 5s., 2 20s.; pair of ornamental carriage gates, price £25; pair of wrought iron carriage gates, price £12 12s.; field gates (assorted), price, 1st tubular field or entrance gate 9 feet 6 inches by 4 feet, with fluted cast iron pillars 70s., 2nd ditto 9 feet 6 inches by 4 feet, to hang to wood posts 35s., 3rd solid iron gate 9 feet 6 inches by 4 feet 25s.; iron hurdles, price £10 per ton, tubular hurdle, new pattern 6s. each; continuous iron fencing, price, first size with top bar ¾ inch round and four lower bars 1 by ¼ inch, standards 3 feet apart 2s. 9d., second size with top bars ¾ inch round and four lower bars 1 by ¼ inch, standards 3 feet apart, third size with all round bars, top ¾ inch, and four lower bars ¾ inch 4s. per yard; garden seats, price, pair of old rustic, painted green, No. 200 20s., pair new rustic with arms oak, No. 201 25s., new grecian pattern, registered, oak, No. 203 27s. 6d., scroll ditto, wrought iron end, green, No. 204, 12s., scroll ditto, oak, No. 205 4 feet 6 inch long 15s. 6d., each; arm chairs, price, No. 206 painted green 21s., Grecian as 203, painted oak 25s., No. 1 scroll as 204, painted green 12s., scroll as 205, painted oak 15s. each; cast iron ornamental vase and pedestal, price, small fluted 35s., middle ditto 55s., small tazza 35s., large tazza 80s., media 95s., lotus 55s., antique £5 15s., deer's head 95s.; new pattern Berlin Grecian vases, price £6 6s. per pair; rustic pattern garden table, price, round 35s., oblong 12s. each, and garden table, price, round 20s., oblong 25s. each, designed and manufactured by the exhibitors; Silens messor mowing machine, price £8 10s., invented and manufactured by Thomas Green, of Leeds; iron garden roller, price 15s.; garden roller with seat attached, price 60s.; improved garden engine tub, price £5; specimen of vermin traps, price, rabbit 16s., improved registered 27s., Dorset 21s., hawk 30s., rat 6s. 6d., small bird 5s. 6d., mole 6s., rat for rivers 12s. per dozen, and improved dynamometer or draught gauge, price, in strong oak case 60s., manufactured by the exhibitors.

OLDHAM AND BOOTH, of Kingston-upon-Hull, Yorkshire.

Six horse power bone mill, price £110; four horse power bone dust mill, price £90, and two horse power bone mill, price £17, invented, improved, and manufactured by the exhibitors; eight horse power portable single cylinder steam engine, price £230, subject to $\frac{1}{2}$ per cent. discount for cash, invented, improved, and manufactured by Robey and Co., of Lincoln.

J. J. B. PORTER and Co., of Lincoln.

National coal gas apparatus for private residences, farmsteads, or any isolated buildings, price £17 10s., invented by George Rower, of St. Neot's, improved and manufactured by the exhibitors; corrugated iron and wood shed for the above apparatus, price £20, manufactured by the exhibitors.

THOMAS READ and Co., of 4, Agar-street, Strand, London.

Specimens of sign painting; writing and gilding on glass, also enamelling and embossing on glass and tablets, writing on cardboard, and ornamental writing for beneficence boards, banners, and general decorations, and Hussey's patent reaping machine, price £25, manufactured by George Thomason and Co., sole patentees.

SPENCER READ, and Co., of 4, Agar-street, Strand, London.

Specimens of photographs of agricultural and other machinery, working drawings, models, &c., prize cattle, &c., and a miscellaneous assortment of photographs, &c.

F. REIMANN, of 4, Bowater-place, Blackheath, Kent.

(New implement) sowing plough for three furrows, for grain and seeds of every kind, price £11 5s., and (new implement) hand drill, susceptible of being transformed at will into a single or double drill on wheels, price 40s., wheels 29s., invented, improved, and manufactured by Truneau, of St. Fargeau, Yonne, France.

JOHN RICHARDSON, of Brunton-place, near Carlisle, Cumberland.

Corn dressing machine, price £8 15s., improved and manufactured by the exhibitor, was awarded, after actual trial against eleven competitors, the first prize at the Highland and Agricultural Show at Edinburgh, in August 1859.

GEORGE CARTER ROLEF, of Bull Town Farm, Braubourne, near Ashford, Kent.

Kentish turn-rise plough, price £8, manufactured by John Harvey, of Braubourne, Ashford, Kent, was awarded a prize of 30s. at the Ashford meeting, in 1853, 40s. at Sevington Court Lodge near Ashford, 1854, 50s. at East Stour Farm, Ashford, 1855, 40s. at Eyegate Farm, Smeeth, 1857, 30s. at Repton Farm, Ashford, 1859.

PHILIP JOHNSON, of 290, Oxford-street, London.

Butter Churns, to make from 30lbs. to 1lb. of butter, prices, to make 30lbs. 8s. 6d., 25lbs. 6s., 20lbs. 50s. 15lbs. 4s. 6d., 12lbs. 37s. 6d., 10lbs. 35s., 8lbs. 32s. 6d., 6lbs. 30s., 4lbs. 28s., 2lbs. 18s., 1lb. 15s., invented and manufactured by the exhibitor; patent mangle, price £10 10s., improved and manufactured by the exhibitor, and tablecloth press, price 35s. and upwards, manufactured by the exhibitor.

THOMAS KENNAN and SON, of 18 and 19, Fishamble-street, Dublin.

Wire strainer, price 25s.; set of tools, for knotting fence wires, price 7s. 6d.; wire straightening machine, price 15s.; collar vice, price 3s. 6d.; set of tools for erecting wire fences, price 65s., were specially commended by the judges at the Chester Show of the Agricultural Society, 1858; set of tools for erecting wire fence, price 65s.; apparatus for blasting roots and stumps of trees, price 30s. and upwards; double action log sawing machine, price 55s. each; house and garden ladder, price 35s.; chisel-tooth cross-cut saw, price 12s. 6d. and upwards; felling saw, price 24s. and upwards, and double action log sawing machine, price 55s., all invented and manufactured by the exhibitors.

GEORGE MILFORD, of Thorverton, near Cullampton, Devon.

Improved 1-horse cart, price 15*l.* (awarded half the prize by the Bath and West of England Society at Cardiff, 1853); improved Salisbury Cardiff prize 2-horse wagon, price 25*l.*, and improved Yeovil prize wagon, price 24*l.*, all invented, improved, and manufactured by the exhibitor.

WILLIAM PEARSON and Co., of Leeds, Yorkshire.

Washing, wringing, and mangling machines, price 3*l.* 3s. and upwards, invented, improved, and manufactured by the exhibitors.

WILLIAM TROTTER, of South Acomb, Newcastle-on-Tyne, Northumberland.

Patent flexible reaping machine, price 24*l.*, invented by the exhibitor, and manufactured by Pattinson and Co. of Hexham Iron Works, Hexham; (new implement) atrow rope twister, price 2*l.* 17s. 6d., and (new implement) key rack, price 10s. 6d., both invented and manufactured by the exhibitor; (new implement) patent self-acting lubricator for steam engine cylinders, price $\frac{1}{2}$ -inch 1*l.*, 4 inches 1*l.* 10s., invented by John Oliver of Chesterfield, and manufactured by the exhibitor; (new implement) patent double lever cask stand, price 8s. according to size, invented by William Cavill of 45, Skinner-street, London, and manufactured by the exhibitor.

JOHN TYE, of Lincoln.

Portable corn grinding mill on 4 travelling wheels, price 55*l.* 10s., invented, improved, and manufactured by the exhibitor; 12-inch steel mill for grinding, bruising, and splitting grain, price 12*l.* 12s., invented, improved, and manufactured by Thomas Buxton of Malton; fixed corn mill on metal frame with 2 pairs of stones, price 135*l.*; mill for making pearl barley, price 31*l.* 10s., and portable or fixed corn grinding mill, price 42*l.*, all invented, improved, and manufactured by the exhibitor; sack barrow with sack-holding and lifting apparatus combined, price 3*l.* 10s., invented and improved by the exhibitor, and manufactured by R. H. Crisp of Lincoln; portable or fixed corn mill with 3-feet Derbyshire grey stones, price 38*l.*, invented, improved, and manufactured by the exhibitor.

R. H. CRISP, The India Rubber and Gutta Percha Depot, Lincoln.

Patent improved india rubber and canvas strapping, price 6d. per foot; patent improved india rubber and canvas belting, price 9d. per foot; Parmelee's patent improved india rubber and canvas machine bands, price 4*l.* each and upwards; pair of Parmelee's patent improved india rubber and canvas driving belts, price 5*l.* 10s., and pair of Parmelee's improved patent india rubber and canvas driving bands, price 6*l.* each, all invented, improved, and manufactured by the North British Rubber Company, Edinburgh; superior leather machine strap, price 6*l.*, invented, improved, and manufactured by the exhibitor; pair of gutta percha driving bands, price 4*l.* 5s. each, manufactured by David Moseley of Manchester; gutta percha machine straps, price 2s. 6d. per lb.; gutta percha tubing, price 4s. 6d. per lb.; gutta percha suction pump piping, price 3s. 3d. per lb.; india rubber and canvas hose for delivery purposes, price $\frac{1}{2}$ -inch 4*l.*, $\frac{3}{4}$ -inch 5*l.*, $\frac{1}{2}$ -inch 6*l.*, $\frac{3}{4}$ -inch 7*l.*, and $\frac{3}{4}$ -inch 8*l.* per foot, if fitted with brass rose and jet with tap 5s. 6d. extra, manufactured by David Moseley of Manchester; india rubber flexible gas tubing, price $\frac{1}{2}$ -inch 3*l.* 6d., $\frac{1}{4}$ -inch 4*l.* 6d., $\frac{3}{4}$ -inch 6*l.*, and $\frac{1}{2}$ -inch 8*l.* per foot; india rubber flexible tubing for corn drills, price $\frac{3}{4}$ -inch 10*l.*, $\frac{1}{2}$ -inch 14*l.*, and 1-inch 1*l.* 9d. per foot; waterproof cart cover, price 2*l.* 8s., or 4s. per square yard; vulcanized india rubber rubber washers, price 2s. 6d. per lb., manufactured by David Moseley of Manchester; and flexible glazed tubing, price 8d. per foot.

WALLIS and HASLAM, of Basingstoke, Hants.

Two-horse power patent portable thrashing machine, price 37*l.* 10s. 6d.; 3-horse power patent portable thrashing machine, price with stout oak frame and wheels 45*l.* 12s., if to fix on wheels 39*l.* 10s., and 4-horse power patent portable thrashing machine, price 54*l.* 12s. 6d., but if to fix on stout oak frame 48*l.*, both invented, improved, and manufactured by the exhibitors; patent portable straw elevator, price £45 12s.; patent corn screen, price £7 and upwards; and patent winnowing

and corn dressing machine, price £14 5s., invented by Boby and Co., of Bury St. Edmunds, improved and manufactured by the exhibitors; barley hummeller for hand or other power, price 90s.; light one wheel pony plough, price 40s.; light one wheel iron plough, price 70s.; one wheel iron plough for two horses, price with steel furrow 76s. 6d., iron ditto 69s., with skia coultter 5s. 6d. extra; two wheel light iron plough, price fitted with steel turn-furrow 86s. 6d.; two wheel iron plough, with patent screw stumps, price with iron turn-furrow 90s., but if with steel as exhibited 87s. 6d., and 10s. extra for patent screw stumps; two wheel iron plough, price 90s., if with patent screw stump 10s. extra; (new implement) two wheel iron plough, with improved registered screw head gear, price 91s. 6d.; and one wheel iron horse hoe, price 38s. and upwards, invented, improved, and manufactured by the exhibitors; (new implement) set of patent excelsior iron harrows a whippetree, price 30s. and upwards, invented by Joseph Seamsn, of Basingstoke, improved and manufactured by the exhibitors; (new implement) machine for drilling iron by hand to other power, price without frame 88s., upon a frame £5 5s., if with planed bed plate 15s. extra; and pair of 1½ inch patent self adjusting spherical bearings, price 11s., invented, improved, and manufactured by the exhibitors; and Warwickshire field gate, price 20s., invented by Thomas Bowick, agent to the Right Hon. Leigh, Stoneleigh Abbey, improved and manufactured by Hugh Raynbird, agent to the Right Hon. Lord Bolton, Hackwood Park.

WEDLAKE and DENDY, of Hornchurch, near Romford, Essex.

Three horse power portable steam engine, price £95; portable combined thrashing and dressing machine, adapted for driving with the above engine, price £60; portable one horse power thrashing machine, price £21; haymaking machine, price £10; and horse hay, barley, or couch rake, price £6 7s. 6d., invented, improved, and manufactured by the exhibitors.

WILLIAM WISE, of Sittingbourne, Kent.

(New implement) four horse Kent turnrise plough, price £11 11s. 6d., invented, improved, and manufactured by the exhibitors.

JOSEPH WARREN, of Maldon, Essex.

Cultivator, with seven hoes, to cover 5 feet 6 inches, price £7 10s., lifting apparatus 7s. 6d. extra; and (prize article) turnrise plough, price £6 15s., invented by the exhibitor; iron horse rake, price £7 10s. and upwards; surface or paring plough, price 76s.; iron beam plough, price 80s. with two wheels and coultter; iron plough, price 75s.; wood beam plough, price 60s.; iron beam plough, price with coulters £5 5s.; Kent turnrise plough, price £6 7s. 6d.; iron beam plough, price 67s. 6d.; double tom plough, price 55s.; mangel plough or Kentish hoe, price with wheel 40s.; wood beam Cambridge plough, price with wheel and coultter 56s.; set of four harrows, price with whippetree 76s.; set of four heavy iron harrows, price with whippetree 88s.; double iron cylinder roll, to cover 10 feet 6 inches, price £10; oilcake mill, price 65s.; chaff machine, price 70s.; plough sled, price 10s. 6d.; alarm gun, price 30s.; stack pillar and cap, price 5s.; round pig trough, price 16s.; chaff machine, price £5 10s.; and corn dressing machine, price £7 9s., improved and manufactured by the exhibitor.

WILKINSON, WRIGHT, and Co., of Boston, Lincolnshire.

Portable thrashing machine, price £105, improved and manufactured by the exhibitors; (new implement) straw elevator, price £35, invented by Thomas Luck, of Spalding, and manufactured by the exhibitors; (new implement) clay machine, price £35, and (new implement) continuous motion brick and tile machine, price £45, invented by Joseph Davis, of Boston, and manufactured by the exhibitors; portable steam engine of seven horse power, on wood wheels, price £205, on iron wheels, price £200, and portable steam engine of three horse power, price £125, improved and manufactured by the exhibitors.

WOODS and SON, of the Suffolk Iron Works, Stowmarket, Suffolk.

Portable corn grinding mill, price £54, and upwards; farmer's portable corn grinding mill, price £31 10s.; portable

corn grinding mill, price £19 19s.; improved grinding and crushing roller mill, price £13 13s.; roller crushing mill, price £11 11s.; universal mill for crushing oats, malt, linseed, barley, &c., to grind beans, peas, &c., price £10 10s.; roller crushing mill, price £7 15s.; universal mill for crushing and grinding, price £5 15s.; improved crushing roller mill, price 90s., and roller crushing mill for malt, oats, and linseed, price £5 10s., invented, improved, and manufactured by the exhibitors; improved root pulper or micer, price 95s., and upwards, invented by Frederick Phillips of Brandon, improved and manufactured by the exhibitors; improved one horse cart, with harvest frame and rave boards (was awarded first prize at the Meeting of the Royal Agricultural Society at Salisbury, 1837), price without the harvest frame £13 10s., with frame complete £15 10s.; pair of wheels and axle, price £7 10s. and upwards; two horse power for driving agricultural machines, price £16 16s.; one horse power for chaff engines, crushing mills, root pulpers, &c., price £13 13s.; pony power, for driving small machines, price £9 9s.; two horse power portable thrashing machine, price £37; three horse power portable bolting thrashing machine, price £49, and six horse power bolting thrashing machine, with straw shaker and screen, price of drum part £63, invented, improved, and manufactured by the exhibitors; patent poppy and weed extirpator and fertilizing lever harrow, price £9 9s. (was awarded the silver medal at the Chelmsford meeting), invented by Frederick Phillips, of Brandon, and improved and manufactured by the exhibitors; set of rake teeth (Howard's pattern) price 63s., invented by J. and P. Howard, of Bedford, and improved and manufactured by the exhibitors; Hall's patent cabinet mangle, price £6 10s., invented by John Hall, of Bildestone, and improved and manufactured by the exhibitors; asphalt apparatus for laying asphalt floors, paths, &c., with specimens of floors, &c., price of apparatus complete with all tool and sand-drying oven £17, invented, improved, and manufactured by the exhibitors; combined Cambridge and Crosskill's roller and clod crusher, price £14 11s., invented, improved, and manufactured by the exhibitors; iron land and pasture roller, price £13 13s.; Wood's light iron land roll, price £7; double barley roll, price £8 8s.; iron furrow roll, price 42s., and press wheel furrow roll, price £8, invented, improved, and manufactured by the exhibitors.

THOMAS ALLCOCK, of Ratcliffe-on-Trent, near Nottingham.

Chaff cutting engine with three knives, price £13 10s.; chaff cutter, with two knives, price 45s. and upwards; horse rake, price £6 15s.; small scrapper, or horse hoe, price 84s., invented and manufactured by the exhibitor.

STEPHEN SWINFORD, of Sarre, near Margate, Kent.

Four horse Kent turnrise plough, price £13, invented and improved by the exhibitor, and manufactured by Henry Miles and Sackett Adams, of Sarre.

PEYTON and CLERK, of Anchor Forge, near Birmingham, Warwickshire.

Kent axes, with handles, price 3s. each; broad axes, with handles, price 2s. 6d. each; felling axes, with handles, price 4s. each; wheelers' or fencer's adzes, with handles, price 4s. each; railway or sleeper adzes and handles, price 5s. 6d. each; carpenter's adzes, with handles, price 3s. each; steel polled Kent hatchets and handles, price 1s. 2d. each; kitchen hatchets and handles, price 1s. 8d. each; hammer-headed hatchets, price 1s. 6d. each; pickaxes with handles, price 3s. 6d. each; grubbing mattocks and handles, price 4s. each; Staffordshire bill hooks, price 1s. 8d. each; Oxfordshire billhooks, price 1s. 8d. each; Norfolk bill hooks, price 2s. each; billhooks, price 1s. 8d. each; broom hooks, price 1s. 6d. each; lopping bills, price 1s. 8d. each; best cast steel country shovels, price 3s. each; cast steel taper or plate layer's shovels, price 3s. each; cast steel thicket garden spades, price 3s. each; cast steel Cheshire socket spades, price 3s. 3d. each; Cheshire langet spades, 3s. 6d. each; cast steel Hereford spades, price 3s. 6d. each; cast steel water furrow shovels, price 3s. each; cast steel gravel or navigators' shovels, price 3s. each; cast steel draining tools, price 30s. per set; cast steel hop spades, price 3s. 6d. each; improved cast steel garden spades, price 6s. each; cast steel hop kerfs, price 3s. 6d. each; dock weeders, price 3s. each;

patent choppers, price 2s. each; patent butchers' cleavers, price 3s. 6d. each; entire labour axes, price 5s. each; American wedge axes, price 5s. 6d. each; Carolina hoes, price 1s. 3d. each; West Indian hoes, price 1s. 3d. each; American planter's hoes, price 2s. 6d. each; Mamooties, price 2s. 6d. each; Indigo hoes, price 2s. 3d. each; Brazil hoes, price 2s. 6s. each; Portuguese hoes, price 2s. each; coffee diggers, price 1s. each; grubbing hoes, price 2s. each; coffee hoes, price 1s. 3d. each; garden hoes, price 1s. each; turnip hoes, price 10d. each, all manufactured by the exhibitors.

WILLIAM BALL, of Rothwell, near Kettering, Northamptonshire.

Patent iron plough for general purposes, price 88s., skim coulters 6s. 6d. extra (the only plough which has taken a first-class prize medal at each of the three National Exhibitions viz., England, Ireland, and France, also the following prizes and high commendations at the Royal Agricultural Societies: at Norwich, 1849, a first prize of £5, at Exeter, 1850, a first prize of £7, commended at Lincoln, 1851, and at Carlisle, 1855, a prize of 80s., at Chelmsford, 1856, highly commended at Warwick, 1850, a first-class prize medal at Melbourne, Australia, 1856, and for the last two seasons at the local meetings it has taken all the prizes it has competed for, with scarcely any exception); iron plough for deep ploughing, price £5 15s., skim coulters 6s. 6d. extra, awarded a prize of £7 at the Royal Agricultural Society's meeting, Gloucester, 1853, commended at Carlisle, 1855, a prize of 60s. at Chelmsford, 1856, a prize of 30s., 1859, and a prize of 100s. at the Great Yorkshire Agricultural Society; patent iron plough for light land, price 88s., skim coulters 6s. 6d. extra, awarded a prize of 10s. by the Royal Agricultural Society's meeting at Chelmsford, 1856, highly commended at Warwick, 1859, and received local prizes too numerous to mention; improved ridge or double breast ploughs, price 84s., each, marker 7s. 6d. extra; patent iron ploughs, price 81s. each, skim coulters 6s. 6d. extra; patent one-wheel iron plough, price 82s. 6d.; patent iron swing plough, price 77s. 6d.; iron double plough, price £7 7s., and light two horse waggon, price £30, invented, improved, and manufactured by the exhibitor, awarded a first-class prize at the Royal Agricultural Society's meeting at Lewes, a first-class prize medal at the Dublin Exhibition in 1853, and a first-class prize medal at the Paris Exhibition in 1855; three horse waggon, price £35, invented and improved by the exhibitor, and manufactured by George Ball, of North Kilworth; one horse carts, price £14, invented, improved, and manufactured by the exhibitor, awarded a first-class prize at the Royal Agricultural Society's meeting at Salisbury in 1857; two horse cart, price £15; and one horse cart, price £14 10s., invented and improved by the exhibitor, and manufactured by George Ball, of North Kilworth; iron carriage scarifier, cultivator, or grubber, price £6 10s., broad feet 4s. 6d. each extra, invented, improved, and manufactured by the exhibitor.

THOMAS BEARDS, of Stowe, near Buckingham.

Eight horse power portable double cylinder steam engine, price £250, invented and manufactured by Thomas Rickett, of Buckingham; (new implement) apparatus for steam cultivating land, price £100, invented by the exhibitor, and manufactured by the Buckingham Castle Iron Works Company, of Buckingham; iron double furrow plough, price £6 6s., invented and manufactured by Howards, of Bedford.

JAMES BLYTH, of Ramsgate, Kent.

Waggonette, price £17, and basket pony phaeton, price £26, manufactured by the exhibitor.

WILLIAM CULLINGFORD, of 1, Edmund-terrace, Ball's Pond-road, Islington, Middlesex.

Extra stout cocoanut fibre sheep-folding net, square mesh, 4 feet wide, 200 yards long, 6d. per yard, price 100s., manufactured by the exhibitor; (new article) hemp sheep-folding net, vitriolised, 100 yards long, 4 feet high, 6d. per yard, price 50s.; diamond mesh sheep-folding net, with corded edges, 4 feet wide, 4½d. per yard, price 75s.; cocoanut fibre lamb-folding net, 1 foot wide, 3½-inch mesh, 6d. per yard, price 100s.; every kind of nets for game, fish, &c., &c., at various prices; roll of wire netting, 1 inch mesh, price 56s. 3d.; spiral wire garden stool, with wrought iron frame, &c., price 4s. 6d.; garden chair, spiral wire and frame, &c.,

price 8s. 6d.; spiral wire iron-framed arm chair, for parks, gardens, &c., price 11s.; patent Norfolk pig trough, with 3 wrought iron bars, complete, price 8s. 6d.; cast iron hog trough, large size, suitable for 3 hogs, price 10s.; bamboo fishing rod, 20 feet long, with or without sockets, price, socketed, 7s. 6d. each, straight 5s. each.

ALFRED EDDINGTON, of Chelmsford, Essex.

(New implement) winnlass for ploughing or cultivating, price £200, invented by the exhibitor, and manufactured by A. and W. Eddington, of Chelmsford; steam engine, price £315, manufactured by Clayton, Shuttleworth, and Co., of Lincoln; four furrow plough, price £84, invented by John Fowler, jun., of London, and manufactured by Ransomes and Sims, of Ipswich.

JOHN EDDY of Kenford, near Exeter, Devonshire.

Iron one-way or turnwrest plough, price 90s., two skim coulters 10s. extra and upwards, invented, improved, and manufactured by the exhibitor, gained the prize of 40s. at the Royal Warwick meeting, 1859, and also at the Bath and West of England Society prizes for seven years in succession; iron plough for general purposes, price 42s. and upwards; iron rotary screening machine, price £5 15s.; and improved tubular iron whippetrees, price 16s.; all invented, improved, and manufactured by the exhibitor.

J. ELLIS and SONS, of Oswestry, Shropshire.

Seven horse power portable steam engine, price £215; six horse power portable steam engine, price £200; six horse power fixed steam engine, price, exclusive of carriage, brick-work, or masonry, but inclusive of fixing, £155, with improved water heater £10 extra; combined portable single blower thrashing, straw shaking, riddling, winnowing, chaff separating, and barley boring machine, price, including patent drum beaters, wood wheels, and patent axles, £100; and a combined portable double blower finishing machine, price, including patent drum beaters, wood wheels, and patent axles, £115; all invented, improved, and manufactured by the exhibitors.

HENRY BEX, of Lamberhurst, Kent.

(New implement) two row hand dibble, for beans, peas, wurzel, and turnips, price 35s.; (new implement) three row hand dibble, for general purposes, price 40s.; (new implement) four row hand dibble, for general purposes, price 45s.; and (new implement) a five row hand dibble, for general purposes, price 55s.; all invented and manufactured by the exhibitor.

WILLIAM HAWKINS, of Lamberhurst, Kent.

Two wheel truss beam iron plough, price 90s., invented by Messrs. Ransomes and Sims of Ipswich, improved by the exhibitor, and manufactured by Messrs. Ransomes and Sims; eight row steerage cup drill, known as the "Bedfordshire drill," price £20 10s., invented by Messrs. Hensman and Son, of Leighton Buzzard, Beds, improved by the exhibitor, and manufactured by Messrs. Hensman and Son.

FREDERICK EDGINGTON, of Old Kent-road, London.

Tent, without a pole in the centre, price £5; rope driving band, price 60s.; tarpaulin waggon cover, price 50s.; canvas waggon cover, price 30s.; rick cloth, price £10 10s.; cask of grease, 20lbs., price 7s.; waggon rope, price 7s. 6d.; woollen horse cloth, price 6s. 6d.; tarpaulin horse cloth, price 8s. 6d.; hair horse's nose bag, price 3s. 6d.; cocoa fibre nose bag, price 2s. 6d.; four yards Union Jack flag, price 30s.; four bushel best hemp corn sack, price 2s. 3d.; five bushel best hemp flour sack, price 2s. 9d.; four bushel common corn sack, price 1s. 6d.; and a five bushel common flour sack, price 1s. 9d.; all manufactured by the exhibitor.

JOHN T. EDMONDS, of Prestwood, near Great Messenden, Buckinghamshire.

Patent balance universal winnowing, screening, and sifting machine, price £8 10s. and upwards; improved barley hummeller, price 84s.; improved expanding horse hoe, price 70s.; and an improved horse hoe, price 65s.; all invented and manufactured by the exhibitor.

JOHN EVENS, of Dane Iron-works, Margate, Kent.

(New implement) improved hand power chaff engine,

price £5, invented by Gillett, of Brailes, Shipston-on-Stour, and improved and manufactured by the exhibitor; (new implement) weed extermiator, price £35; and a pony or hand rake, price 30s., shaft, &c. 20s. extra; all improved and manufactured by the exhibitor; improved Kentish wheat hoes, price 2s. 6d. each; improved Kentish spades, price 7s. 6d. each.

JAMES FERRABEE and Co., of Phoenix Iron-works, near Stroud, Gloucester.

Improved chaff and litter cutting machine, price £16 16s., invented, improved, and manufactured by the exhibitors; chaff cutting machine for manual or other power, price £6 10s. and upwards, manufactured by the exhibitors; (new implement) Hellard's patent "Victoria" two horse side delivery reaping and mowing machine, price £42 10s., invented, improved, and manufactured by Robert Hellard of Taunton; improved portable safety two horse power for driving machinery, price £18, without travelling wheels and shafts £14; patent mowing machine, cutting twelve inches wide, price 90s., sharpening apparatus 5s. extra; patent mowing machine, cutting sixteen inches wide, price £5 10s.; both invented and manufactured by the exhibitors; set of five patent universal spanners or screw wrenches, price 75s., invented by Patrick B. O'Neill of London, and manufactured by the exhibitors; set of five Ferrabee's patent screw wrenches, price 49s., invented by James Ferrabee of Phoenix Iron-works, and manufactured by the exhibitors; case of Budding's screw wrenches, price 5s. and upwards, invented by the late E. Budding of Dursley, and manufactured by the exhibitors.

JOHN FOWLER, jun., of 28, Cornhill, London.

Ten-horse set of steam cultivating apparatus, price £622; twelve-horse set of steam cultivating apparatus, price £699; and ten-horse ordinary agricultural engine, adapted for steam ploughing, price £381, invented and improved by the exhibitor, and manufactured by Kitson and Hewitson, of Leeds; balance four-furrow surface plough, price £81; three-furrow surface Kent plough, price £91; two-furrow Cotgreave and subsoil plough, price £105; and balance three-furrow surface plough, price £61 10s., scarifier tines £6 extra, invented and improved by the exhibitor, and manufactured by Ransomes and Sims, of Ipswich; and water cart, price £21, invented and improved by the exhibitor, and manufactured by Kitson and Hewitson, of Leeds.

WILLIAM GERRANS, of Tregony, near Grampond, Cornwall.

Winnowing machine, price £10 10s., improved and manufactured by the exhibitor; portable self-acting Cornish horse rake, price £8 10s.; and one-row turnip and mangold drill, convertible into a one-horse hoe at pleasure, price £4 10s., manufactured by the exhibitor.

WILLIAM HENSMAN & SON, of Linslade Works, near Leighton Buzzard, Bedfordshire.

Four-horse power portable patent bolting thrashing machine, price £68; five-horse power portable bolting thrashing machine, price £73; two-horse power portable patent thrashing machine, price £37; one-horse power patent Vandyke thrashing machine, as a fixture, price £26 7s. 6d.; patent eight-row steerage corn, turnip, and mangold drill, known as the Woburn drill, price £20; patent eight-row corn, turnip, and mangold drill, price £21, steel hoes £1 extra; patent eight-row steerage corn, turnip, and mangold drill, price £21; patent six-row corn, turnip, and mangold drill, price £19; eight-row press lever steerage corn and seed drill, price £24 10s.; patent iron plough with two wheels, price £5 6s., invented, improved, and manufactured by the exhibitors; and small hand drill, price £1 10s., invented by G. W. Baker, of Woburn, Beds, and manufactured by the exhibitors.

SAMUEL HOOD, of 68, Upper Thames-street, London.

Set of stable fittings, price £5 18s. 6d., invented by the exhibitor, improved by William Hood, of 68, Upper Thames-street, and manufactured by the exhibitor and Son; set of stable fittings, price £3 18s. 6d.; set of stable fittings for a loose box, price £4 8s.; sets of stall divisions, price £4 10s. and £1 15s.; set of stall divisions for loose boxes, price 4s. 6d. per foot run, manufactured by the exhibitor and son; saddle

brackets, price 5s. 6d. and upwards; bridle holder, price 1s. 4d.; stable traps, price 6s. each, or 18s. per cwt.; collar brackets, for carriage harness, price 4s. 9d. each; harness saddle brackets, price 4s. 9d. each; corner manger and water cistern combined, price 3s. 3d.; and set of stable gutters, price 6s. 6d. per yard, invented by the exhibitor, and manufactured by the exhibitor and Son.

HUNTIAM and BROWN, of Exeter.

Millstone runner, made of the best French burrs, price £11 10s.; millstone layer in bedstone of French burrs, price £11; and emigrant's hand flour mill, with French burr, grinding stones, and iron frame, price £13, manufactured by the exhibitors.

MCCAUGHT and SMITH, of Worcester.

Elegant circular-fronted brougham, price £150; a reversible wagonette, price, complete with shafts, pole, break, wings, enclosure, &c., £130; four-wheeled dogcart, price £60; and two-wheeled dogcart, price £45, invented and manufactured by the exhibitors.

JAMES MELLARD, of Trent Foundry, Rugeley, Staffordshire.

Improved Cornea' chaff-cutting machine, price £10 10s., with fast and loose pulleys 15s. extra; if without the stop and reverse motion, £9 10s.; two-knife chaff cutters, price £2 12s. 6d. and upwards; two-knife economic chaff cutter (No. 0), on neat cast iron frame, price £2 2s.; and corn crusher, price £4 15s., improved and manufactured by the exhibitor; strong corn crusher, price £9 10s., invented by Richmond and Chandler, improved and manufactured by the exhibitor; oil-cake breaker, price £2 15s.; and double roller cake breaker, price £4 10s., invented, improved, and manufactured by the exhibitor; a Martin's patent turnip-cutter, price £5 10s. and upwards, invented by M. Martin, of Barmer, improved and manufactured by the exhibitor; disc root-pulper, price £4 4s.; improved compound lever cheese presses, price, £2 18s. and upwards; curd mill, price £1 12s.; improved carriage jack, price 8s. 6d.; three-tined root grubber, price £2 10s.; if with extra set of tines for surfacing, £2 17s. 6d.; five-tined lever horse hoe, price £2 5s.; and chain harrow, price £3, improved and manufactured by the exhibitor; and patent self-relieving chain harrow, 7 ft. 6 in. by 7 ft. 6 in., price £4, invented and patented by Mr. Cartwright, of Shrewsbury, and manufactured by the exhibitor.

THOMAS MILFORD and SONS, of West of England Wheel Works, Thorverton, near Cullompton, Devon.

Improved prize one-horse cart for general purposes, price £13; with harvest shelving, £2 extra (awarded the prize of £2 by the Royal Society at Salisbury; the prize of the Bath and West of England Society at Cardiff, 1858); improved prize two-horse wagon, price £26, invented, improved, and manufactured by the exhibitors (awarded the first prize of £2 by the Royal Society at Salisbury, 1857); and improved prize three or four-horse wagon, price £35, invented, improved, and manufactured by the exhibitors.

Messrs. MITTON and Co., of Lincoln.

(New implement) patent rotary corn screens, price £12 each; and winding sack lifter and barrow combined, price £2 10s., invented, improved, and manufactured by the exhibitors; suspending flower basket, price £1 8s., manufactured by the exhibitors; wire suspending flower baskets, price 2s. 6d. each and upwards; wire flower pot stands, price £1 2s., 15s., and 10s. each; pheasantry, price £10; model of rosary, price £7 upwards; common wire scroll garden stools, price 4s. each; folding chairs, price 10s. each and upwards; galvanized iron wire netting, $\frac{3}{4}$ inch mesh, price 3½d. per superficial foot and upwards; cottage verandah, price £3; flower-pot stands, price 10s. each and upwards; garden stool galvanized spiral seats, price 4s. 6d. and upwards; garden fencing, with spire top and diamond bottom, price 3s. per lineal yard; strained wire fencing, with metal pillars, price 1s. 2d. per lineal yard; meat safes, price £1 each and upwards; meat covers, galvanized, price 1s. 10d. each and upwards, manufactured by the exhibitors.

NEWTON, WILSON, and Co., of 144, High Holborn, London.

Patent sewing machine, price £5 5s. and upwards; manu-

facturing sewing machines, price £10 10s. and upwards, invented and manufactured by the Grover and Baker Sewing Machine Company; boudoir sewing machines, price £10 10s. and upwards, invented by W. Harris, of Boston, U.S.A., and improved and manufactured by the exhibitors; patent apparatus for tucking, price 15s.; patent apparatus for hemming, price £1 10s. per set; patent apparatus for binding, price £1 10s.; patent carpet sweeper, price 15s.; patent noiseless carpet sweeper, price 18s.; and patent pegging machine for boots and shoes, price £125, invented and manufactured by the exhibitors.

FREDERICK and ALEXANDER ROBERTS, of Maiden Newton, Dorsetshire.

(New implement) new and improved double-wheeled iron plough, price complete as shown, with steel turn-furrow and skim-coulter, £1 15s., invented, improved, and manufactured by the exhibitors; (new implement) new and improved double-wheeled iron plough, price complete as shown, with steel turn-furrow and skim-coulter, &c., £4; (new implement) model of a new registered horse works, invented by the exhibitor; (new implement) new registered horse works, price £5, invented and manufactured by the exhibitors.

S. C. SALISBURY, of Essex-street, Strand, London.

(New machine) machine for manufacturing bricks, tiles, pipe cornices, &c., from clay and other plastic materials, price small size £25, largest size £200, invented and manufactured by the exhibitor; (new implement) combined reaper and mower, price £27, invented by Clow, of Wisconsin, U.S., patented and manufactured by the exhibitor; (new fencing) portable iron railing, price 10s. to 15s. per yard, invented by Fuller, of New York, patented and manufactured by the exhibitor; and sewing machine, price £3 up to £10, invented in the United States of America, patented by David Millard, of Liverpool, and manufactured at Soho Works, Birmingham, and at Leeds.

JOSEPH SIMMONS, Rainham, near Sittingbourne, Kent.

Kent turn-rist plough, price £8 10s., invented, improved, and manufactured by the exhibitor; Kent turn-rist ploughs, price £3 and upwards, invented by the exhibitor, improved by the late William Smart, Esq., and manufactured by the exhibitor; drill for drilling carrots and other seeds, price 38s., invented, improved, and manufactured by the exhibitor.

JONATHAN STALKER, of Penrith, Cumberland.

Double ploughs, price £3 and upwards, or with marker 10s., steel mould boards 14s., wheel 5s. extra (twelve prizes have been awarded to the four-guinea implement within the last four years from the principal shows of Cumberland, Westmoreland, Northumberland, Liverpool, and Manchester, held at Wigan); (new implement) reverse plough, price 75s., or with horse hoe 20s. extra; prize horse hoes, price 75s. and upwards (highly commended at the meeting of the Society held at Salisbury, in 1857, has been successful at most of the leading shows in Cumberland, Westmoreland, and Yorkshire, and a special prize was awarded to it at Liverpool, in 1859); small drill grubbers, price 65s. and 63s.—all invented, improved, and manufactured by the exhibitor.

BENJAMIN KITTMER, of Fulstow, near Louth, Lincolnshire.

Corn dressing machine, price £8 10s., improved and manufactured by the exhibitor.

WILLIAM PIKE, of Spalding, Lincolnshire.

(New implement) five-inch cylinder patent pump or fire engine, price £15, invented by Thomas Blinkhorn, of Spalding, and manufactured by Blinkhorn and Shuttleworth, of Spalding; (new implement) patent double action water filter, price 25s., and (new implement) patent belt filter, price 42s., invented by Squier Cheavin, of Spalding, and manufactured by Cheavin and Co., of Spalding.

SAMUEL ROWSELL, of Buckland St. Mary, near Chard, Somersetshire.

American horse rake, price 28s. (has been awarded five prizes, namely, four by the Bath and West of England Agricultural Society, and a handsome silver medal at the

Royal Agricultural Society's trial at Salisbury, 1857); field gate, price 22s. (has been awarded the two and only prizes given by the Bath and West of England Agricultural Society in 1856 and 1858); gate hasp, price 3s. 6d.; gate hinge complete, price 3s. 6d.; American horse rake, price 40s.; and wicket, a specimen of part of an entrance gate, price 10s., whole set £25, invented, improved, and manufactured by the exhibitor; and box of sketches of different kinds of gates, invented by the exhibitor.

THOS. PERRY & SON, of Highfield Works, Bilston, Staffordshire.

Sheep and cattle fencing, price 3s. 10d. per yard and upwards; cast iron terminal pillars, with self-fixing base, price 10s. each, invented and manufactured by the exhibitors; wrought iron sheep and cattle hurdles, price 3s. 6d. each and upwards, invented and manufactured by the exhibitors; ornamental strained-wire garden fence, price 2s. per yard, invented and manufactured by the exhibitors; japanned game proof wire netting, price 6d. per lineal yard and upwards, invented, improved, and manufactured by the exhibitors; wrought iron field gates, and cast iron pillars, price 52s. 6d. and upwards, complete; entrance gates of all kinds, with side gate and pillars, price £6 5s. and upwards; strong wrought iron tree guards, price 17s. each and upwards; specimen of garden chairs, with ornamental cast iron ends, price 20s. each; and wrought iron chair, with wrought iron ends, price 22s. 6d. each—all invented and manufactured by the exhibitors.

PRIEST and WOOLNOUGH, Kingston-on-Thames, Surrey.

Seven-row light lever corn drill, price 19l.; nine-row lever corn drill, price 22l. 18s.; eleven-row lever corn drill, price 27l. 7s.; thirteen-row lever corn drill, price 30l.; fifteen-row lever corn drill, price 32l. 10s.; fore-carriage aeration for drills and horse hoes, price 4l. 10s., and five-row turnip and manure drill, 7 feet wide, price 30l. 5s., improved and manufactured by the exhibitors; patent turnip duster and fly destroyer, invented by J. Jephson Rowley, of Rothorn, improved and manufactured by the exhibitors, price 18l., was awarded silver medal at Chester Show, 1859; patent lever horse hoe, price 18l., was awarded a prize of 2l. at the Salisbury Show, 1857; patent lever horse hoe, price 22l.; corn dressing machine, price 7l. 5s., and improved corn dressing machine, price 11l. 11s., improved and manufactured by the exhibitors.

DRAY, TAYLOR, and Co. (late Wm. Dray and Co.), of 4, Adelaide-place, London Bridge, removed from Swan-lane, London.

Patent oil-ske breaking machine, for beasts and sheep, price 3l. 13s. 6d. and upwards, invented, improved, and manufactured by N. Nicholson, of Newark (was awarded the first prize at Chester); wrought iron field gate, price 1l. 8s., invented, improved, and manufactured by the exhibitors; improved patent reaping champion machine, price 25l., extra for driving iron 1l. 1s., invented by Obed Hussey, of the United States, improved and manufactured by W. Dray and Co., of London (received the prize of the Royal Agricultural Society at Lincoln, 1854; at Buxted, in 1856, the judges gave it a prize of 15l.; the Austrian gold medal of honour has been awarded to this machine); improved winnowing and blowing machine, price 10l. 10s. and upwards, invented by Wm. Dray and Co., of London, improved and manufactured by the exhibitors (obtained a prize at the Royal Agricultural Society of Ireland at Carlow, 1855, also at Manchester and Liverpool Royal Agricultural Society, 1856); improved chaff cutting machine, price 7l., change wheels 7s. 6d. extra, pulley for power 10s. extra, and upwards; improved malt bruising machine, price 6l. 10s., pulley for power 10s. extra, and improved grain crushing machine, price 5l. 5s., invented, improved, and manufactured by Richmond and Chandler, of Salford, Manchester; patent tubular gate, price 2l. 2s. (a prize was awarded to these gates at the Irish Agricultural Society's Show at Dublin, 1856); improved chaff cutting machine, price 2l. 15s. and upwards, manufactured by the exhibitors; improved grain crushing mill, price 3l. 15s.; improved portable forge, with square bellows, price 3l.; portable bench and vice, price 2l. 10s., and improved grindstone, price 1l. and upwards, invented, improved, and manufactured by the exhibitors; patent oval wheel rotary

force pump and fire engine, price 12*l.* and upwards, invented improved, and manufactured by J. H. Winder, of Sheffield; (new implement) new patent 4 in. pump, price 13*l.*, invented, improved, and manufactured by J. Norton, of London; 4 in. copper liquid manure pump, price 7*l.* 11*s.*; wrought iron galvanized liquid manure pump, price 2*l.* 10*s.*, pipe 3*s.* per foot extra, invented, improved, and manufactured by the exhibitors; patent lawn mowing machine, to cut 20 inches, price 4*l.* 8*s.*, invented, improved, and manufactured by Green of Leeds; improved double weighing machine, price 4*l.* 4*s.*, invented, improved, and manufactured by the exhibitors; patent sack truck weighing machine, price 3*l.* 10*s.*, invented, improved, and manufactured by Dowling, of London; iron sack truck, price 15*s.*; wood sack truck, price 16*s.* 6*d.*, and wood bale truck, price 1*l.* 12*s.*, manufactured by exhibitors; improved cheese press, price 3*l.* 10*s.*, invented, improved, and manufactured by Thewlis and Griffiths, Warrington; improved American churns, price 28*s.*, 32*s.*, and 38*s.* each; improved circular wrought iron corn bin, price 25*s.* and upwards; improved wrought iron flour bin, price 32*s.* 6*d.* and upwards; improved wrought iron corn and chaff bin, price 8*s.*; cast iron flower vases and pedestals, price 27*s.* 6*d.* to 37*s.* 6*d.*; improved garden engine, to hold 20 gallons, price 90*s.*, and improved double lever cask stand, price 10*s.* 6*d.*, manufactured by the exhibitors; ornamental garden chairs, price 55*s.*, 27*s.* 6*d.*, and 43*s.* each, and ornamental garden seats, price 48*s.* and upwards, invented, improved, and manufactured by the Coalbrookdale Company; improved agricultural shoe brushes, price 1*s.* 6*d.*, in mahogany 2*s.*; elegant flower pots, price from 1*s.* 4*d.* to 2*s.* 3*d.* each; ornamental flower baskets, from 2*s.* to 8*s.* each; galvanized wire garden arches, price 25*s.* and 32*s.*, and ornamental garden tables, price 45*s.* and 36*s.*, invented, improved, and manufactured by the exhibitors; farm medicine chests, price in mahogany 7*l.* 10*s.*, in varnished deal 3*l.* 12*s.* 6*d.*, invented and improved by J. Bowick, of Kenilworth, and manufactured by the exhibitors; rain gauge for farm or garden purposes, price 11*s.*; workman's draining level, price 12*s.* 6*d.*; shaft protectors, price 2*s.* and 3*s.* each; set of gratings, price the set of three sizes 1*s.*, or 2*s.* for 6 in. pipe, 7*d.* for 4 in. pipe, and 5*d.* for small pipe, invented and improved by J. Bowick, of Kenilworth, and manufactured by the exhibitors; Boyd's patent self-adjusting scythe, price 10*s.* 6*d.*, invented by James Boyd, Lewisham, and manufactured by the exhibitors; sample of continuous flat and round bar fencing, 3*s.* per yard and upwards; cast steel digging forks, price from 3*s.* 3*d.* to 6*s.*; cast iron steel spades, price from 2*s.* 6*d.* to 5*s.*, and shovels, price from 2*s.* 10*d.* to 4*s.*, invented, improved, and manufactured by Lyndon, Birmingham; wrought iron folding garden chair, price 8*s.* 6*d.*, and wrought iron arm chair, price 14*s.*, invented, improved, and manufactured by the exhibitors; and patent double action haymaking machine, price 15*l.*, invented, improved, and manufactured by N. Nicholson, Newark-on-Trent (obtained the first prize at the Salisbury show).

HENRY ATWOOD THOMPSON, of Lewes, Sussex.

Patent haymaking machine, with reverse action, price 16*l.* 10*s.* (awarded the first prize at Paris in 1856, and a prize at the Royal Agricultural Society's show at Salisbury in 1857); patent haymaking machine, price 16*l.* 10*s.*; horse drag rake for hay, corn, or stubble, price 3*l.* 8*s.*, steel teeth 10*s.* extra; combined one horse cart, water cart, and manure irrigator (awarded a gold medal and 250 francs at Paris in 1856, and highly commended at Salisbury in 1857), price of cart with 4½ inch tire 15*l.* 10*s.*, irrigating apparatus and cask 50*s.*, 18 inch type; set of curved harvest raves price 40*s.*; portable pump with five inch working barrel, price 65*s.*; portable pump with flexible hose, price 5*l.* 10*s.*; globular wicker strainer for manure pump, price 2*s.* 6*d.*; tripod stand, price 17*s.* 6*d.*; economic drainage level, price 38*s.* and upwards (awarded a silver medal at the Royal Agricultural Society's Show at Liucolon in 1854, and a gold medal at Paris in 1856); prize telescope drainage level, price 5*l.* 10*s.* (awarded a silver medal at Gloucester in 1853, and a gold medal and 100 francs at Paris in 1856), invented and manufactured by the exhibitor; workman's level for working to any uniform slope, price 18*s.* 6*d.* (commended at Salisbury in 1857); levelling staff with sliding vane, price 12*s.* 6*d.*; portable levelling staff, price 42*s.*; surveyor's cross, price 25*s.*; assortment of measuring chains, price light 5*s.*, strong 7*s.* 6*d.*, improved 8*s.* 6*d.*, and set of ten

harrows, price 3*s.*, all invented and manufactured by the exhibitor.

ROBERT TINKLER, of Penrith, Cumberland.

(New implement), several specimens of a patent revolving barrel churn, price 60*s.* and upwards, invented, improved, and manufactured by the exhibitor.

EDWARD WEIR, of 142, High Holborn, London.

Irrigator liquid manure pump, fire and garden engine, price with four inch cylinders 47 7*s.*, invented and manufactured by the exhibitor; samples of patent woven hose pipe, for conveying liquid manure or water, price 1 inch diameter 1*s.* 1*d.*, per yard, 1½ inch diameter 1*s.* 5*d.*, 1¾ inch diameter 1*s.* 7*d.*, 2 inch diameter 1*s.* 9*d.*, 2½ inch diameter 2*s.* 3*d.*, manufactured by Watham and Co., of Lancaster; spirit draining level, price 30*s.*, case 1*s.*, and workman's pendulum draining level, price 15*s.*, invented and manufactured by the exhibitor; set of draining tools, price 30*s.*, manufactured by the exhibitor; skeleton horse hoe, price 42*s.*, improved and manufactured by Barnabas Urry, of Newport, Isle of Wight; improved truss beam horse hoe, price 45*s.*; improved bruising mill for malt, oats, barley, peas, and beans, price 55*s.*; improved portable bruising mill, price 65*s.*, and improved bean and pea mill, price 50*s.*, improved and manufactured by Barnabas Urry; perspective view of farm cultivated by Halkett's patent system of guideway steam agriculture; model of a taru or market garden laid down with rails for Halkett's patent guideway steam agriculture; model of the locomotive cultivating platform used in Halkett's system of guideway steam agriculture; model of the shunting platform for Halkett's system of guideway steam agriculture; photographic views of some of the operations performed by Halkett's guideway steam agriculture; model of truck for Halkett's patent guideway steam agriculture; model of wheel of truck for Halkett's patent guideway system of agriculture; model of a watering or irrigating apparatus adapted to Halkett's patent guideway cultivator, and model of the comminutor used in Halkett's patent guideway steam agriculture, all invented by Peter Alexander Halkett.

WELBURN, WILLIAMSON, of 133, High Holborn, London.

Washing machines, price 60*s.*, 90*s.*, 1*l.* 10*s.*, and upwards, invented by Odell, of Toronto, America, improved and manufactured by the exhibitors; wringing and mangling machine, price 70*s.*, and drying machines or water extractors, price 1*l.* 8*s.* and 1*l.* 9*s.*; manufactured by the exhibitors; new patent machine for washing wool, price 15*l.* 10*s.*, invented by Odell, of America, improved and manufactured by the exhibitors.

JAMES WOODBOURNE, of Kingsley, near Alton, Hampshire.

Portable hop-bagging machine, price 12*l.*, and fixed 15*l.*, invented, improved, and manufactured by the exhibitor; improved double-action haymaking machine, price 15*l.* 10*s.*; horse rake, price 7*l.* 10*s.*, with steel teeth (strongly recommended), 10*s.* extra, and improved general purpose waggon, price 31*l.*, invented, improved, and manufactured by the exhibitor.

WILLIAM BLIGH, of Canterbury, Kent.

Park phaeton, price 50*l.*, and square light cart, price 22*l.* 10*s.*, manufactured by the exhibitor.

ROBERT COGAN AND CO., of 43, Cranbourn-street, Leicester-square, London.

Glass churn, price 33*s.*; glass pails for cream, milk, acids, &c., &c., prices from 4*s.* to 12*s.*, glass butter slabs, price 10*s.*, and glass milk tests, price 1*s.* each, invented and manufactured by the exhibitors; Moore's scythe sharpener, price 2*s.* 6*d.*, invented and manufactured by Edwin Moore, of Titchfield-street, Oxford-street, London; sundry garden seats from 7*s.* to 50*s.* each; miscellaneous collection of glass milk pans, cream pots, lactometers, thermometers, milk syphons, butter pails, stout glass for farm building, flooring, hothouses, ventilating glass tiles, slates, aquariums, fern shades, &c., and a variety of articles suitable to dairy and market garden purposes.

J. CORNES AND SON, of Bow, Middlesex, and of 109, Bishopsgate-street Within, London.

Chaff cutting machines, price 55*s.* and upwards; cele-

brated prize combined winnowing and blowing machine, price £9 13s.; portable double-action lift and force pump, with brass barrels, price £12 10s.; patent butter making and cleansing machine, price 70s.; patent root and wool washing machine, price 90s.; patent combined washing, wringing, and mangling machine, price £9 10s.; domestic mangling and wringing machine, price 81s., all invented, improved, and manufactured by the exhibitors.

COTTAM AND Co., of 2, Winsley-street, Oxford-street, London.

Stable stall, price 93s.; side of stable stall, price, complete, £6 1s. 6d.; loose box, price, complete, £33 6s. 6d.; patent enamelled manger and rack, price 79s.; patent enamelled manger, water trough, and rack, price £6 13s.; manger and rack, fitted plain, price 66s. 6d., invented and manufactured by the exhibitors; patent rack, manger, and water trough, enamelled, price £5 5s., and patent corner manger and rack, price 90s., invented by Edward Cottam, of 2, Winsley-street, and manufactured by the exhibitors; sample of surface drain, price 2s. 6d. per foot; mare trap, price 8s. 6d., and twelve-inch horse pot, price 8s., manufactured by the exhibitors; corn rack, price 11s. 6d.; corner rack and seed box, price 20s.; circular wrought iron rack, price 9s. 6d.; circular rack (galvanized), price 11s.; open manger or stall trough, price 21s.; sample of improved cast iron traps, price 12m. 17s. 6d.; mare pot, price 11m. 7s.; stable grates and frames, 8 inch 2s., 10 inch 3s., 12 inch 4s. 6d., 14 inch 7s., 16 inch 10s., 18 inch 12s.; gutter, price 7s.; the piece 2s. 9d.; an angle-piece, price 2s.; cattle trough, price 18s.; dog troughs, price, 10 inch 5s., 12 inch 5s., 18 inch 7s., each; pig trough, price 10s.; stable pails made of galvanized iron, price 3s. 4s., and 5s. each; pump, price 28s. and upwards; carriage jack, price 25s.; carriage setter, price 18s. and upwards; corn mill, price £6 10s.; chain harrow, price 80s.; odometer or measuring wheel, price 63s., and dynamometer or draught gauge, price £70, invented by George Cottam, 2 Winsley-street, and manufactured by the exhibitors; cast iron window or bull's-eye light, price 9s. 6d.; stable sash, price 16s.; air gratings, price 6d. and 9d. per foot, open and shut ventilators 9 inch by 3 inch 1s. 6d., 9 inch by 6 inch galvanized 2s. 6d.; circular ventilator, price 21s.; wrought iron hood, price, hood 7s. 6d., 6 feet 6 inches of pipe 6s. 6d. and zinc coat for the above 2s. 6d.; stable forks, price 2s. 6d. to 4s. 6d. each; stable shovels, price 1s. 9d., 2s., 2s. 9d. and 3s., each; lanterns, price 2s., 3s., and 3s. 3d., each; safety lantern, price 15s.; wash basins, prices 4s., 5s., and 6s. 6d. each; harness room stove, price 30s.; registered drying or airing apparatus, price £10 10s.; corn bin, price 30s. and upwards; latches, prices 4d., 7d., 1s., 1s. 3d., and 2s. 6d.; harness brackets, prices 4s. 5s., and 6s.; brass collar and bridle holders, prices 10d., 1s. 6d., and 2s. 6d.; galvanized brackets, prices 7d., 8d., 1s., 1s. 9d., 2s. 2d., and 2s. 6d. each; saddle and harness brackets, prices 1s. 6d., 2s. 6d., 3s. 6d., 4s., and 5s. 6d.; head stall ornaments, prices, horse shoe and ring 3s. 6d., star and ring 1s. 6d., lion's head and ring 2s., double whip racks 2s. 6d., single whip racks 2s., whip hooks 3d., rosettes 3d.; rings, ribbons, rosettes, &c., prices 9d., 1s. 2d., 2s. 6d., and 4s. each; chains, bright, galvanized, and japanned black, prices, bright 3s., 3s. 6d., and 4s., galvanized 1s. 1s. 9d., and 2s. 3d., japanned black 10d., 1s. 3d., and 2s. 6d. each; ceiling hook, price 7s. 6d. and upwards; iron sack truck, price 20s., iron-bound corn measures, prices, 2s. 6d. and 7s. 6d., improved wrought iron spout and corn meter, prices, 7s. 6d. and 8s., pipe 1s., hopper 3s. 6d., newly-invented wrought iron wheelbarrow, for stable and garden purposes, price 30s., tying apparatus, or halter guide, with weights, chain, and spring hooks, price 14s., sheep hurdle, price 4s. 6d. and upwards, cattle hurdle, price 5s. 6d. and upwards, strong flat bar field gate, price 40s., cast iron post, fitted for the above gate, price 25s., and cast iron post, price 25s., all invented and manufactured by the exhibitors.

WILLIAM DRAY & Co., of Darenth Vale Iron Works, Farningham, near Dartford, Kent.

Patent reaping machine, price £25, invented by Obed Hussey, of the United States, improved and manufactured by the exhibitors (obtained the Royal Agricultural Society's prize of £20 at Lincoln, and many others in various parts of the country); patent reaping machine, price £30; grinding mill,

with stone grinders for grinding agricultural produce, price £15; (new gate) improved field gate, price 20s.; (new gate) patent improved field gate, price 20s., and improved Keat turni wrost plough, price £6, invented, improved, and manufactured by the exhibitors; patent iron plough, price £5 15s., invented, improved, and manufactured by Horusby and Son, of Grantham; improved combined winnowing and blowing machine, price £9 10s. and upwards; chaff cutting machines, price 50s. each and upwards, invented, improved, and manufactured by the exhibitors; chaff cutting machine, price 90s. and upwards, invented, improved, and manufactured by Richmond and Chandler, of Salford; iron field gates, price 33s. each; c-rn bruising mill, price 57s. 6d. and upwards; portable farm bench and vice, price 50s.; portable forge, price 50s.; iron wheelbarrows, price 25s.; combined rack, manger, and water trough, price 60s.; enamelled manger, price 30s.; galvanized iron pails, price 5s. 6d. each; japanned stable pails, price 5s. 6d. each; steel tools, price £10; improved garden engine, price 90s.; improved garden engine, price £5 10s.; garden roller, price 37s., all invented improved, and manufactured by the exhibitors; patent lawn mowing machine, price £6 6s., invented by J. Boyd, of Lewisham, and manufactured by B. Sarsenelson, of Banbury; garden seats, price 30s. and upwards, invented, improved, and manufactured by the Coalbrookdale Company, of Coalbrookdale; bronzed iron garden tables, price 32s.; galvanized wire netting, price 5d. per yard and upwards; galvanized garden arches, price 30s. and upwards; iron corn bin, price 24s. and upwards, invented, improved, and manufactured by the exhibitors; counter weighing machines, price 10s., 12s., and 14s.; sack weighing machine, price £2 2s., and upwards, invented and manufactured by the exhibitors; patent self-adjusting scythes, invented by J. Boyd, of Lewisham, and manufactured by the exhibitors, price 10s. 6d. each; eight horse power portable steam engine, price £225 (or trial); act of patent apparatus for cultivating land by steam power, price £205, and Smith's patent steam cultivator, price £16 10s., invented by William Smith, of Woolston, and improved and manufactured by J. and F. Howard, of Bedford.

GEORGE HAWKES, of Arlsey, near Baldock, Herts.

(New implement) portable grinding mill for steam power, invented, improved, and manufactured by the exhibitor, price £28, if fitted with crane for lifting runner stone, £5 extra.

EDWARD DOWLING, of 2, Little Queen-street, Holborn, London.

Platform weighing machine, on the lever and other principles, of every size, price from 12s. to 100s.; patent barrow machine, price £1, invented and manufactured by the exhibitor; dairy scales, manufactured by the exhibitor, price 12s. and upwards; chromometer, £2 2s.; glass rosettes, for horses' bridles, price 8d. per pair; hay statelyards, price from 8s. 6d. to 35s.; steel scales, to weigh from $\frac{1}{4}$ oz. to 1lb., price 2s. 6d. to 10s.

ISAAC SPIGHT, of Glandford Brigg, Lincolnshire.

(New implement) ten-row patent horse hoe, for corn and all kinds of root crops, price 16l. 10s., invented and manufactured by the exhibitor.

GEORGE TURNER, Depôt of Inventions in Domestic Machinery, 13, Rose-terrace, Brompton (opposite the Queen's Elms), London, S.W.

The magic churn, or egg and cream-whipping machine, price 1l. 10s., invented and manufactured by the exhibitor; new patent rotary knife cleaning machines on ornamental stands, price 2l. 2s. and upwards, invented and manufactured by Gallop and Co. of London; patent sausage making and mincing machines, price 1l. 10s. and upwards; patent self-acting roasting and basting machines, price 5l. 5s., invented and manufactured by Askew and Co.; polished steel-preserving oil, price 1s. per bottle, invented and manufactured by the exhibitor; patent lamer oil, price 4s. per gallon; paraffin or lina oil lumps, price 1s. 4d. each; machines for chopping suet, meat for pies, herbs, vegetables, &c., price 4s. 6d. and upwards each, manufactured by the exhibitor; cucumber slicers, price 1s. 6d. each; patent self-acting fumigator, price 5s.; garden tools, price 4s. 6d. per set; garden syringes with two brass roses, prices 7s. 6d. and 15s. each; horse radish scrapers, price 1s. 6d. each; asparagus knives, price 1s. 6d.

each; French bean cutters, price 2s. 6d. each; Sussex prize medal truck baskets, price from 1s. 3d. each, manufactured by Gidney and Son of London; John Bull's patent metal vent pez, price 1s. 6d., invented and manufactured by the exhibitor; patent knife cleaners on high stands, price 2l. and upwards; garden thermometers, price 2s. each; garden scrapers, price 2s. each; patent coffee mills, price 8s. 6d. and 10s. 6d. each; patent asphalted felt, price 1d. per foot, invented and manufactured by Croggan and Co. of 2, Dowgate-hill, London, E.C.; (new implement) patent lawn mowing machine, price 6l. 10s., invented and manufactured by Green of London; cast-steel lady's daisy forks, price 2s. 6d. each; ornamental wire archway, price 1l. 11s. 6d.; circular spiral wire archway, price 2l. 2s., and corahform wire table, tripod, and oval flower stands, price from 5s. each, all manufactured by J. Reynolds of London; galvanized wire netting, price 6d. per yard, invented and manufactured by Barraud and Bishop of Norwich; case of small domestic machinery, price from 1s. each, and patent cribbiting preventive head collar, price 1l. 1s., both manufactured by the exhibitor, and portable copper, price 5l.

JNO. GEO. DRURY and WM. HENRY BIGGLESTON,
of Canterbury, Kent.

Portable force pump or fire engine, price 12l. 12s. and upwards, and model of a self-acting fire extinguisher, price 5l., both invented, improved, and manufactured by P. R. Davis and Co. of Manchester; Pooley's patent agricultural weighbridge, price 27l. 10s., invented by Pooley, and improved and manufactured by P. R. Davis and Co.; Biddell's patent bean cutter, price on iron stand 4l., invented and improved by G. A. Biddell, and manufactured by Ransomes and Sims of Ipswich (awarded the silver medal at the Royal Agricultural Society's meeting at Gloucester); chaff-cutting machines, price 2l. 10s. and upwards, invented, improved, and manufactured by Richmond and Chandler of Manchester; hand chaff cutter box, price 1l. 10s., and chain harrow, price 3l. 10s., both invented, improved, and manufactured by the exhibitors; patent chain harrows, price 3l. 7s. 6d. and upwards, invented by J. Cartwright of Shrewsbury, and improved and manufactured by Ransomes and Sims of Ipswich; Biddell's patent steel oat mill, price on iron stand 3l. 15s., and Biddell's patent root cutter, price 5l. 5s., both invented by G. A. Biddell of Ipswich, and improved and manufactured by Ransomes and Sims of Ipswich; Gardner's turp cutter, double action, price 5l. 10s., invented by James Gardner of Banbury, and improved and manufactured by Ransomes and Sims of Ipswich; one-horse gear with intermediate motion, price 13l., and improved wrought iron lifting jack, price 1l. 10s., both invented, improved, and manufactured by Ransomes and Sims of Ipswich; patent combined root grater and chaff cutter, price 6l. 10s., invented, improved, and manufactured by B. Samuelson of Banbury; chaff cutting machines, price 2l. 5s. and upwards, invented, improved, and manufactured by Picketsley, Sims, & Co. of Leigh, Lancashire; circular pig troughs, price 7s. 6d. and upwards, and sack barrow, price 18s., all invented, improved, and manufactured by the exhibitors; Nicholson's patent double action haymaking machine, price 16l. 16s., improved and manufactured by Ransomes and Sims of Ipswich (received the first prize of the Royal Agricultural Society's meeting at Salisbury, 1857); Smith and Ashby's patent double action and reverse motion haymaking machine, price 15l. 15s., invented, improved, and manufactured by Smith and Ashby of Stamford (took the first prize offered by the Royal Agricultural Society of England during a period of ten years in succession); horse rake with iron teeth, price 7l. 10s. and upwards, invented by Howard of Bedford, and improved and manufactured by the exhibitors; water trough, price 9s. and upwards, invented, improved, and manufactured by Ransomes and Sims of Ipswich; round water or feeding trough, price 6s., invented, improved, and manufactured by the exhibitors; horse drag rake, with semi-angular steel teeth, price 8s., and patent wheel hand rake, price 2s., invented, improved, and manufactured by Smith and Ashby; patent combined bean and oat mill, price 6s., on iron stand, invented by G. A. Biddell, of Ipswich, and manufactured by Ransomes and Sims of Ipswich; patent root cutter, price 6s., invented by G. A. Biddell, improved and manufactured by Ransomes and Sims; turnip cutter for sheep, price 90s., invented by James Gardner of Banbury, and manufactured by the exhibitors; Samuelson's patent Gardner's double-action (all iron) tur-

nip cutter, price 66 19s. 6d., invented by the late James Gardner of Banbury, and improved and manufactured by B. Samuelson of Banbury; prize oilcake mill, price 73s. 6d., invented, improved, and manufactured by Bentall of Heybridge; linned cake breaker, price 56s. 6d., and upwards, invented, improved, and manufactured by Samuelson of Banbury; registered oilcake breaker, price 70s. (took the prize of the Bath and West of England Society in 1856, and again in 1857; it was also highly commended by the judges of the Royal Dublin Agricultural Society in 1856), invented, improved, and manufactured by Smith and Ashby of Stamford; garden chairs of all kinds, price 20s. and upwards, invented, improved, and manufactured by the exhibitors; patent mangle, price 11l., invented, improved, and manufactured by Baker of London; patent lawn mowing machine, price 46 17s. 6d., invented by Boyd, improved and manufactured by B. Samuelson of Banbury; liquid manure pump, price 70s., invented, improved, and manufactured by B. Samuelson, of Banbury; prize iron Kent plough, price 45 10s., invented, improved, and manufactured by J. and F. Howard of Bedford; set of prize harrows, price 63s., invented, improved, and manufactured by J. and F. Howard; one-horse land roll, price 18; two-horse field roller, price 10 10s., and three-horse field roller, price 12 10s., invented, improved, and manufactured by the exhibitors; patent corn screen, price 18 10s., invented by T. C. Bridgman of Bury St. Edmunds, and improved and manufactured by Robert Boby of Bury St. Edmunds; corn bin, price 30s., invented, improved, and manufactured by the exhibitors; improved platform weighing machine, price 90s. and upwards, invented, improved, and manufactured by Chambers, Day, and Co., of Birmingham; sack weighing machine, price 40s. and upwards; wringing and mangling machine, price 70s., invented, improved, and manufactured by the exhibitors; washing, wringing, and mangling machine combined, price 18 8s., invented, improved, and manufactured by Bradford of Manchester; wood beam mangle hoe, price 42s., patent prize root pulper, price 15 5s.; and bundle of points for Bentall's broadshare models, invented, improved, and manufactured by E. H. Bentall of Heybridge; cast-iron window-frame and casement, price 12s., invented, improved, and manufactured by the exhibitors; two cast-iron cocks for water-carts or butts, price, small 7s., large 8s., invented, improved, and manufactured by Sidney of Norfolk; garden engine, price 16; garden roll, price 12 10s. and upwards; set of iron York harrows, price 60s. and upwards; seed barrow, price 55s.; turnip drill, price 50s.; wire netting, japanned, price 4d. per lineal yard and upwards; hand drag rake price 12s., invented, improved, and manufactured by the exhibitors; oilcake breaker, price 90s., invented, improved, and manufactured by Ransomes and Sims; clod crusher or press-wheel roller, price 15, invented by W. Cambridge of Bristol, improved and manufactured by B. Samuelson of Banbury; land presser, price 17 10s., invented, improved, and manufactured by the exhibitors; cultivator or scarifier, price 10, invented, improved, and manufactured by Coleman and Son of Chelmsford; wrought iron crib or hay rack, price 30s., invented, improved, and manufactured by the exhibitors; patent kitchener, price 122 10s., invented by Sidney Flavel of Leamington, improved and manufactured by Flavel and Co.; improved gas cooking oven, price 45s.; set of bright quoits, price 22s.; bright spades, cast steel, prices, 4s. to 4s. 6d.; black spades, cast-steel, prices 3s. 6d. to 4s.; cast-steel shovels, prices, 3s. 6d. to 4s., and cast-steel digging forks, prices, four prongs 4s. 6d., five do. 5s., invented, improved, and manufactured by W. A. Lyndon of Birmingham; cast-steel spades, prices, 3s. to 3s. 4d.; cast-steel shovels, prices, 3s. to 3s. 4d., invented and manufactured by Smith and England, of Stourbridge; patent lever cork-drawer, price 3s. 6d., invented, improved, and manufactured by Wm. Luza of London; (new implement) bean mill on wood frame, price 2l. 5s., and (new implement) barley crusher, price 4l., invented, improved, and manufactured by R. Phillips, of Canterbury; bean mills on iron frames, price 2l. 15s. each, invented, improved, and manufactured by Smith and Ashby, of Stamford; wrought-iron carriage jack, price 10s. 6d., invented, improved, and manufactured by the exhibitors; improved sack holder, price 1l. 14s. 6d., invented, improved, and manufactured by Gilbert, of Birmingham; binding rakes, price 2s. 10d., invented, improved, and manufactured by the exhibitors; patent asphalted roofing felt, price 1d. per square foot, invented, improved, and manufactured by McNeill and Co., of London; sausage-

making and general mincing machine, price 1*l.* 10*s.* and upwards, and improved patent coffee mill, price 10*s.*, invented, improved, and manufactured by S. Nye and Co.; box of patent vent pegs, price 1*s.* each, invented by E. Fellows, of Canterbury, improved and manufactured by W. J. Lee, of Wolverhampton; bean and oat crushers, price 5*l.* 5*s.*, and upwards, invented, improved, and manufactured by Richmond and Chandler, of Liverpool; patent fire-resisting safe, price 14*l.*, invented, improved, and manufactured by Milner and Sons, of Liverpool; wrought-iron rick stand, price 6*l.* 10*s.*, invented, improved, and manufactured by the exhibitor; grain crusher, price 10*l.* 10*s.*, invented, improved, and manufactured by Stanley, of Peterborough; hand drag rakes, price 12*s.* each, invented, improved, and manufactured by the exhibitors; chaff-cutting machine, price 5*l.* 5*s.*, and patent combined mill, on iron stand, price 6*l.* 6*s.*, invented by Biddell, improved and manufactured by Ransomes and Sims; patent hydrostatic percolator or urn, in planished tin, price, for 1 pint, 8*s.* 6*d.*; 2 ditto, 12*s.*, 4 ditto, 17*s.* 6*d.*, invented, improved, and manufactured by E. Loysel, of Paris; patent rotary knife cleaning machine, price 6*l.*, invented, improved, and manufactured by George Kent, of London; patent knife cleaner, price 14*s.* 6*d.*, invented, improved, and manufactured by S. Worth, of London; improved mouse-trap, price 7*s.* 6*d.*; iron stump bedsteads, price 1*l.* and upwards, invented, improved, and manufactured by the exhibitor; cask stand, price 14*s.*, invented, improved, and manufactured by Barlow, of London; rest of four patent iron travelling and office trunks, price 3*l.* 12*s.* 6*d.*, invented by Wilson and Co., improved and manufactured by the exhibitors; patent bean cutter, price 4*l.*, invented by G. A. Biddell, of Ipswich, improved and manufactured by Ransomes and Sims; letter copying machine, price 3*l.*, and galvanized iron pails, price 5*s.* 6*d.*, invented, improved, and manufactured by the exhibitors; improved block tin milk pans, price 4*s.* 9*d.*, invented, improved, and manufactured by Walton, of Wolverhampton; three-horse-power thrashing machine price 43*l.*, invented, improved, and manufactured by the exhibitors; vermin traps, price, rabbit traps 21*s.*, mole traps 6*s.*, rat traps for runs 12*s.* per dozen; ornamental iron flower stand, price 2*l.* 4*s.*, invented, improved, and manufactured by Kenrick and Son, of Birmingham; and patent lawn scythe, complete, price 11*s.* 6*d.*, invented, improved, and manufactured by Boyd, of London.

R. FORSHAW AND CO., of Liverpool, Lancashire.

Two-ton cart and cattle weighing machine, price 18*l.* 10*s.*, posts and chains 1*l.* 10*s.* extra, invented, improved, and manufactured by the exhibitors; Dray's champion reaping machine, price 25*l.*, dividing iron 1*l.* 1*s.* extra, invented by Obed Hussey, of the United States, improved by William Dray, of London, and manufactured by the exhibitor (has received many prizes, both from the Royal Agricultural and local shows, the Austrian gold medal of honour was awarded to it in 1857); and reaping machine, price 20*l.*, similar to the above, but smaller; and sack weighing machine, price 5*l.* 5*s.*, wings 1*l.* 1*s.* extra, invented, improved, and manufactured by the exhibitor.

J. and F. HANCOCK, 62, Pentonville-road, London, and Northgate-street, Gloucester.

Pulverizer plough, price 6*l.* 10*s.*; (new implement) pulverizer cultivator and parer, price 6*l.*; (new implement) pulverizer hoe, price 3*l.* 10*s.*; (new implement) parer, price 5*l.* 5*s.*; (new implement) butter-making machines, price 5*l.* 5*s.* and upwards; machine for shaping butter into 1 lb. and 3/4 lb. pieces, price 2*s.*; and machines for ornamenting butter, for table and garnishing purposes, price 3*s.* 6*d.* each, all invented and manufactured by the exhibitors.

JOHNSON and WHITAKER, of Leigh, near Manchester, Lancashire.

Chaff machine, price 1*l.* 10*s.* and upwards; oilcake mill, price 15*l.*; root cutter, price 13*l.* 10*s.*, and new patent root cutter, price 15*l.* 10*s.*, improved by John Whitaker, and manufactured by the exhibitors; (new implement) patent root pulper, price 15*s.*, improved and manufactured by the exhibitors; patent lawn mower, price 15*l.* 10*s.* and upwards, improved by John Whitaker, and manufactured by the exhibitors.

EDWARD PELLEW PLENTY and WILLIAM PAIN, of Eagle Iron Works, near Newbury, Berkshire.

Portable combined thrashing machine, not exceeding seven

horse power, price 19*l.*; chaff cutter, to be worked by steam or horse power, price 13*l.*; Shepherd's horse or portable granary, price 13*l.*; iron water or liquid manure cart for farm or street purposes, with distributor and sprinkler detached, price 17*l.*; iron water or liquid manure cart, price 11*l.* 11*s.*, and galvanized iron water trough, price 12*l.* 10*s.*, invented, improved, and manufactured by the exhibitors.

RICHARD and JOHN RANKIN, of Liverpool, Lancashire.

(New implement) patent bone mill of ten horse power, price 175*l.*, improved by John Rankin, of Liverpool, and manufactured by the exhibitors; improved patent corn screen or smut machine, price 130*l.*, invented by J. Grimes, of the United States, improved by John Rankin, and manufactured by the exhibitors; iron framing with wood casing, price 18*l.*, invented and manufactured by the exhibitors; sifter or separator, price 10*l.* 10*s.*, improved and manufactured by the exhibitors.

G. F. SMITH, of Canterbury, Kent.

Basterna brougham, price 150*l.*; a sociable, price 120*l.*; a waggonette, price 155*l.*; and a Whitechapel cart, price 130*l.*, all manufactured by the exhibitor.

COOMBE and Co., of Mark-lane, London.

French runner millstone, made of a new description of burr, price 13*l.*; and French bed stone, price 11*l.*, manufactured by the exhibitors; patent Ashby smut machine, price, machine 130*l.*, spout and pulley 15*l.* extra, invented, improved, and manufactured by John Ashby, of Croydon; case of machine wire for dressing flour; case of strong-wove wires for kiln-heads, &c.; three-row patent brush for dressing flour, price 2*s.* 6*d.* per foot; double or two-row brush for dressing flour, price 2*s.* 6*d.* per foot; a single or one-rowed brush for dressing flour, price 1*s.* 8*d.* per foot; pulley blocks for hoisting mill stones, &c., price, 2 and 3 sheaves 12*l.* 10*s.* per pair, 3 and 4 sheaves 13*l.* 3*s.* per pair; screw jack for lifting heavy weights, price 12*l.* 5*s.*; two patent bolting cloths for dressing flour, price, No. 18 40*s.*, No. 16 35*s.*; patent mill sweeping broom and common ditto, price, patent 7*s.*, common 5*s.* each; iron proof staff in case, price 13*l.* 5*s.*; jointed proof staff (wood), price 1*l.* 5*s.*; mill chisels, best cast steel, price per lb., best 6*d.* to 1*s.* 4*d.*, second 6*d.* to 1*s.*; set of wood measures, bushel 22*s.*, half-bushel 12*s.*, peck 7*s.* 6*d.*, half-peck 6*s.*, quarter-peck 5*s.*; double leather driving strap, price 4*s.* per foot; single leather driving strap, price 1*s.* 10*d.* per foot; two sack trucks (wood), price 18*s.* each; double and single split cane brush, price per foot, single 1*s.* 6*d.*, double 2*s.*; mahogany flour dressing machine, price 16*l.*; weighing machine (single), price 13*l.* 10*s.*; and weighing machine (single), price 12*l.* 10*s.*, all manufactured by the exhibitors.

WILLIAM SPANTON, of Old-court, Nonington, near Wingham, East Kent.

(New plough) four horse Kent plough, price 13*l.* 10*s.*, improved and manufactured by George Croft.

FRANCIS MORTON, of Liverpool.

(New implement) patent self-acting winding straining pillar, in cast or wrought iron, for straining prepared hoop iron, and all kinds of fencing wire, also for hanging field gates, price 12*l.* 5*s.*; indestructible wire cable strand cattle fence, for farm lands and general enclosures, price 8*d.* per yard, or with bar iron uprights complete 1*s.* 3*d.* per yard; strained hoop iron and wire cable fence for young horses, heavy bullocks, &c., price 2*s.* per yard, if stands and hoop iron are galvanized 2 1/2*d.* per yard extra; ornamental galvanized wire cable strand fence, capable of resisting the heaviest bullocks, prices, with six lines of galvanized cable strand and patent oval standards 2*s.* 3*d.*, with seven lines ditto ditto 2*s.* 4*d.*, with six lines ditto and extra strong bar iron uprights 1*s.* 9 1/2*d.*, with seven lines ditto ditto 1*s.* 11*d.* per yard; ornamental galvanized iron deer fence, prices, including delivery and fixing, 5*s.* 9*d.* per yard, ditto ditto 4*s.* 6*d.* per yard with bar iron uprights not galvanized, ditto ditto 2*s.* 6*d.* per yard if proprietors find their own wood posts; and model of low fence for top of earth mounds or stone walls, price exclusive of wood uprights 4*d.* per yard of fence, with bar iron uprights 7 1/2*d.* to 8 1/4*d.* per yard, invented by the exhibitor, and manufactured by Francis Morton and Co., of Liverpool; ornamental wrought iron field gate 9 feet by 4 feet, prices, with hangers 1*l.* 18*s.*, without 1*l.* 16*s.*, plain

with hangers £1 12s., ditto without £1 10s. each; plain useful field gate 9 feet by 4 feet, price £1 5s.; ornamental strong wicket gate, prices, with cast iron pillars complete £2 5s., without ditto £1; shed for general farm purposes, covered with patent galvanized iron roofing tiles, price 2s. each; model of curved self-supporting and fire resisting corrugated galvanized iron roof, price, sheet 100 ft., by 19 ft., delivered and fixed complete £70; cheap corrugated iron roofing plates, price 3½d. per superficial foot; galvanized 5-inch eaves gutter, price 6d. per lineal foot; galvanized 2½-inch rain water pipe, price 6d. per lineal foot; improved copper roof lightning conductor, price 1s. 6d. to 1s. 10d. per foot; and galvanized wrought iron liquid manure and garden pump, price £1 18s. each, improved and manufactured by Francis Morton and Co., of Liverpool.

J. E. KIRBY, of Banbury, Oxfordshire.

Combined thrashing, shaking, winnowing, and barley horning machine, which finishes the corn ready for market, price £105; four horse power combined thrashing and winnowing machine, to be driven by steam power, price £79; six horse power portable engine, price £200, invented, improved, and manufactured by the exhibitor, and four horse power portable steam engine, price £160, all invented, improved, and manufactured by the exhibitor.

WILLIAM BUTLIN, of Northampton.

Portable engines, price £205 and upwards, invented and manufactured by the exhibitor.

WILLIAM MARSHALL AND SON, of Gainsborough, Lincolnshire.

Eight horse power portable steam engine, price £220; 2½ horse power portable steam engine, price £95, with pulley 1 foot 6 inches diameter for slow motion machines 20s. extra; portable circular saw bench, price £13 10s. and upwards, and screw lifting jack, price 30s., all invented, improved, and manufactured by the exhibitors.

HOWARD, RICHES, and WATTS, of Duke's Palace, Iron Works, Norwich.

(New implement) patent American grist mill (No. 3 size), price £22 and upwards, invented by Amory Felton, New York, U.S. America, and manufactured by the exhibitors; (new implement) patent grain separator, price for agricultural purposes £16 to £18, larger sizes for mills £40 to £80, invented by Augustus B. Childs, of Rochester, New York, U.S. America, improved by Augustus B. Childs, of 481, New Oxford-street, London, and manufactured by the exhibitors; four horse power portable steam engine, price with iron fire-box, &c., in the usual way, £160, with steel fire-box £165, or complete on wood travelling wheels as exhibited £200, improved and manufactured by the exhibitors.

WARD and BURMAN, of Stratford-upon-Avon, Warwickshire.

(New implement) patent brick and tile machine, price £75, and (new implement) patent clot machine, price £75, invented and manufactured by the exhibitors.

NELSON KENWARD, of Sutton, near Carshalton, Surrey.

(New implement) steam boiler and engine, eight horse power, price £235, invented and manufactured by the exhibitors.

WILLIAM SUMMERSCALES AND SON, of Coney-lane Mills, Weighley, Yorkshire.

Chaff and litter cutter worked by steam or horse power, price £7 10s. and upwards, (at Londonderry August 1858, no prizes were given for chaff machines, but the judges awarded a commendation and the Society's silver medal), they also received the first prize at the Lichfield Show, and a prize at the Ratchliffe Show), invented by F. P. Walker, of Manchester, improved by Thomas Larnuth, of Salford, and manufactured by the exhibitors; new washing machine for roots, rags, and other articles, price £5 10s.; combined washing and mangling machine, price £7; wringing and mangling machine, also a bone crusher and paper squeezer, price 90s., if with iron rollers 30s. extra and upwards, and small size wringing and mangling machine, price 35s., if with cloth 10s. extra, improved by Summerscales and Sagar, and manufactured by the exhibitors; mangling machine, price 95s., invented, improved, and manufactured by the exhibitors.

WYATT JOHN PETTITT, of the Snargate Apiary, Dover, Kent.

(New article) bee house with four sets of Pettitt's collateral hives, price 147. 14s., invented and manufactured by the exhibitors; bar frame hive, price 57. 5s., the prices range down to 42s. according to size and design, invented and improved by Major Mann, of Faversham, and manufactured by the exhibitor; temple bee hive, price 84s., and collateral bee hive, price 42s., invented, improved, and manufactured by the exhibitor.

WILLIAM BENTLEY, of Margate, Kent.

Specific for the cure of certain diseases in horses, cattle, and sheep, price 21s. per dozen, invented and manufactured by the exhibitor.

JOHN MILTON JONES, Gloucester.

Composition for waterproofing, softening, and preserving leather, price in tin boxes 1s. each, invented and manufactured by the exhibitor.

DANIEL LANCASTER BANKS, of 26, Willington-road, Camberwell.

(New implement) model illustrating Bank's ornamental farm and combination of steam agriculture, price 650L, manufactured by the exhibitor.

ISAAC WRIGHT, of Great Bentley, near Colchester, Essex.

Grass seeds and specimens of agricultural seeds and roots.

Messrs. STONHAM and CALSANY, of Depling, near Maidstone, Kent.

Model, accompanied with explanation, drawings, specification, and estimate in detail, of costs of a building adapted for drying hops, capable of drying 500 bushels in 24 hours, or 1 bushel to every foot of drying-floor in twelve hours, at a mean temperature not exceeding 130 degrees in the hops, price 37. 3s.

JOSEPH BARLING, of No. 7, High-street, Maidstone, Kent.

(New implement) model of improved hop kiln, the cost of altering a kiln will depend on its size and other particulars, and may be effected from 4L to 8L, invented and manufactured by the exhibitor.

JOHN COLLINS, 2, Warwick-place, Wheeler-street, Maidstone, Kent.

Cast iron apparatus for drying hops, malt, and other substances, price £11, invented by the exhibitor, and manufactured by Balls Garrett, of Maidstone; model of ground floor of a kiln for drying hops or malt, model showing a section of hop or malt kilns, invented and manufactured by the exhibitor; model of flue bricks for heating buildings in general, and hop or malt kilns, invented by the exhibitor, and manufactured by E. L. Betts, of Aylsford, Kent; kiln floor pile for drying hops, malt, or other substances, manufactured by Edward Hyson, of Stowmarket, Suffolk; wire floor, as in general use in malt kilns, model of roofs for kiln floor, for drying hops, malt, &c., models of a wind guard or cowl for the top of a kiln, and model of a kiln wind guard or cowl, of improved construction, invented and manufactured by the exhibitor; fan or air blower, to illustrate ventilating powers of wind guards or cowls; model of furnace bars; specimen of earthen pipes, as used in Collins's patent hop and malt kilns, manufactured by E. L. Betts, of Aylsford, Kent; designs for an east house or kiln for drying hops, design for two kilns for drying hops, design for six kilns for drying hops, designs for a malt office, and design for heating powers for kilns; design for heating powers for kilns, or other purposes; design for heating powers for kilns or other buildings; designs for heating powers for kilns; estimate and specifications of works for building kilns for drying hops.

THOMAS GIBBS & Co., The Seedsmen to the "Royal Agricultural Society of England," Corner of Half-Moon-street, Piccadilly, London.

Collection of dried specimens of permanent grasses, containing all the most useful and valuable varieties for laying down land to permanent meadows and pastures; collection of

specimens of English wheats, barleys, oats, &c., in the ear, including all the varieties in general cultivation in the United Kingdom; collection of dried specimens of foreign wheats, barleys, oats, &c., in the ear, and of English varieties grown from seeds imported from France after the kinds had been acclimatized there for some years; collection of samples of various permanent and other grass seeds, including mixtures for laying down land to permanent grass for the following purposes: meadows and pastures, parks and field lawns, irrigation or water meadows, upland sheep walks, cemeteries and churchyards, garden lawns and grass plots, &c.; renovating mixture for improving old swards; various grass seeds separate, Italian and other rye grasses, fescues, poas, &c., &c., altogether comprising several hundred varieties; collection of general agricultural and other seeds, including c roots, kohlrabi, parsnips, mangel wurtzels, awedes, hybrids, and other turnips, clovers, sainfoin, lucerne, peas, beans, and all other agricultural seeds; collection of roots of Yellow or Orange Globe, Long Red, and other mangel wurtzel, kohlrabi, &c., including Yellow or Orange (Globe)mangel, Long Red ditto, Red (Globe) ditto, Long Yellow ditto, purple kohlrabi, and green ditto.

JOSEPH THORLEY, of 77, Newgate-street, London.

Case containing 418 packets, each packet one feed of Thorley's food for cattle, price 45s., invented, improved, and manufactured by the exhibitor.

THOMAS RETIGAN & Co., Albert-buildings, Corporation-street, Manchester, Lancashire.

Royal patent cake, for cattle, price £12 10s. per ton, and original and economic food for cattle, price 40s. to 44s. per cwt., invented and manufactured by the exhibitors.

JAMES TREE, 22, Charlotte-street, Blackfriars-road, London.

Cattle gauge and key to the weighing machine, price 7s. 6d. to 16s. 6d. each; cattle gauge adapted for any market, price 8s. 6d. to 25s. each; circular cattle gauge, price £1 5s. each; and farmers' slide rule and cattle gauge, price 12s. 6d., 15s. 6d., and 25s. each, invented by John Ewart, and manufactured by the exhibitor; telescope draining level, price £5 10s. each; and horse standard or measure, price 16s. each, invented by James Tree and Co., and manufactured by the exhibitors; cottage or agricultural barometer, price 11s. 6d. each; garden minimum thermometer, price 4s. 6d. each; garden maximum thermometer, price 7s. 6d. each; garden microscope, price 21s. each; and rain gauge, price 15s. each, all improved and manufactured by L. Casella, London.

HENRY BRIDGES, of 406, Oxford-street, London, W.

New patterns of improved butter prints, and other small articles for use in the dairy, price 6d. to 10s. each, invented, improved, and manufactured by the exhibitor.

PETER LAWSON and SON, the Queen's Seedsmen, of Edinburgh, and 27, Great George-street, London, S.W.

Collection of all the principal varieties of wheat, barley, rye, and oats, both in the sheaf and in the clean grain, comprising those of native origin and those which have been introduced to this country by the exhibitors from France, Germany, Italy, Russia, Spain, Portugal, Egypt, Algeria, North and South America, and the British Colonies. Collection of the principal grasses cultivated in this country for agricultural purposes, comprising both native and foreign species and varieties: these are shown both in the seed and straw. Collection of the principal varieties of turnips, mangold wurtzels, carrots, and other roots for feeding cattle. Complete collection of all the cultivated varieties of the kohlrabi: illustrative of the "Paper" in the Society's *Journal*, vol. xx., page 497. Collection of the principal varieties of the Coniferae or cone-bearing trees, native of, or which have been introduced, and found capable of cultivation in the United Kingdom: this collection is illustrated by growing specimens from seed, as well as by original drawings from full-grown trees. Collections of garden tools, from 10s. to £10 per set. Collection of native and foreign wools, illustrating all known breeds of sheep.

GEORGE SPILL, of Stepney Green, and Imperial Oil

and Colour Works, St. George's-street, London Docks.

[All the articles on this stand were manufactured by the exhibitor, except otherwise mentioned.]

(New article) waterproof rick cover, price complete 3s. per square yard; (new article) double texture waterproof (india-rubber) cart cover, price complete 3s. per square yard; oiled canvas rick cover, price, complete, 1s. 9d. per square yard; oiled canvas cart cover, price, complete, 1s. 9d. per square yard; double texture wool and Indian-rubber horse-lou cloth, price 3s. 6d. and upwards; (new article) patent vegetable leather ventilating horse cloth, price 20s. 5d.; (new article) patent vegetable leather gig apron, price 10s. 6d. and upwards; (new article) patent vegetable leather carriage knee boot, price of average size 26s. 6d.; patent vegetable leather greyhound cover, price 6s. 10d.; (new article) patent vegetable leather gun cover, price 3s. 9d.; (new article) patent vegetable leather game bag, price 6s; patent vegetable leather straps, price, from 5d. per foot run; (new article) patent vegetable leather driving cape, price 22s. 6d.; (new article) patent vegetable leather riding leggings, with springs, price 8s; pair of patent riding leggings, with long springs, price 13s. 6d.; (new article) pair of patent leather trousers, price 13s. 6d.; (new article) pair of patent leather fishing stockings, price 8s; (new article) patent leather shooting or fishing hat, price 1s.; (new article) ploughman's waterproof cape, price 3s. 6d.; ploughman's waterproof frock, price 5s.; ploughman's waterproof leggings, price 1s. 10d.; ploughman's waterproof hat, price 1s. 3d.; torch oil, price 9d. per gallon; portland cement wash, price 1s. per gallon; superior wheat manure, price £5 5s. per ton; superior blood manure, price £5 5s. per ton; superior super-phosphate of lime, price £6 10s. per ton; improved white cart grease, price 10s. 6d. per cwt.; improved yellow cart grease, price 12s. 6d. per cwt.; improved brown machine grease, price 15s. 6d. per cwt.; engine oil, price from 5s. to 6s. per gallon; pure refined colza oil, price 4s. per gallon; Greene's metallic oxide paint, copper colour, price 8s. per gallon; Greene's metallic oxide paint, black colour, price 7s. 6d. per gallon; Greene's metallic oxide paint, bronze colour, price 8s. per gallon; improved paint, mixed, in a liquid state ready for use, price 6s. per gallon and upwards; black japan varnish, dries in a few hours, and blue, red, and green compositions, price 5s. 6d. to 14s. per gallon; new mineral oils for lighting purposes, price, phenola 2s. 10d., photogen 3s. 2d., petroleum 3s. 9d., belmontine 4s. 6d. per gallon; lamps for the above oils, price from 1s. 6d. each, suitable for labourers' healthy homes, and from 3s. to 30s. each for the use of farmers and tradesmen; model of labourer's cottage (and explanatory hook), explanatory book, containing 20 examples, at 3s. each, invented by C. V. Bernard, of London, and manufactured by the exhibitor; outside ledged door and frame complete, with stone sill, for agricultural labourers, miners, and colliers, price 11 1s. 6d., inside ledged door and frame, with stone sills, price 16s. 6d., and improved cottage window casements and frames, price 18s. 6d., with three glazed casements 11. 5s.

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

MONTHLY COUNCIL: Wednesday, Aug. 1.—Present: The Earl of Powis (President, in the Chair), the Earl of Macclesfield, Lord Ashburton, Sir J. V. Shelley, Bart. M.P., Hon. A. Vernon, Mr. Amos, Mr. Raymond Barker, Mr. Earnett, Colonel Challoner, Mr. Frere, Mr. Brandreth Gibbs, Mr. Fisher Hobbs, Mr. Howard, Mr. Humberston M.P., Mr. Milward, Mr. Shuttleworth, Mr. H. Wilson (of Stowlangtoft), and Professor Wilson.

The following new members were elected:—

Bromley, —, near Lancaster
Brown, Thomas J., The Moor, Hereford
Camp, J. W. del Campo, North Wootton, King's Lynn
Fielden, Joshua, Stansfield Hall, Todmorden
Filmer, Sir E., Bart., M.P., East Sutton Park, Maidstone

Halliday, Thomas C., Red Hall, Bursdon, Horley, Surrey
 Hardwick, Alfred, Haugleton Portslade
 King, Stephen, Old Hayward, Ilungerford
 Moor, James, 11, Upper Berkeley-st., Portman-sq., London
 Radford, H. B., Stanton House, Burton-on-Trent
 Wedgwood, George Arthur, Batt's Farm, Warrington,
 Croydon.

FINANCES.—Mr. Barnett, Chairman of the Finance Committee, presented the report, from which it appeared that the current cash balance in the hands of the bankers was £2,487 7s. 8d., and at Canterbury £3,012 13s. 10d. The Secretary's receipts during the past month were examined and found correct.

GENERAL LEEDS COMMITTEE.—The President read the report recommending a visit to the trial-grounds, a spot selected for the show-yard by a deputation from the Council. It was unanimously resolved that the name of J. Dent Dent, M.P., be added to the list of the Committee. It was resolved that Mr. Manning be appointed contractor for the Leeds show-yard. The seal of the Society was affixed to the agreement, which had been already signed and sealed by the Mayor of Leeds. On the motion of Mr. Brandreth Gibbs, it was resolved, "That the Press be allowed catalogues of implements as soon as the trial-yard is open; these to be delivered on the representative producing his press order from the Secretary." At the request of the Chairman of the Journal Committee, the consideration of Mr. Brandreth Gibb's motion, "that in order to avoid the complaints which are annually made as to the late period at which the Reports on the Implements ex-

hibited at the Society's country meetings are published, in future, the report, as soon as ready, shall be set up in the type in which it will eventually appear in the Journal, and that copies of it be at once issued (under the usual regulations) to the Exhibitors, and to the agricultural newspapers which are in the habit of publishing the ordinary proceedings of the Society," was postponed until the next meeting of Council.

The following list of prizes for Essays and Reports for 1861 was agreed to:

- I. Special Prize of 50*l.* offered by the President, the Earl of Powis, for the best Report on the Improvement in the Farming of Yorkshire, since the last report in Vol. IX. of the Journal.
- II. 50*l.* for the best Report on the Farming of Hampshire.
- III. 10*l.* for the best Report on the results of Drainage at different depths on different soils, as tested by the wet season of 1860, including the effect of laying down drained land flat or in ridges.
- IV. 10*l.* for the best Essay on the best mode of Wintering Dairy Cattle.
- V. 10*l.* for the best Essay on the general principles and results involved in the Cross Breeding of Cattle.
- VI. 10*l.* for the best Essay on the Rearing of Calves.
- VII. 10*l.* for the best Essay on the best mode of Harvesting and Thrashing Cern.
- VIII. 10*l.* for any other agricultural subject.

The usual vacation was then granted to the Secretary and Clerks of the Society, and the Council adjourned over the autumn recess to Wednesday, November 7.

THE LEADING FEATURES OF THE IMPLEMENT DEPARTMENT OF THE CANTERBURY SHOW.

The happiest of unions has been that between Agriculture and Engineering. Not without jars, however, of which more hereafter, has it been; but still the alliance has been productive of results as striking as they have been beneficial. Those who are old enough to remember, and who had the good fortune to be present, at the earliest of the Royal Society's Shows, and who walked this week through the crowded show-sheds of the Canterbury Meeting, will have had striking evidence of this. At first neither Agriculture nor Engineering were greatly ambitious of helping each other, or confident as to how the one could help the other. Of the two, doubtless, Agriculture was perhaps the readiest to find fault, and to have but a poor idea of what Engineering could do for her; while, on the other hand, Engineering had little notion how much her assistance was really needed, and in what manner it could best be given. But time cleared away the mists and clouds which hung over the path of progress, and in due course each saw how much the one would be benefited by the other; the far-seeing friends of Agriculture prophesying wondrous results, and announcing startling innovations—haughtily sneered at, at first—as the gift of Engineering to her. Thus plodded the couple warily on, not at all times quietly forsooth, like coupled hounds at times, to speak truly—one pulling one way, one the other; but somehow, with all their cross-purposes and side-pullings, progressing forwards at a really satisfactory rate.

It is a remarkable feature connected with agriculture that it possesses no history: detached facts doubtless are here and there to be met with, but continuous philosophically connected details there are little or none, to afford light as to the real progress of any of its departments, cultural or implemental. Did these mate-

rials exist, nothing would be more interesting than to trace the gradual improvements made in agricultural mechanism—where, and by whom. But these unfortunately do not exist sufficiently detailed to trace this progress satisfactorily. At best we have but a dry list of names and machines; but of the various difficulties which must of necessity have encountered the inventors we have no record. Stages of progress, therefore, such as can be traced in the history of the steam-engine, cannot be traced in like manner in connexion with the mechanism of agriculture. We hear only of results, and barely at times of these; but history is silent as to the way these are worked out, and of the nature of the difficulties by which they were surrounded. In looking back, then, at the last half century—a period the most prolific in real practical projects—we have to content ourselves with the vaguest of information, and the slenderest of details. We can but say that engineering has done great things for agriculture: at first, beginning in a very doubtful and feeble way, she proffered her services to drive here and there a thrashing-machine in some far off northern district; then, emboldened by success, she began to cut the roots and the hay, and to crush the corn and the cake; and, getting more ambitious with each successive triumph, she walked boldly into the field, and now threatens to supplant the plough by the steam cultivator. We refer in these points to the aid which steam has given to agriculture through the medium of engineering; but in other, perhaps less ambitious and daring, but not less useful ways, has her aid been remarkable. The implements of the field, and the machines of the steading, have all received in turn a portion of her zealous care, and have been stamped with the impress of her mechanical genius. At first she found the machines and implements of the farm

few in number, defective in principle, and still more glaringly defective in point of construction; but by dint of perseverance, and the outlay of large sums, the number of effective machines was greatly augmented, till, from the rudimental ones, as the spade, the plough, and the harrow, we had the roller, the clod-crusher, the grubber, and a host of others, too numerous to take note of here. Construction at the same time was attended to, till the rude unfinished examples of early days were supplanted by those in which accuracy of detail and highness of finish strove for the mastery. With the increase of supply came the increase of demand, till at last, from a few isolated makers scattered here and there through rural districts, working in tiny shops, sprang up the great makers of the present day, with their giant establishments sending out thousands of machines and implements, owing their existence to the labours of hosts of workmen.

Such, indeed, has been the astonishing results of the labours of engineering during the last half-century, and such the pitch of comparative perfection to which she has brought the working apparatus of agriculture, that in some measure many have begun to believe and give utterances—vague and unsatisfactory enough, it is true—to the belief that in many of the departments perfection has been attained. It is quite understandable how a person, who for long years has devoted himself to the study of one branch of mechanism, and has with indomitable perseverance carried out the results of his study into practice, should, after introducing a long succession of improvements, come at last to the conviction—latent, if not expressed—that he has exhausted his capabilities, and forestalled all improvements. This result in such a case is quite easily understood; but it is as easily so that the party in such a position is the very last to judge accurately on the matter. Outsiders are the best judges of the merits of the case, and are much more likely to come to an accurate appreciation of all its details than the party immediately concerned in the upholding of that “interest” to which he is so attached. “My friends,” said brave old Samuel Johnson, “free yourselves from cant”—capable of being done, truly; but had he said “Free yourselves from prejudice”—the result very doubtful. Human nature is human nature; and we can quite understand how the proprietor of the finest-finished, the best-appointed, and quickest-moving stage-coach, folded his hands complacently as he smoked his pipe and drank his brandy-and-water in the parlour of that inn past which his fine conveyance whirled, and pronounced it, as it went careering past, as the perfection of conveyances, and the very limit of locomotion. He did not think, poor man, that it was to be utterly supplanted by a locomotive of still more marvellous speed; and, that however perfect his coach was, it was only *perfect in its way*. Just so with much of our agricultural mechanism: it may be argued that it has reached the point of positive perfection—so much ingenuity has been expended in its arrangement, in the perfecting of its principle, and in the accuracy of its construction, that further improvement is hopeless. But it should not be overlooked that all this may be granted, and yet the door of progress need not be shut. The machine, any machine—we name none particularly—may be perfect, may be incapable of improvement *per se*; so far as it is the representative of a class it may be all that is required, but that class may itself be superseded—be entirely shut out of the field of practice, just as completely as was the stage-coach by the railway locomotive. Progress is ever onward: there is in nothing here such a thing as standing still. The stand point of to-day to which we have attained, however high we deem it, must act as the stepping-stone to raise us still

higher. It is but folly to suppose that we have reached the limit of our elevation. The wanderer in mountain regions thinks each hill he mounts the last he has to ascend, but it only enables him to see before him a wider prospect, a longer range, and a higher series. We may have reached perfection in some of the departments of agricultural machinery; but so far, in the broadest sense, are we from perfection in its mechanism generally, that we are but on the eve of still greater wonders—still more marvellous successes than we have yet witnessed. The farthest seeing amongst us do not hesitate to call this period in which we now live a “transition” one. Our past experience has been acting but as a guide to show us what is needed, what is to be avoided, what to be earnestly striven after. One point we are clearly drifting to, namely, that in which human and animal labour will be superseded by steam-power—in which the mind to judge, and the will to direct, superior mechanism, will be looked for from the farm-servant far more than a mere strength of muscle or of bone. Steam, in what it has done, has given us the best earnest of what it will do for agriculture. Much as engineering, then, has done for agriculture, it has still more to do: the demands upon its skill are greater than ever; and, with the new ambition which success has engendered, agriculture, in place of being less, will be more exacting in its claims. Ere long the question will be, not “Can you, the engineer, aid me in this?” but all shade of doubt as to what he *can* do having been dispelled by the successes of past years, it will be changed to “Will you do it for me? The capability I know you have—you have done not a little to convince me of that; but have you the will to assist me?” Nor will engineering refuse any more henceforth than she has done hitherto to obey the call, and give her best counsels and her richest genius and skill to aid the onward progress of agriculture—the “mother of all the arts.”

We have said that the union between engineering and agriculture has been productive of great results, and have briefly glanced at the most striking of these. But, although we have as yet chiefly sung the praises of Engineering, let it not be supposed that we deem Agriculture herself to have been a mere spectator—a passive instrument in the hands of Engineering. If Engineering has done so much for Agriculture, Agriculture has done not a little for Engineering. If not, how explain you, the rapid rise of agricultural engineering—a branch which, for extent of labour done and capital invested, is scarcely second to any in the kingdom? The supply of good implements and machines may have increased, if not created, the demand. More usual is it for political-economists to say that the demand has created the supply. Truly, had the agriculturists not been desirous to buy, the implement-makers might have made in vain. “It is easy,” says the proverb, “to take a horse to the water; but it is not so easy to make him drink.” The result would be much the same, we opine, if the water was taken to him. But the truth is that—despite the absurd talk there has been for long, and, unfortunately, to some extent, now is, of the slowness of farmers to avail themselves of new improvements and of the best facilities for carrying on their operations—they have shown a liberality of sentiment, and a freedom of action, in every way praiseworthy. So far, indeed, from their having shown a “pig-headedness”—to use the neat expression often made use of, in speaking of farmers, by people who don’t know anything about them—in this same matter of employing machines, has it not been the case, in a variety of instances, that they have been so eager to adopt new things, that they have perforce been “taken in”—not to mince the matter—and have purchased articles a great deal more

characterised by their novelty of arrangement than by their practical utility in the field or the farmstead?

Again, those engaged in manufactures too readily raise the finger of scorn and turn up the nose of contempt at the slowness of farmers; but where, let us ask, do we find so many evidences of the desire of those engaged in manufactures to encourage latent and slowly-bursting-out mechanical talent, in the same way as evidenced by our agricultural societies? We have farmers' clubs and agricultural associations, where the members meet to compare their notes of practice, and communicate their experience: these have had, and still have, a powerful influence in aiding the application of engineering to agricultural science. The infancy of the trade was tenderly supported by our agricultural societies, its aspiring youth kindly encouraged by all species of rewards, and its riper years—But we need not, say cannot, finish the sentence as we ought to do; for is it not on record that in this, the Year of Grace Eighteen Hundred and Sixty, a few of the sons of Engineering have repudiated all connexion with Agriculture as personified in its leading society! Not without jars, said we truly, has been the union between Engineering and Agriculture.

In noticing the leading features of the Canterbury Show, we would not, if we could, omit all mention of this, if not implemental, at least administrative, feature. None deploras the secession of the leading makers from the Show more than we do. It is a phase in the history of agriculture, view it in whatever way we may, that is to be deplored, and greatly too. It is not for us here to enter into details of the question, with the object of showing who is right or who is wrong. This is not our province. We have alluded to it as a matter of obvious necessity; and we will only further say that, where a union has been productive of benefit to both parties, it is a sad thing to resort to "separation." This is, indeed—or ought to be, if people thought rightly—the very last resource, and should only be carried out in cases of hopeless despair. The case, so far as the implement-makers and the Royal Society are concerned, does not, to our way of thinking, present this aspect of hopelessness. It is not the way—we say it with all deference to the opinions of those who differ with us, and who may be better able to judge than we are—to bring about reform in any body, by leaving it *en masse*. Better far to stay by a leaky ship—if it is leaky—and try to make her sea-worthy. The good old ship, in better times, comrades! has borne you bravely to many a port, and has carried you to fortune. Why have left her because her officers are a little crusty, and her pumps show the existence of some water in the hold? It is a sad story to tell of any one, that they have deserted their posts. The policy of doing so, under almost any circumstances, however much these may be complained of, is at all times doubtful. Do we say too much, when we affirm that the good taste evinced in the proceeding is anything but doubtful? If motives the reverse of generous or high-minded are attributed to the leading implement-makers, as having prompted this step which they have unfortunately taken, they have themselves to blame. We can but repeat how much we deplore this event, brought about by men many of whom we know and esteem, and of the value of whose services none ought to be more fully cognizant than ourselves.

The progress of improvement in agricultural mechanism is just at that stage, that we can ill afford to have any conditions calculated to retard its onward movement; and pity it is that one involving such momentous consequences as that which we here so heartily regret, should have originated now. Agriculture needs all the

assistance from mechanical science which she can obtain; and that she has not dispensed her favours, for the assistance which she has already received, with a niggard hand, let the position and the wealth of not a few of our leading implement-makers decide. She has yet many favours to bestow; and it depends pretty much upon men of mechanical science themselves, where and how she is to bestow them. It has not been seldom witnessed, in this country of ours, that the strikes of able workmen have opened up paths to fortune to second-class men, or outsiders, which would otherwise have remained for ever closed to them. Some men ride to fortune on the back of other men's mistakes—but a paraphrase of the old proverb, "What is one man's loss is another man's gain."

That the matter will not end here, but will go on to assume other phases, we verily believe. We have, however, no less a faith in this—that all will work well ultimately; for a stimulus will be given to the development of mechanical skill in quarters now comparatively unknown and unproductive. Agriculture, whoever is, will surely not be a loser in the long run. But let us hope for the return of a better state of feeling between the old friends who, in happier times, have brought about mutually happy results, productive of benefit to both alike; that by-gones will be by-gones; and that, in their grand contributions to the show-sheds of next year, amidst the dingy, smoke-hued towns of Yorkshire, we shall sink all remembrance of the absence of the leading makers this year from those which have so recently been pitched amidst the hop-fields of Kent. But to bring about this greatly-to-be-wished-for reconciliation, the Royal Agricultural Society has also her work to do—her errors to rectify, and her faults to amend. But of this, more in a succeeding paper.

R. S. B.

TRIAL OF REAPING MACHINES IN FRANCE.

The great summer shows of the year may be said to close with our reports of the Scotch and Yorkshire Meetings. Generally good as almost all these exhibitions were, there has still been a question of weather to contend against. This has told in more ways than merely in the matters of attendance and convenience. In fact, almost as a rule, certain field trials have been postponed, and up even to the last we have, actually in August, the due testing of the reapers deferred until corn can be found in a sufficiently forward state to cut. Although with the harvest by no means ready, the Emperor has been able to anticipate us in France, and an international trial of reaping machines has come off at Fouilleuse. It was in every way an important one, whether we take the English firms, as represented on the occasion, or in comparison with the French manufactures brought out to oppose them. The entries reached to thirty-nine, and the nineteen English included, Burgess and Key's; M'Cormick; Cranston's Wood; Bell's; and Cuthbert's; while amongst the French there were Laurent, Robin, Legendre, Ganneron, and Mazier. In so bad a condition, however, was some of the crop, that only two machines got through their work in good time—Burgess and Key, and Dr. Mazier. The award was ultimately thus declared: 1st prize and grand medal of honour as the best of all machines tried—Burgess and Key; 2nd prize—Cuthbert; 3rd prize—Wood. French machines: 1st prize—Dr. Mazier; 2nd prize not awarded; 3rd, Legendre. The Emperor himself was present at the trials, and evinced much interest in examining the several implements at work.

THE HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND.

MEETING AT DUMFRIES.

It is still to be lamented that the Scotch and Yorkshire Agricultural Societies cannot "agree to differ" as to the two or three best days in the whole year for taking their several Meetings. For, after all, their interests are very identical. The wires were quite busy between Pontefract and Dumfries. Mr. Knowles was hearing and telling the fate of the Duchesses. Mr. Douglas was as duly advised how the Booth blood was faring elsewhere; while implement makers had one representative here and another there, like a House divided against itself. Some even went so far as to think that both might be "done," and hurried off for the South, amply satisfied with the "Scotch Mist," which damped the opening-day of the Highland Society. It only becomes the more and more palpable, from such facts as these, how much either Association continues to lose in the way of substantial attraction and the best of company. Mr. Douglas' famous stock might have been in Yorkshire, and Mr. Booth's in Scotland, could Hall Maxwell and John Flannam have made up their minds to "toss for choice," after conference and correspondence had so utterly failed in inducing any adjustment.

Not but the Agricultural Society of Scotland can stand alone. There is none other, indeed, that relies so much upon its own especial merits. Galloway bulls, and Clydesdale horses, and Cheviot sheep might not produce much sensation over the Border, but they were everything to the Dumfries show. The pretty little town itself may be taken as the very capital of some of these breeds, of the Galloways more particularly. And it was a healthy sign to see that, either for numbers or excellence, these the native cattle of the district were unquestionably *the* class of the occasion. It is long since there has been so good a one; at the same time that no sort has been so long before the Society. The Galloways, as a distinct race, are by far the oldest breed of stock in the United Kingdom, tracing back pure and unalloyed, even so far, it is affirmed, as the commencement of the seventeenth century. They look, too, just the animals for a rough bleak district; long, low, and active, with rough black and tan coats, and plenty of thick curly hair. The bulls have somewhat bullet "Nigger" heads, with every sign of vigorous constitution, and thorough capability to cope with the climate. But the Galloways die well for the butcher, and many of those exhibited at Dumfries had fed and furnished as even as could be. The symmetry of outline was frequently very perfect, and whether they have been improved up to their present form, or only kept to it, there is no kind of beast the Highland Society should be more careful in encouraging. Not, however, that the necessity for any such official countenance is very imperative. The farmers of the district have been very true to them, and "the sign" they made on Wednesday showed how much good stock they must have to fall back upon. Mr. Beattie took the lead amongst these with a five-year-old bull, a very fine specimen of his order, that not only held the honours of his own class, but was declared to be the best polled bull in the show. He arrived at this further distinction through the liberality of Monsieur Dutrone, who continues his gift of a gold medal, on the score of humanity, for the best beast born without horns. It is only to be hoped that a hard-

headed Galloway may never make a butt of or *at* so worthy a gentleman. Half-a-dozen other aged bulls were generally good; but the cows and heifers were the especially excellent. Some of these were really handsome; and Mr. Cunningham's yearling a well-grown, finely-developed, square-quartered heifer, that went to prove "all over" how early they will come even in any country. Climate, indeed, does not appear to have much effect on the well-doing of the black polled cattle; and the material difference between the Galloways and the Aberdeens is that the latter, though further North, get larger in frame and finer in quality, and at the same time shorter in the coat. It requires a little care, the more particularly with young stock, to always make these material distinctions; and even as it is, the old sort in Dumfries-shire are bought up regularly to cross with the Angus bulls; without, as we imagine, any great alteration, one way or the other, in the produce. The Galloways and Aberdeens are clearly very closely allied. There was but a short show of the latter, and amongst the bulls scarcely any competition whatever; only two old bulls, two in the next section, and but one yearling being sent. The cow classes were scarcely stronger, but the three of any age, and there were but three, were all wonderfully good. Mr. McCombie's cow, indeed, was the winner last week of the Aberdeen Challenge Cup for the best animal in the show, and he backed her here with four other famous cows that have all worn well, and in their turns stood first at the Highland Society's shows—in 1854, '56, '57, and '58. There are not many prize cows that would turn up again in such condition as these did.

The strength, however, of the *Scotch* show of cattle stopped here. There were very few Highlanders, and the best of them to be found amongst the extra stock where the Misses Baird sent five handsome oxen. The Duke of Hamilton's cow was about the best of "the regulars"; though she looked so little like breeding that an objection was entered by Mr. Pollok, but it was not sustained. One or two other protests amongst the Ayrshires also fell through, and these again by no means equalled what we have seen of them, as, for instance, at Edinburgh last year. Ayrshire bulls rarely show to much advantage, but the cows and heifers were at Dumfries more palpably deficient. They had seldom the sweet head or big bag, two points that of themselves say so much for their uses. The Duke of Athole entered the first prize cow of last year, but perhaps in charity did not send her. The comparison would have been very striking, and the illustration of what an Ayrshire cow may be, quite as instructive.

A glance over the Shorthorn bulls at once suggested the query, "Are they much known or used about here?" There are, it appears, some herds gradually developing, but the sample did not say much for them. The first prize bull, for instance, had little but his good flesh to recommend him, and it is seldom so otherwise faulty a bull has stood in so distinguished a position. But there was nothing extraordinary to oppose him, although Mr. Noakes sent the massive Prince Albert all the way from Lewisham, but this time without achieving even the customary commendation. The next section was led off by a terribly vulgarly marked red and white animal, with a bad head, but quality again to warrant

his rank, while Lord Kinnauld's second and third to him stood first and second as a year younger at Edinburgh. The second then and third now was bred by the Prince Consort, and shown previously by Smith and Co., at whose sale Lord Kinnauld gave 150 gs. for him. He has since much developed and furnished, and his touch was always good. Only half-a-dozen of these two years old were entered; and of the fourteen yearlings the best was pronounced to be a long way the best bred of them, by Frederick out of a Towneley Duke of Oxford cow. He has already this season beaten a large field of yearlings at Coldstream; but, like most of the others here, he was not much to look at, and taken as a lot it is seldom that a National Society has got together so indifferent a collection of Shorthorn sires, try them where you would, either old or young.

But the ladies came handsomely to the rescue—and ladies of high quality too. Captain Gunter gallantly treated his Young Duchesses to a northern tour; and Mr. Douglas, bachelor though he be, had a bevy of Queens, and Ladies, and Maids of Athelstane under his protection; while that fair enthusiast, Lady Pigott herself, kept her protégées in good countenance, and talked learnedly of rich roans and Bates' blood. And seldom has there been so much "talk." The twin Duchesses came from Canterbury to Dumfries only to be second-best after all. The white was this time preferred to the roan, but this is but a matter of taste between them, as no doubt it always will be. For our own parts, however, we would give fifty for choice, and go with the English award. But the Duchesses were beaten! And not by the ladies or the ladies' maids from Athelstane, but by an Irish lass that many had never heard of before, but that we crossed with from Belfast to Glasgow in the August of last year. At the Dundalk Show, Mr. Wood, an Irish breeder, entered a yearling heifer that could get no nearer to Mr. Eastwood's Souvenir first, Captain Ball's Letitia second, and three others highly commended, than just a simple commendation. But Mr. Douglas thought rather better of her, and took her home with him at two hundred. She is well bred enough for all the money—by Booth's Prince Arthur, dam by Comet—and has now developed into a great fine useful heifer. She is heavily fleshed, very large in the girth, with a capital quarter, and in fact, with two good ends—although a little "lumpy" on the rump—and a handsome cow's head. At six months older and well on in calf, Clarinet, as she is called, looked a good deal "over" the handsome Duchesses, but she has neither their fine quality nor that ostensible "breeding" about her for which the twins are so deservedly famous. In a word, as "the model" of a Shorthorn, it is difficult to prefer her, and the award was terribly canvassed, and all sorts of reports and charges flying about. Amongst these Mr. Knowles for Captain Gunter would stake five hundred on the Duchesses against the Irish heifer at the next place she was entered—Alnwick, we believe; and against this Mr. Douglas offered to show one animal of his against the *three* Duchesses for a fifty. But then he has got a great selection to make from, at least if we can take his success here as any criterion. First in the order of these, there was the beautiful, level, thorough-bred-looking Lady of Athelstane, the first cow of her class. Then, there was the perhaps yet better Queen of Athelstane, the best yearling; and the Maid of Athelstane as good as either, but who, alas! has not yet qualified as a breeding animal, and was entered accordingly amongst the extra stock; and with her the Rose of Athelstane and the Rose of Sharou debarred more active competition, from their previous successes at the meetings of the Society. Then, Mr. Douglas supported these by the second and third prizes for yearlings, and wound up

his week by *refusing* eight hundred guineas for two of them—the Irish heifer and the Maid of Athelstane. After the Duchesses, the nearest "squeak" he had was in the cow class, where Mr. Atherton finished very close to him with a good well-bred cow, of more size, but hardly all the appearance of the Lady. They were both, though, wonderfully good. The Duke of Montrose had another capital cow behind them; and Lord Strathallan, in three or four sections, proved the spirit with which he is taking up the sert. Mr. Atherton came again amongst the two-year-olds, with a heifer full of further promise, and which, although undistinguished in such company, has a local fame in Lancashire to go on. Colonel Pennant's agent, Mr. Doig, bought her, unnoticed as she was, for a couple of hundred. The Lady of Bonhill was also amongst the other good ones over-paced; and Mr. Stewart had three or four entries in this class, but without commendation. There was more showing for this, as the Southwick herd had not a creditable animal in the entry, nor—we had almost said—in the catalogue. The puff preliminary on his sale was dreadfully overdone, for a more common lot of things, as it was declared, were never offered. The cows averaged about thirty pounds a-piece. The two years old did better, but the yearlings made no more than £17, and young bulls sold for twenty, fifteen, ten, *four*, or anything anybody would give for them. Lady Pigot took the top lot, Rose of Promise, for 270 guineas, and Mr. Douglas the old Rose of Autumn herself for 80—more, we should think, to *say* he had got her again than for anything else. M'Turk, the bull they have been using at Southwick, made 81 gs.; and Mr. Young bought the best bull, a yearling called Heir of Killerby, for Mr. Stirling of Keir, at 150 gs.—and this was supposed to be "the bargain" of the day. But bargains at any price were not plentiful, and the owner of the Cherry tribes must surely have something better in store. The general average was a little over £30 a-piece.

The cross-breds—and cross-bred pretty generally means the Shorthorn bull put to some country cow—were chiefly remarkable for two oxen exhibited by Mr. Stewart, of Aberdeen. These were twins by a Shorthorn bull out of a black polled cow. They both come of light colour, but one with the polled-shaped hornless head, and the other with a nicely turned horn, and, of course, more Durham character. The judges awarded them the second and third places, but we cannot say whether they knew this when separating them. However, twins, whether Duchesses or half-breds, are rather perplexing studies for judges; not in this case, though, because they were so much alike, but rather for just the reverse reason. Mr. Collie showed a *red-and-white* polled beast, which one would suppose to be as much out of order as a brown Suffolk or a chestnut Clydesdale. However, he also took a second prize.

And there was, in fact, a chestnut or a very ruddy bay Clydesdale with an unmistakable silver tail, that the judges again, in utter defiance of her colour, honoured with a second place on the prize list. The entry of Clyde horses was thought to be very excellent, as it was certainly the great attraction of the day. But we can only repeat what we have so often had to say before, that no animals show so unevenly. Here, you have a compact, powerful, weighty, short-legged draught horse; and in the next standing to him, a leggy, small armed, weak thighed, light middled one, but still as clearly a Clydesdale. The Dumfries display of them was more than usually remarkable in this way, and amongst the young things more particularly we never remember so mixed a lot. The aged stallions included many of high character, and a prize horse at Edinburgh could get no

rank here, while the first prize two-year-old of the Carlisle Royal, now grown into a very good-looking horse, was also passed over unnoticed. The best stallion, as it was, did not show to advantage, as he was suffering from a sore back, and also disfigured by something very like a rupture; neither was his action quite that one looks for in a picked nag of a breed so famous for stepping out. But he is a horse of great substance, although for the several points of symmetry, power, and activity combined, we much preferred Mr. Logan's three-year-old, the premier of the next division. The best colt of the succeeding lot, again, Mr. Salmon's two-year-old, was thought so well off as to command three hundred there and then, although it is by no means uncommon to hear of some of them reaching a higher figure. "Blackleg," a horse so called, from his being curiously marked, was sold after the Edinburgh meeting last year, to go to Australia, for, it was said, five hundred guineas. But one has always to deduct the lucky penny, which goes to swell up the price to considerably more than it actually is. It is high time that so undignified a system were discountenanced, as everybody more than understands what it means and aims at. Some of the colts here were very inferior, and on the other hand many of the mares as remarkably good. The latter were led off by a now very celebrated old mare the property of Mr. Douglas, and one of the "cleanest" Clydes we ever met with. Her head and neck, though a little light, show a deal of breeding, and, in fact, for strength and style well put together, we seldom saw her equal. But the natives pronounced her "just too good looking" for a real Clydesdale, although, fortunately, the judges could not be brought to think with them. Her success, indeed, on the show-ground has been something altogether extraordinary. At Glasgow, the stronghold of the sort, she was the best two-year-old, the best three-year-old—when Mr. Douglas bought her—and the best four-year-old. She took the first prize for draught mares at the East Lothian meeting four years in succession, and was the first prize mare at the Royal Agricultural Society's show at Carlisle, in 1855. She took the first honours at Alnwick in the same year, and was never second but once—at the Highland Society's show at Berwick-on-Tweed. She has now righted this by rising to the first; and she backed her own merits at Dumfries with a capital foal with great bone and of fine quality. Her second was another very grand mare, rather bigger and coarser, and for these reasons preferred by many; while Mr. Rigg's mare in foal was as smart, active, and handsome as could be. The mares, indeed, were very generally good, and the fillies, if not so even, and there were some woful weeds amongst them, still furnished many admirable illustrations of the breed. The cart-horses of Scotland would appear to be coming more and more confined to this, for there was not an English horse in the entry. The extra stock numbered half-a-dozen clever Iceland ponies, and some half-bred odds and ends scarcely worth turning to. What just cause or impediment is there to the Highland Society, with all its ample means, having a class of thorough-bred hunter stallions? And further, why should not the names of the horses exhibited be given? In this respect the catalogue is singularly deficient. One would trust not to hear of "precedent" as the only reason—or in other words that such information never will be supplied, simply because it never has been.

The black-faces are said to have stood the winter or summer, whichever may be in fault, far better than the Cheviots, and are so getting into more favour, to the displacement of the other Scotch breed of Sheep. But they

both showed admirably, and the Cheviots, with their grand forms and active habits, would promise to be very fitting companions for the Galloways. They are, in fact, the flock of the district, and the show of them spoke equally well to their uses. The Leicesters, as a breed, do not keep much to their characteristic points in Scotland; but we question whether they are preserved here very purely. The only English sheep amongst them was one of Mr. Pawlett's rams, now the property of Mr. Collie, but he had no place in the prize list. The few Southdowns numbered some pretty specimens from the Duke of Richmond's Gordon Castle flock, and the long-wools a few more Cotswolds, some of which Mr. Handy now brings regularly into the North. But they only take here and there—with Lord Kinnaird, the Earl of Wemyss, and one or two more. The Yorkshire Meeting must have told against the pig show, although Mr. Mangles turned up with his second prize Canterbury boar—the first here—and some lots of young pigs that seemed to be selling, but with price as an object, and the worst going the readiest. The butter and cheese tent was very tastefully furnished, but such an exhibition of poultry had far better be dispensed with. It is somewhat of a burlesque to find a national society countenancing so meagre a display. Day by day it only becomes more and more evident that these summer shows of cocks and hens don't do.

Perhaps, fortunately, in the present crowded state of our columns there is no necessity to report the dinner. The great run of the addresses were "immaterial" to agriculture; but, in proposing "The Tenantry," Mr. Maxwell, of Murches, said: "To what were they indebted for the great show of cattle on the present occasion? He maintained that it was to the tenantry of the county, and he was proud that a Galloway man had carried off the highest honours. He was exceedingly glad that the great stock of this part of the country—the Galloways—stood so well in the estimation of all who had carefully inspected it. It was not for him to enter into any eulogium upon the character and position of the tenantry of this country. In the presence of so many of them it would ill-become him to do so. They had hitherto occupied a very high position. Though there must be many in various other parts of the country who were coming fast up to them, still he trusted that the Scottish tenantry would continue to maintain their high position." And, in responding, Mr. Laurie, of Terreglestown, declared "he could speak from his heart in regard to the tenantry of Scotland. He would not say anything of their character for industry, for skill, for business habits, or for intelligence, because every one present had seen that day what kind of stock the farmers of Scotland could exhibit. That stock, as Mr. Maxwell had remarked, had exceedingly, nay, almost unprecedentedly improved since the first show of the Highland Society was held in Dumfries, and it was undeniable that that improvement was in a great measure owing to the knowledge, industry, and application of the Scottish tenantry. He was himself perfectly astonished to see the Cheviot sheep in such excellent condition, notwithstanding the exceedingly trying and severe winter through which they had passed. . . . In many cases the energy and activity of the tenant-farmers were kept down in consequence of the restrictive nature of their covenants with the proprietors, and his view of the matter was that as the taking of the land on lease was simply a commercial transaction, the tenant should be at liberty to cultivate and use it in the manner that might seem best to him, provided that during the expiring years of the lease he took care that the interests of the landlord did not suffer."

The plough trials in the field excited little of the

interest of the memorable contest at Edinburgh, and only one English firm, that of Page, of Bedford, engaged in them. It was, indeed, curious to see Howard's and Hornsby's ploughs sent only on the strict understanding of "not for competition," after what occurred last year, when one of these did compete, and the other vowed to do so on the next opportunity. As it was, the Council very properly refused to allow any plough to go to work but such as came under the eye of the judges, and a plough proper in repose is not either a very engrossing spectacle, nor a very conclusive argument, particularly on people with "prejudices" to be removed. A very elaborate prize list will tell out with the subjoined synopsis, the story of

THE IMPLEMENTS.

The result of our first general survey of the implement department was the impression that it did not present those features of completeness and general excellence which distinguished the show held at the queen of cities—"Edina, Scotia's darling seat." The more steady and regular search for novelties, however, which we made to succeed the general survey above spoken of, gradually disabused us of this impression to a great extent; but not quite, for, undoubtedly, the show is somewhat deficient in what may be called the heavy machines, as steam engines and the like, and is chiefly distinguished by its collection of the lighter implements of the farm. It is just possible, still, that the peculiar position of the field laid out for the reception of implements tends to bring out a feeling of disappointment on first entering it; for a high ridge, which bisects—so to speak—the field in the direction of its length, hides one large division of the department almost altogether from observation, so that the spectator has to walk up to the crown of this ridge, and to look right and left, before he can take in the whole array of aids which mechanical genius has brought out to assist the processes of that art which ministers to all others. The lack of "shedding" too gives a bareness to the field; and the machines and implements, spread out as they are over a wide space, with ample alleys between, offer little for the eye to rest upon. To one fresh from the fields of Kent, and the crowded show-yard which last month graced them, the implement department of the Highland Society's gathering presents a scantiness which in reality it does not possess. This absence of "shedding" still, we are sorry to find, is one of the features of the Highland Society's show-yard. Certainly, to one accustomed to machinery, and cognizant of the labour which is expended in getting up the fine work which is the characteristic of much of our agricultural mechanism now-a-day, very pitiable is it to have such subjected to the pelting rain or the pearly dew. Improvements, men say, come slowly; let us hope that it will in this case come surely.

Another feature—and one we have before noticed—in the Highland Society's show-yard, is the classification of the implements and machines under different sections, those having reference to one class of operations being kept quite distinct from those of another, bearing upon a different class. Exhibitors hold this mode of classification as inductive not only of inconvenience, but of loss, to them. But, so far as the judges are concerned, and the intelligent observer, the mode is certainly as convenient in operation as it is philosophical in principle. We fear that the views will be always antagonistic of those who wish the show to have all the characteristics of a *selling mart*, and of those who desire to make it merely an exhibition where agriculturists may best see what is good and what is new. It is difficult to make a compromise which will satisfy both, further than that which the

Society has already carried out—namely, having "general collections," where each exhibitor can store what and how he pleases, still entering in the "sections," should he feel disposed to go for the prizes. It certainly seems reasonable to suppose that the interests of the exhibition should not give way altogether to those of the exhibitors; and this need not be said as involving forgetfulness of the fact that the exhibitors have done, and still do, so much to make the meeting what it is. It is easy to understand what the manufacturers feel on the point; but also to note how admirably adapted the system of classification is for all the purposes—and they are undoubtedly valuable—of comparative observation. It is to be regretted that, in consequence of the backwardness of the crops, no public trial of the reaping machines could take place. This, together with the absence of steam cultivating apparatus, gives a lack of interest and excitement to the meeting, which is unfortunate. It is a pity that arrangements could not have been made to have had a steam cultivating apparatus at work.

In the implement department, £247 is offered for first, and 83 bronze medals as second prizes. The highest prize offered this year is £20 for the best thrashing machine with steam power. Two prizes of £10 each are offered for the best reaping machine, "manual delivery," and the best machine with "self-delivery." A special prize of £10 is given by Lord Ashburton to the inventor of the "best drag for the common cart, to be exhibited in working order." This has called out a good many competitors, some of whom show contrivances of considerable ingenuity.

As before said, there is certainly a lack of heavy machinery; and the same may be said of novelty. Considered simply as such, this is not perhaps greatly to be regretted, although it is always desirable to see it, when combined with utility. It is an evidence, at all events, of a desire on the part of the manufacturer to improve his mechanism. All attempts to simplify arrangements of parts should be hailed with welcome by farmers; for simplicity of parts is what they require. A complex machine, though greatly to be admired in a mechanical point of view, is not adapted for the too-often rough-and-ready work of the field or farm buildings.

Before glancing at the "sections" in rotations, and noting any novelties therein, let us briefly draw attention to the general collections, some of which are remarkably good. There are in all 289 entries in the "general collection department." The stand of Caldwell and McKinnel, of Dumfries, is, perhaps, the most complete of Scotch makers. This firm exhibit specimens of turnip cutters for sheep, Tennant's drill, grubbers, chaff cutters, oilcake mills, cheese presses, harrows, pumps, rollers—in all 62 entries. That of Messrs. Young, Peddie, and Co., of Edinburgh, is replete with many objects of interest: we noticed a very good form of small hand hay rake, or for stubbles, the tines of which can be very easily lifted out of work. The same firm exhibits various specimens of field gates, grubbers, rick stands, different forms of wire netting, and a set of stable furniture. The contributions of this firm amount in number to 45. John Gray and Co., of Uddingston, near Glasgow, exhibit specimens of their plough, swing and trench, horse hoes, straw cutters, and churns—in all 11 entries. The trustees of the late John Maxwell, Stakeford Foundry, Dumfries, show an excellent collection of machines and implements, amongst which we noticed particularly a five-horse portable thrashing machine, characterised by excellence of work and compactness of arrangement. Steam engines form also part of the collection; turnip cutters, harrows, grubbers, oilcake breakers, corn-bruisers,

cheese presses, feeding troughs, ventilators, hatch skylight, and cottage windows. The number of entries in this stand is 28. Middleton, of Edinburgh, shows to the number of 18, a variety of articles, as manufactured by Francis Morton and Co., of Liverpool. Perry and Son, of Glasgow, exhibit a variety of gates, iron fencing, hurdles, lawn mowing machines, rick stands, wire netting—the number of entries being 18. Shanks and Son, of Arbroath, show specimens of their lawn mowing machines, in number 7. Smith Brothers and Co., of Glasgow, exhibit specimens of their grain grinders for hand or power, cornboiler, liquid manure pump, a circular-saw table—in all 7 entries. Smith, George, and Co., of Glasgow, exhibit specimens of their water-fountains, a few of which are, we believe, placed here and there in the yard, serving at once the purposes of ornament and utility.

Turning now to the English exhibitors, we find amongst them the well-known names of Hornsby, Richmond and Chandler, Howard, Tuxford, Page, Crosskill, Picksley and Sims, and Ashby and Co. Hornsby's exhibit their now well-known plough, also corn drill with their flexible feeding tubes; a portable thrashing, shaking, finishing, and dressing machine for preparing corn for market; a corn dressing or winnowing machine, and saw-bench. In all the entries of this firm amount to fifteen. Howards have a choice selection of the implements for which their reputation is world-wide, as their ploughs, barrows, and horse-rake. Their entries amount to ten. Richmond and Chandler, whose entries in this department, exclusive of a selection in the "sections" competing for prizes, and also in the department of extra implements, amount to eleven, exhibit specimens of their well-known chaff-cutters, corn crushers, oil-cake mills. Picksley, Sims, and Co. send specimens of their chaff-cutters, grain bruisers, lawn mowers, turnip slicer. Their entries amount to twenty, independent of various machines exhibited in the sections. T. W. Crossby and Co. exhibit specimens of their hay-making machines with reverse action, hay-rakes, portable steam engines, combined thrashing machine, oil-cake mill. Their number of entries is six.

In the department of "Extra implements and machines," which receive honorary premiums where specially commended, there are 67 entries. Among the exhibitors in this department we notice the names and some of the implements well-known in England. Mr. Bentall exhibits a bean kibbler; Mr. Boby his corn screens; Mr. Cranston, his grass-mowing machine; Mr. Crosskill's trustees, their famous carts; Mr. James Isaac's liquid manure cart; James Reeves and Co., chain or bush harrow; Richmond and Chandler, Nicholson's hay-making machine, and their horse driving gear; Williamson Brothers, of Kendal, their steam engines and their turbine. Of the Scotch exhibitors in this department we notice the names of Chaplin and Co., of Glasgow, who show specimens of their steam engines, portable and stationary. The latter is used by the Society for pumping water from the river to supply the show yard. Caldwell and McKinnel enter a centrifugal pump, turnip-cutter, and portable steam engines. Rawdin, of Jedburgh, sheep-dipping apparatus; Rowe, of Langham, locomotive sheep-dipping apparatus; as well as Bigg, who brings his from England.

We are compelled to defer all notice of the novelties, in the various sections. This, however, will be better done in a series of papers which are designed to follow, in which a complete review of the implements exhibited will be given, and comparative observations instituted between Scotch and English agricultural mechanism; wherever such observations are likely to elicit information or discussion of a useful nature.

A trial of mowing-machines was fixed for Friday, at

the farm of Lochside. On Wednesday, Samuelson's mowing-machine was at work for some hours on grass land near Dumfries.

PRIZE LIST. CATTLE.

POLLED GALLOWAYS.

JUDGES.—J. Graham, of Shaw, Lockerby.
R. Swan, of Brae, Dumfries.

Bulls calved before 1st January, 1858, the premium of 20 sovs., and silver medal as breeder, J. Beattie, Newbie House, Annan (Mosstrooper).

The second, 10 sovs., S. Thomson, Blaiket, Crockettford, Dumfries (Samson).

The third, the bronze medal, J. Graham, Meikle Culloch, Dalbeattie (Hannihal).

Bulls calved after 1st January, 1858, 20 sovs., R. Stobo, Halliday Hill, Dumfries.

The second, 10 sovs., J. Cunningham, Whitecairn, Kirkpatrick, Durham.

The third, the bronze medal, J. Beattie (Balmoral).

Bulls calved after 1st January, 1859, 10 sovs., J. Beattie (Hero).

The second, 5 sovs., J. Birrell, Guards, Gretna.

The third, the bronze medal, P. Dudgeon, Cargen, Dumfries (Cargen).

Cows of any age, 15 sovs., J. Graham, Meikle Culloch (Harriet).

The second, 8 sovs., W. and J. Shennan, Balig, Kirkcudbright.

The third, the bronze medal, J. Graham (Theresa).

Heifers calved after 1st January, 1858, 10 sovs., W. and J. Shennan.

The second, 5 sovs., J. Graham (Matilda).

The third, the bronze medal, J. Wallace, Langbarns, Kirkcudbright.

Heifers calved after 1st January, 1859, 8 sovs., J. Cunningham, Whitecairn, Kirkpatrick Durham.

The second, 4 sovs., W. and J. Shennan.

The third, the bronze medal, the Duke of Buccleuch.

EXTRA POLLED GALLOWAYS.

The medium gold medal, J. Graham, Meikle Culloch, for cow (Hannah). First prize at Glasgow in 1852.

Commended.—The Duke of Buccleuch, for two heifers; W. Maxwell, Glenlee, New Galloway, for an ox; R. Stobo, Halliday Hill, for an ox.

POLLED ANGUS OR ABERDEENS.

JUDGES.—R. Hector, 4, Union-street, Montrose.
G. Milne, Haddo, Mendie, Aberdeen.

Bulls calved before 1st January, 1858, 20 sovs., A. Bowie, Mains of Kelly, Arbroath, and silver medal to W. M'Combie, as breeder of the best bull (Young Panmure).

The second, 10 sovs.—No competition.

Bulls calved after 1st January, 1858, 20 sovs., W. M'Combie, Tillyfour, Aberdeen (Lord Clyde).

The second, 10 sovs., G. Brown, Westertown, Fochabers (Prince Albert).

The third, the bronze medal.—No competition.

Bulls calved after 1st January, 1859, 10 sovs., the Trustees of the late R. Scott, Balywlyo, Brechlu (Doctor).

The second, 5 sovs.—No competition.

The third, the bronze medal.

Cows of any age, 15 sovs., W. M'Combie (Pride of Aberdeen).

The second, 8 sovs., J. Collie, Ardgay, Forres (Mayflower).

The third, the bronze medal, G. Brown, Westertown, Fochabers (Rose).

Heifers calved after 1st January, 1858, 10 sovs., G. Brown (Maggie of Westertown).

The second, 5 sovs., J. Collie, Ardgay (Nourmahal).

The third, the bronze medal, W. M'Combie, Tillyfour (Heiress of Balywlyo).

Heifers calved after 1st January, 1859, 8 sovs., the Trustees of the late R. Scott (Peerless).

The second, 4 sovs., W. M'Combie, Tillyfour (Fancy).

The third, the bronze medal, the Trustees of the late R. Scott (Mary Gray).

EXTRA POLLED ANGUS OR ABERDEENS.

The medium gold medal to the four following:—W. M'Combie, Tillyfour, for prize cow, Inverness, 1856; W. M'Combie, for prize cow, Aberdeen, 1853; W. M'Combie, for prize cow, Berwick, 1854; W. M'Combie, for prize cow, Glasgow, 1857.

The gold medal for the best Polled Bull in the yard, to J. Beattie, Newbie House, Annan (Mossdrooper).

SHORT HORNS.

JUDGES.—T. Crofton, Holywell, Durham.
W. Catle, Dormont Grange, Ecclefechan.
G. Shepherd, Stettins, Turves.

Bulls calved before 1st January, 1858, the premium of 20 sovs. to W. Lambert, Elsington Hall, Haydon Bridge, and the silver medal to J. Atkinson, Bywell Hall Farm, Stockfield, as the breeder of the best bull (Esquire Annadale).

The second, 10 sovs., Viscount Strathallan (Retribution).

The third, the bronze medal, Viscount Strathallan (Haut-boy).

Bulls calved after 1st January, 1858, 20 sovs., D. Ainslie, Costerton (Young Johnny).

The second, 10 sovs., Lord Kinnaird (Lord John Russell).

The third, the bronze medal, Lord Kinnaird (Lord Privy Seal).

Bulls calved after 1st January 1859, 10 sovs., J. Atkinson, Peeply, Stocksfield, Newcastle-on-Tyne.

The second, 5 sovs., Messrs. Turnbull, Bonhill-place, Dumbar-ton (Harlequin).

The third, the bronze medal, J. Hozier, Newlands, Maul-la-rie Castle, Carlisle (Benedict).

Cows of any age, fifteen sovs., J. Douglas, Athelstaneford, Drem (Lady of Athelstane).

The second, 8 sovs., T. Atherton, Chapel House, Spike, Liverpool (Moss Rose).

The third, the bronze medal, Viscount Strathallan (Cobweb).

Heifers, calved after 1st January, 1858, 10 sovs., J. Douglas, Athelstaneford (Clrionet).

The second, 5 sovs., Capt. Gunter, The Grange, Wetherby, Yorkshire (Duchess 79).

The third, the bronze medal, Capt. Gunter (Duchess 78).

Heifers, calved after 1st January, 1859, 8 sovs., J. Douglas, Athelstaneford (Queen of Athelstane).

The second, 4 sovs., J. Douglas, Athelstaneford (Rose of Cashmere).

The third, the bronze medal, J. Douglas, Athelstaneford (Maglet).

EXTRA SHORT HORNS.

The medium gold medal to the two following:—

J. Douglas, Athelstaneford, for Rose of Athelstane.
J. Douglas, Athelstaneford, for Rose of Sharon.

Highly commended.—J. Douglas, Athelstaneford, for Maid of Athelstane.

AYRSHIRES.

JUDGES.—P. Graham, Burns of Limekilns, East Kilbride.
Quintin Bone, Greenan, Ayr.
J. Pollock, Rays, Kilmarnock.

Bulls, calved before 1st January, 1858, 20 sovs., J. Stewart, Burnside Cottage, Strathaven, and the silver medal to Mr. Dunn, Helenburgh, as breeder of the best bull.

The second, 10 sovs., Tudhope and Todd, Foniel, Douglas.

The third, the bronze medal, the Duke of Buccleuch.

Bulls calved after 1st January, 1858, 10 sovs., J. Marshall, Airbles Farm, Motherwell.

The second, 5 sovs., J. Stewart, Burnside.

The third, the bronze medal, J. Stewart, Burnside.

Cows in milk of any age, 10 sovs., J. Marshall, Airbles Farm.

The second, 5 sovs., J. Stewart, Burnside.

The third, the bronze medal, H. D. B. Hyslop, Tower, Kirk-cannel.

Cows in calf of any age, 10 sovs., J. Stewart, Burnside.

The second, 5 sovs., J. Parker, Nether Broomlands, Irvine.

The third, the bronze medal, J. Stewart, Burnside.

Heifers calved after 1st January, 1858, 8 sovs., J. Parker, Nether Broomlands, Irvine.

The second, 4 sovs., the Duke of Buccleuch.

The third, the bronze medal, H. D. B. Hyslop.

Heifers, calved after 1st January, 1859, six sovs., J. Stewart, Burnside.

The second, 3 sovs., J. Marshall, Airbles.

The third, the bronze medal, the Duke of Buccleuch.

HIGHLAND.

JUDGES.—Captain Kennedy, Finnar.
Duncan Mitchell, Blairloch, Lass.
Captain Macduff.

Bulls calved before 1st January, 1858, 20 sovs., Allan Pollok, Rouanch, Tarbert, and the silver medal to R. D. Campbell, of Jura, as the breeder of the best bull.

The second, 10 sovs.—No entry.

Bulls calved after 1st January, 1858—No entry.

Cows of any age, 10 sovs., the Duke of Hamilton, Arran.

The second, five sovs., Allan Pollok.

The third, the bronze medal, Allan Pollok.

Heifers, calved after 1st January, 1857, 8 sovs., Allan Pollok.

The second, 4 sovs., Allan Pollok.

The third, the bronze medal. No entry.

Heifers, calved after 1st January, 1858, 6 sovs., Allan Pollok.

The second, 3 sovs., Allan Pollok.

The third, the bronze medal. No award.

FAT STOCK.

JUDGES.—J. Haig, Cameron Bridge.
G. Harvey, Whittingham Mains.
J. Payne, Dumfries.

Cross oxen, calved after 1st January, 1857, the medium gold medal, D. Ainslie, Costerton, Blackshields.

The second, the silver medal, J. Stewart, Newmarket, Aberdeen.

The third, the bronze medal, J. Stewart.

Cross oxen, calved after 1st January, 1858, the medium gold medal, J. Hunter, Dipple, Fochabers.

The second, the silver medal, R. Husband, Gellat, Dunfermline.

The third, the bronze medal. No competition.

Polled oxen, calved after 1st January, 1857, the medium gold medal, Wellwood Maxwell, of Glenlee, New Galloway.

The second, the silver medal, Wellwood Maxwell.

The third, the bronze medal, the Duke of Buccleuch.

Polled oxen, calved after 1st January, 1858, the medium gold medal, J. Collie, Ardgay.

The second, the silver medal, J. Collie, Ardgay.

The third, the bronze medal, the Duke of Buccleuch.

EXTRA CATTLE.

Highly commended.—Misses Baird, of Closeburn, for five Highland oxen; R. Osburn, Hitchell, Cummertrees, Annan, for cross-bred ox.

HORSES.

FOR AGRICULTURAL PURPOSES.

JUDGES OF STALLIONS.—R. Fudlay, Springhill, Baillieston.
J. Steedman, Bogall, Roslin.

Stallions, foaled before 1st January, 1857, 30 sovs., D. Riddell, Kilbowie, Dumtocher.

The silver medal to W. Forrest, of Treesbank, Hamilton, as the breeder of the best stallion.

The second, 15 sovs., W. Kerr, Lochend, Kilbirnie.

The third, the bronze medal, J. Barr, Barangry, Bishopton.

Entire colts, foaled after 1st January, 1857, 20 sovs., A. Logan, Crossflat, Kilbarhan.

The second, 10 sovs., J. Frazer, Overton, New Abbey.

The third, the bronze medal, R. Lochhead, Glenshinnoch, Bishopton.

Entire colts, foaled after 1st January, 1858, 15 sovs., J. Salmon, Benston, Paisley.

The second, 8 sovs., P. Crawford, Drumgoyack, Strathblane.

The third, the bronze medal, J. Buchanan, Coldrath, Drymen.

Entire colts, foaled after 1st January, 1859, 10 sovs., M. Kerr, Gree, Beith.

The second, 5 sovs., J. Proudfoot, Tampland, Lochmaben.

The third, the bronze medal, A. McLachlan, Easter Longhaugh, Bishopton.

JUDGES OF MARES.—G. Tod, Lochran, Blairadam.

J. Waugh, St. John's Kirk, Biggar.

Mares (with foal at foot), foaled before 1st January, 1857, 20 sovs., J. Douglas, Athelstaneford.

The second, 10 sovs., R. Morton, Dalanir, Old Kirkpatrick.

The third, the bronze medal, J. Salmon, Benston, Paisley.

Mares (in foal), foaled before 1st January, 1857, 15 sovs., W. Rigg, Banks, Kirkcubright.

The second, 8 sovs., J. Watson, Bathvale, Glasgow.

The third, the bronze medal, J. Beattie, Newbie House, Annan.

Fillies, foaled after 1st January, 1857, 10 sovs., J. Anderson, Smithston, Kilsyth.

The second, 5 sovs., J. Muir, Lochfergus, Kirkcubright.

The third, the bronze medal, W. Little, Fitz, Aspatria.

Fillies, foaled after 1st January, 1858, 8 sovs., W. Aikenhead, Shawmoss, Pollockshaw.

The second, 4 sovs., J. Keir, Morton, Mid-Calder.

The third, the bronze medal, J. Walker, Cawder Cuilt, Maryhill.

Fillies, foaled after 1st January, 1859, 6 sovs., W. Kerr, Wester Causewayend, Mid-Calder.

The second, 3 sovs., G. Henderson, Airdrie, Kirkbean.

The third, the bronze medal, J. Frazer, Overton, New Abbey.

EXTRA HORSES.—(COMMENDED.)

John Rithet, Pennersaugh, Ecclefechan (for half-bred Arabian colt).

J. W. J. Paterson, Terroua, Langholm (for hunter).

SHEEP.

CHEVIOTS.

JUDGES.—J. Oliver, Howpasley, Hawick.

James Paterson, Chapelhill, Hawick.

Tups not more than four shear, 10 sovs., J. Brydon, Moodlaw, Langholm.

The second, 5 sovs., J. Brydon, Moodlaw.

The third, the bronze medal, T. Brydon, Kinnelhead, Moffat. Dimont or Shearling Tups, 10 sovs., Robert Borland, Auchencairn, Closeburn.

The second, 5 sovs., T. Brydon, Kinnelhead.

The third, the bronze medal, J. Brydon, Moodlaw.

Pens of five Ewes, not more than four shear, of 8 sovs., T. Brydon, Kinnelhead.

The second, 4 sovs., T. C. Borthwick, Hopsrig, Langholm.

The third, the bronze medal, R. Borland, Auchencairn, Closeburn.

Pens of five Shearling Ewes or Gimmers, 8 sovs., J. Brydon, Moodlaw, Langholm.

The second, 4 sovs., T. Welsh, Earlshaugh, Moffat.

The third, the bronze medal, C. Borthwick, Hopsrig.

BLACKFACED.

JUDGES.—A. Denholm, Bailtaws, Biggar.

Captain Kennedy, Finnart.

D. Mitchell, Blairachie, Luss.

Tups not more than four shear, 10 sovs., Walter Murray, Walston, Penicuik.

The second, 5 sovs., T. Brydon, Kinnelhead.

The third, the bronze medal, J. Drife, Barr, Sanquhar.

Dimont or Shearling Tups, 10 sovs., J. Drife, Barr.

The second, 5 sovs., T. Murray, Eastside, Penicuik.

The third, the bronze medal, T. Murray, Eastside.

Pens of five Ewes not more than four shear, 8 sovs., J. Milligan Hayfield, Thoruhill.

The second, 4 sovs., to Allan Pollok, Ronachan.

The third, the bronze medal, T. Murray, Eastside.

Pens of five Shearling Ewes or Gimmers, 8 sovs., J. Moffat, Gateside, Kirkconnel.

The second, 4 sovs., J. Drife, Barr.

The third, the bronze medal, T. Murray, Eastside.

LEICESTERS.

JUDGES.—J. Bell, Scalehill, Lanonby, Penrith.

G. Taylor, Sewerby Cottage, Burlington.

G. Hope, Fenton Barns, Drem.

Tups not more than four shear, 10 sovs., J. Beattie, Newbie.

The second, 5 sovs., T. Cockburn, Sisterpath, Dunse.

The third, the bronze medal, J. Beattie.

Dimont or Shearling Tups, 10 sovs., J. Beattie, Newbie.

The second, 5 sovs., T. Cockburn, Sisterpath, Dunse.

The third, the bronze medal, T. Cockburn, Sisterpath.

Pens of five Ewes, not more than four shear, 8 sovs., J. Collie, Argay.

The second, 4 sovs.—No competition.

The third, the bronze medal.—No entry.

Pens of five Shearling Ewes or Gimmers, 8 sovs., G. Simso Courtbill, Kelso.

The second, 4 sovs., G. Simson, Courtbill.

The third, the bronze medal, J. Melvin, Bonnington, Ratho.

LONG-WOOLS OTHER THAN LEICESTERS.

(ALL COTSWOLDS.)

JUDGES.—J. Bell, Scalehill, Lanonby, Penrith.

G. Taylor, Sewerby Cottage, Burlington.

G. Hope, Fenton Barns, Drem.

Tups not more than four shear, 10 sovs., E. Haudy, Sierford, Cheltenham.

The second, 5 sovs., J. Gibson, Woolmet, Dalkeith.

The third, the bronze medal, Lord Kinnaid, Rossie Priory, Inchture.

Dimont or Shearling Tups, 10 sovs., E. Handy, Sierford.

The second, 5 sovs., E. Handy, Sierford.

The third, the bronze medal, Lord Kinnaid.

Pens of five Ewes, not more than four shear, 8 sovs., R. Robison, Marks, Kirkcubright.

The second, 4 sovs., J. Gibson, Woolmet, Dalkeith.

The third, the bronze medal, Lord Kinnaid.

Pens of Five Shearling Ewes or Gimmers, 8 sovs., R. Scot Skirling, Campdown, Drem.

The second, 4 sovs., Lord Kinnaid.

The third, the bronze medal, J. Muir, Lochfergus, Kirkcubright.

SOUTHADOWNS.

JUDGES.—T. Crofton, Holywell, Durham.

Wm. Cattle, Dormont Grange, Ecclefechan.

G. Shepherd.

Tups not more than four shear, 10 sovs., The Duke of Richmond, Gordon Castle, Fochabers.

The second, 5 sovs., The Duke of Richmond.

The third, the bronze medal, R. Scot Skirling, Campdown.

Dimont or Shearling Tups, 10 sovs., The Duke of Richmond.

The second, 5 sovs., R. Scot Skirling.

The third, the bronze medal, The Duke of Richmond.

Pens of Five Ewes not more than four shear, 8 sovs., R. Lyall, Old Montrose, Brechin.

The second, 4 sovs., R. Scot Skirling.

The third, the bronze medal.—No entry.

Pens of Five Shearling Ewes or Gimmers, The Duke of Richmond.

The second, 4 sovs., R. Scot Skirling.

The third, the bronze medal.—No entry.

EXTRA SHEEP.

Commended, R. Brown, Cassylands, Dumfries, for Five Shearling Cheviot Wethers.

PIGS.

JUDGES.—J. Brown, Aspatria, Cumberland.

J. Curren, Comiston, Colinton.

J. Swan, Edinburgh.

Boars of a large breed.—No competition.

Boars of a small breed, 3 sovs., G. Mangles, Givendale, Ripon.

The second, 4 sovs., J. Hindson, Barton House, Everton, Liverpool.

The third, the bronze medal, Miss Bell, Woodhouselees, Caenobie.

Sows of a large breed, 6 sovs., W. Mac Duff, Longbridge-moor, Annan.

The second, 3 sovs., Miss Bell, Woodhouselees.

The third, the bronze medal, Miss Bell.

Sows of a small breed, 6 sovs., J. Mackay, Cross-Arthur-lie, Barthead.

The second, 3 sovs., G. Mangles, Givendale.

The third, the bronze medal, G. Mangles.

Pens of Three Pigs not exceeding eight months old of a large breed, 4 sovs.—No competition.
 The second, 2 sovs.—No entry.
 Pens of Three Pigs not exceeding eight months old of a small breed, 4 sovs., G. Mangles, Givendale.
 The second, 2 sovs., The Earl of Wemyss, Gosford, Drem.
 The third, the bronze medal.—No award.

DAIRY PRODUCE.

JUDGES.— Brown, Greenockmains, Cumnuck.
 F. Richardson, Edinburgh.
 T. Gibson, Edinburgh.
 D. Lennox, Dumfries.

Samples of cured butter, 5 sovs., S. Thompson, Blaiket, Crockettford, Dumfries.

The second, 3 sovs., Mrs. Burgess, Lambholm, Kirkmichael, Dumfries.

The third, the bronze medal, Donald M'Farlane, Balmuldy, Bishopbriggs.

Samples of powdered butter, 5 sovs., Mrs. Chisholm, Bankhead, Tinwald, Dumfries.

The second, 3 sovs., Mrs. Fleming, Waterfoot, Annan.

The third, the bronze medal, Mrs. Sloan, Horseholm, Dumfries.

Samples of fresh butter, 5 sovs., R. French, Shieldhill, Closeburn.

The second, 3 sovs., Adam Skirving, Croys, Dumfries.

The third, the bronze medal, Mrs. Smith, Blairmuckhole, Shotts, Lanarkshire.

Two sweet milk cheeses, 5 sovs., John Dunlop, Whiteshawgate, Strathaven.

The second, 3 sovs., James Caird, M.P., Baldoon, Wigtown.

The third, the bronze medal, J. Mackie, Sarkshields, Kirkpatrick-Fleming.

Two skimmed milk cheeses, 5 sovs., A. Gibson, Gillesbie Dairy, Lockerby.

The second, 3 sovs., A. Vase, Kirkmichael, Dumfries.

The third, the bronze medal, Mrs. Smith, Glenmanns, Penpont.

Two English cheeses.—No entry.

Two imitation English cheeses, 5 sovs., W. Dickie, Girhill, Dalry, Ayrshire.

The second, 3 sovs., R. Murdoch, How-well, Kirkcudbright.

The third, the bronze medal, W. M'Adam, Valleyfield, Castle Douglas.

PRIZES FOR IMPLEMENTS.

JUDGES.—J. W. Hunter, Thurston, Dunbar.
 J. Jardine, Dryfeholm.
 R. Patterson, Offers, Stirling.

Two-horse ploughs for general purposes, 2 sovs., John Gray and Co., Uddingston, Glasgow.

The second, the bronze medal, James Halliday, Dumfries.

Trench or deep-furrow ploughs, 2 sovs., Wm. M'Cormick, Dumfries.

The second, the bronze medal, R. Law, Shettleston, Glasgow.

Subsoil ploughs for two horses, 2 sovs., R. Law, Shettleston.

The second, the bronze medal, J. Kirkwood, Trautent.

Subsoil ploughs for three or four horses, 3 sovs., J. Kirkwood.

The second, the bronze medal, R. Law.

Double mould-board ploughs, 2 sovs., R. Law.

The second, the bronze medal, Wm. Jardine, Dryfebridge, Lockerbie.

Ribbing ploughs, 2 sovs., J. Kirkwood.

The second, the bronze medal.—No competition.

Two-horse grubbers or cultivators, 3 sovs., J. Halliday.

The second, the bronze medal, Caldow and M'Kinnel, Dumfries.

Norwegian harrows or pulverizing laud-rollers, 3 sovs., trustees of W. Crosskill, Beverley.

The second, the bronze medal, J. Inglis, Craigour, Liberton.

Consolidating land rollers, 4 sovs., James Kirkwood, Traent.

The second, bronze medal, Robert Wight, Seton, Longniddry.

Land pressers for preparing seed bed for grain, 4 sovs., G. W. Robinson, Barton-on-Humber,

The second, bronze medal, Smith Brothers and Co., Glasgow.

Ribbing machines, 2 sovs., James Kirkwood.

The second, bronze medal, Mrs. Thos. Sheriff, West Barns, Dunbar.

Harrows for heavy land, 2 sovs., E. H. Bentall, Heybridge, Maldon, Essex.

The second, bronze medal, Kemp, Murray, and Nicholson, Stirling.

Harrows for light land, 2 sovs., E. H. Bentall, Heybridge.

The second, bronze medal, Kemp, Murray, and Nicholson, Stirling.

Harrows for covering grass seeds, 2 sovs., Rogerson, Trailflatwood, Dumfries.

The second, bronze medal, E. Page and Co., Bedford.

Common swingtrees for two horses, 1 sov., Caldow and McKinnel, Dumfries.

The second, bronze medal, D. Burns, Whitecross, Linlithgow.

Equalising swingtrees for more than two horses, 1 sov., D. Burns, Whitecross.

The second, bronze medal, R. Law, Shettleston.

Broadcast sowing machine for grain, 5 sovs., Mrs. T. Sheriff, West Barns.

The second, bronze medal, G. Finlayson, Gighty Burn, Arbroath.

Drill sowing machines for grain, 5 sovs., Mrs. Sherriff, West Barns, Dunbar.

The second, bronze medal, Kemp, Murray, and Nicholson, Stirling.

Sowing machines for grass seeds, 5 sovs., Kemp, Murray, and Nicholson.

The second, bronze medal, J. Burnie, Castle Douglas.

Sowing machines for turnips, 3 sovs., J. and T. Young, Ayr.

The second, bronze medal, Mrs. T. Sherriff, West Barns.

Sowing machines for turnips with manure, 5 sovs., R. and J. Reeves, Bratton, Westbury, Wilts.

The second, bronze medal. No competition.

Dibbling or drop sowing machines, with manure, 3 sovs. No competition.

Sowing machines for mangold, 3 sovs., J. and T. Young.

The second, the bronze medal, Wm. Turner, Whauphill, Kirkcinner.

Sowing machines for carrots, 3 sovs., Mrs. Sherriff.

The second, bronze medal. No entry.

Three row sowing machines for beans, 2 sovs., Mrs. Sherriff.

The second, bronze medal. No competition.

One row sowing machines for beans, 1 sov., A. Jack and Son, Maybole.

The second, bronze medal, R. Law.

Machine for pulverizing guano, 2 sovs., A. Jack and Son.

The second, bronze medal, Mrs. Sherriff.

Machine for distributing guano in drill or broadcast, 5 sovs., R. and J. Reeves, Bratton.

The second, bronze medal. No award.

Liquid manure distributing machines, 4 sovs., the Trustees of W. Crosskill.

The second, bronze medal, Isaac James, Cheltenham.

Horse hoe for drilled grain crops, 4 sovs., Mrs. Thomas Sherriff.

The second, bronze medal, W. and J. Hunter, Samuelston, Haddington.

Horse hoe for green crops, 2 sovs., Caldow and McKinnel, Dumfries.

The second, bronze medal, Caldow and McKinnel.

Machine for singling turnips, 4 sovs. No award.

Machine for raising potatoes, 4 sovs., R. Law.

The second, bronze medal, Smith Brothers and Co., Glasgow.

Scythe for general purposes, 1 sov., J. Payne, Kirkcudbright.

The second, bronze medal. No competition.

Reaping machines, self-delivery, 10 sovs. Competition postponed.

Reaping machines, manual delivery, 10 sovs. Competition postponed.

Horse-stubble or hay rakes, 2 sovs. Competition postponed.

JUDGES.—A. Scott, Craiglockhart, Edinburgh.

J. Stirling, C.E., Edinburgh,
R. Smith, Ladyland, Dumfries,
G. Hope, Fentonbards, Drem.

Thrashing machines for two or more horses, 5 sovs., J. Drummond, Cumnock.

The second, the bronze medal, Williamson Brothers, Kendal. Thrashing machine, with steam power, 20 sovs., Robey and Co., Lincoln.

The second, the bronze medal, Wilkinson, Wright, and Co., Boston, Lincolnshire.

Fanners or other machines for winnowing grain, 3 sovs., J. Richardson, Brunton Place, Carlisle.

The second, the bronze medal R. Boby, Bury St. Edmunds. Fanners or other machines for cleaning grass seeds, 3 sovs., J. Richardson, Brunton Place, Carlisle.

The second, the bronze medal. No award.

Weighing machines for grain, 2 sovs., A. and W. Smith and Co., Glasgow.

The second, the bronze medal, J. Maxwell, Dumfries.

Weighing machines, indicating from 1 lb. to 2 tons, 4 sovs., A. and W. Smith and Co.

The second, the bronze medal, Smith Brothers and Co., Glasgow.

JUDGES.—J. Corror, Comiston, Edinburgh.

R. Elliot, Laighwood, Dunkeld.
J. Melvin, Bonnington, Ratho.

Straw cutters for hand-labour, 2 sovs., Richmond and Chandler, Salford.

The second, the bronze medal, E. Page and Co., Bedford. Straw cutters for power, 3 sovs., E. Page and Co., Bedford.

The second, bronze medal, Richmond and Chandler, Salford. Turnip cutter for cattle, 2 sovs., Caldwell and McKinnel.

The second, the bronze medal, J. Wingate, Alloa.

Turnip cutters for sheep, 2 sovs., the Trustees of the late J. Maxwell.

The second, the bronze medal, Caldwell and McKinnel.

Turnip cutters for sheep, attachable to a cart, 3 sovs., Caldwell and McKinnel.

The second, the bronze medal, Mrs. Sherriff. Machines for pulping turnips, 2 sovs., E. H. Bentall, Heybridge.

The second, the bronze medal, S. Corbett, Wellington, Salop.

Root washers, 2 sovs., the Trustees of W. Crosskill.

The second, bronze medal, Richmond and Chandler, Salford. Linseed bruisers for hand labour, 2 sovs., E. H. Bentall.

The second, the bronze medal, Richmond and Chandler, Salford.

Oil-cake bruisers for hand labour, 2 sovs., E. H. Bentall.

The second, the bronze medal, Richmond and Chandler. Grain grinders or bruisers for power, 5 sovs., Picksley, Sims, and Co., Leigh, Lancashire.

The second, the bronze medal, E. H. Bentall.

Steaming apparatus for food, 5 sovs., A. and W. Smith & Co. The second, the bronze medal, Richmond and Chandler.

Feeding troughs for byres, 1 sov., P. B. Mure Macredie, Perceon, Kilmarnock.

The second, the bronze medal, J. Robson, Glasgow.

Feeding troughs for sheep, 1 sov., W. Kirkwood, Duddingston Mills, Portobello.

The second, the bronze medal, S. Thomson, Blaiket, Crockettford, Dumfries.

Sheep fodder racks, 2 sovs., E. Callander, Clarebrand, Castle Douglas.

The second, the bronze medal, J. Kirkwood.

Churns worked by hand, 2 sovs., R. Tinkler, Penrith. The second, the bronze medal, Mrs. J. Beattie, Dumfries.

Churns worked by power, 3 sovs., R. Tinkler.

The second, the bronze medal, P. Hunter, Edinburgh. Cheese presses, 1 sov., Caldwell and McKinnel.

The second, the bronze medal, J. Drummond, Cumnock.

General set of dairy utensils, 2 sovs., P. Hunter, Edinburgh.

The second, the bronze medal, H. Bridges, 406, Oxford-street, London.

One horse carts, with harvest frame, 4 sovs., Kemp, Murray, and Nicholson, Stirling.

The second, the bronze medal, J. Williamson, Campblebridge, Thornhill.

Harvest carts, 1 sov., J. Williamson, Campblebridge, Thornhill.

The second, the bronze medal, Trustees of W. Crosskill. Light spring carts, 2 sovs., Trustees of W. Crosskill.

The second, the bronze medal, R. Law. Drags for the common cart, 10 sovs., T. McCrickie, Cumnock.

Wheelbarrows, of malleable iron, 1 sov., W. Kirkwood, Duddingston Mills, Portobello.

The second, the bronze medal. No award. Barrows, for conveying cooked food, 1 sov., J. Wingate, Alloa.

The second, the bronze medal, Caldwell and McKinnel. Divisions, rack, and manger, for farm stables, 2 sovs., George Smith and Co.

The second, the bronze medal, A. Jack and Co. Farm harness, 1 sov., Hay Downie, Costorphine, Edinburgh.

The second, the bronze medal. No award. Stone or iron stack pillars, with frame work, 2 sovs., J. Robson, Glasgow.

The second, the bronze medal, Caldwell and McKinnel. Field gates, constructed entirely of iron, 1 sov., Bain, McNeil, and Young, Edinburgh.

The second, the bronze medal, T. Perry and Son, Glasgow. Field gates, not constructed entirely of iron, 1 sov., Wm. Gillies and Son, Maxwelltown.

The second, the bronze medal. No award. Dunghill gates, to open at different elevations, 1 sov. No entry.

Iron hurdles for cattle fence, 1 sov., Bain, McNeil, and Young.

The second, the bronze medal, J. Hope and Son, Newton, Kirkpatrick Fleming.

Iron netting for sheep fence, 1 sov., Bain, McNeil, and Young, Edinburgh.

The second, the bronze medal, Bain, McNeil, and Young. Wooden hurdles or other fencing for sheep, 1 sov., Wm. Gillies and Son, Maxwelltown.

The second, the bronze medal. No award. Pipe or tile machine for hand or power, 8 sovs., Page and Co., Bedford.

The second, the bronze medal, Page and Co. Glazed pipes for conveying water under pressure, 3 sovs., J. Robson, Glasgow.

The second, the bronze medal. No award. Tiles and pipes for field-drainage, 2 sovs., J. Robson.

The second, the bronze medal, J. Taylor, Moorfield, Kilmarnock.

Glazed socketed pipes for sewerage, 3 sovs., J. Robson, Glasgow.

The second, the bronze medal, Edmonstone Coal Company, Dalkeith.

Tools for cutting field drains, 1 sov., A. Cadell, Cramond. The second, the bronze medal, Wm. Cotts, Shinnel Forge, Penpont.

Tools for cutting open drains in hill pastures, 1 sov., W. Cotts.

The second, the bronze medal, A. Cadell, Cramond. General sets of hand implements for the farm, 2 sovs. No entry.

Gas apparatus for country houses and farm-steadings, 5 sovs., J. T. B. Porter and Co., Lincoln.

The second, the bronze medal, J. T. B. Porter and Co., Specially commended.

SPECIALLY COMMENDED.

Steam engines belonging to A. Chaplin and Co. COMMENDED.

R. Bobey, Bury St. Edmunds, for a patent corn screen. Caldwell and McKinnel, Dumfries, for a six horse power portable steam engine.

W. Crosskill, Beverley, for a pig trough. G. Halkerton, Freuchie, Fifeshire, for a grindstone.

Wm. Kirkwood, for hand stubble or hay rake. T. McCrickie, Cumnock, for a turnwrist or right and left plough.

Wm. McLachlan, Maxwelltown, for a curd crusher. Richmond and Chandler, Salford, for a one horse driving gear.

Smith & Wellstood, Glasgow, for a portable cooking range. John Weir, Dumfries, for collection of saddlery.

THE YORKSHIRE AGRICULTURAL SOCIETY.

MEETING AT PONTEFRAC T.

This little borough of liquorice and "voter-bottling" renown has reaped fresh honours by the very hearty reception which it has given to its county show. The streets were perfectly radiant with union-jacks and bits of bunting, fir trees were tied to the lamp posts, laurels became a drug, leading inhabitants gave handsome "spreads," and compelled friends and friends' friends to come in and make merry. The scene in front of The Dragon, when Mr. Lane Fox left on the Wednesday in his four-in-hand, and the hounds were filing off to their quarters, was one of the most animated and unique that Yorkshire has ever known. This new feature of the show was remarkably successful, and £60 was given away in prizes between the two classes. Nothing could have been more complete than the arrangements, both in this and every other department of the meeting. As regards the hounds, a shed with eighteen compartments was erected on one side of a large railed space, in the middle of which a dozen flag stones were neatly laid down so as to form a little platform, on which the three judges, Messrs. Parry, Wickstead, and Percy Williams, took their stand, and tested the straightness of legs and feet as each huntsman and his couple were called on to parade. Out of the nine entries for the aged hounds the Holderness did not show; and after an interesting contest between the Duke of Beaufort, Earl Fitzwilliam, Earl of Yarborough, Lord Middleton, Lord Hawke, Sir Watkin Wynne, Hon. F. Villiers, and Mr. Lane Fox, victory declared in favour of the time-honoured Brocksley kennel, while Yorkshire gained second honours with Lord Middleton, and the veteran John Walker finished third for Wynnstay. In general estimation the Yarborough bitch carried the day, although "Gambler" has always been a very great favourite with huntsmen. Lord Middleton's couple were very nearly balanced in merit; and of the Wynnstay the rare "Royal" had decidedly the pull. The Pytchley dog hound was very grand, but his great height spoilt his chance. The same kennels, with the exception of Lord Yarborough's and Earl Fitzwilliam's, and the addition of the Southwold, tried conclusions for the puppy prizes, where Mr. Lane Fox came to the fore. We thought the bitch puppies the best, but the plan of putting one of each sex together made the judging so difficult, that it is proposed another year to have each class subdivided into sexes. Upwards of thirty masters of hounds, past and present, came to look on; and although Tom Sebright, Jem Hills, and Harry Ayris were among the absentees, there was a very large congress of huntsmen, headed by the veteran Will Long and Joe Maiden. Will Butler, who was the only "pink" among them, was in high feather on his new appointment to Earl Fitzwilliam's pack, and contributed by his speeches and sentiments not a little to the hilarity of the party, who adjourned, under Mr. Brady Nicholson's presidency, to a dinner marquee on the ground, where their festal proceedings were watched by hundreds with the greatest curiosity. The six pieces of plate arranged on little selves behind each lot of winning hounds, consisted of cups, teapots, and inkstands.

Such was the interest of the hound judging, that the Shorthorn ring was in a great measure deserted on Wednesday morning, except by a few anxious owners, who scrutinized every movement of the judges, and watched for the handing over of the white or green rosettes with

the most eager and critical eyes. The group included Mr. Thomas Barnes, Sen., Mr. Torr, Mr. W. Smith, Mr. Sanday, Mr. Grundy, Mr. Wetherell, the Messrs. T. and J. Booth—Mr. Richard Booth could only hear of his triumphs by telegraph—Mr. Culshaw, Mr. Dodds, and others of the most ardent members of that great Shorthorn parliament.

For the third year in succession, Master Butterfly won the head prize in his class, and if anything, the Canterbury pilgrimage seemed to have improved him. Would that we could see a cross between him and Queen Mab! It is worthy of notice that on the very morning he completed his Yorkshire triplet of victories, another son of old Frederick's (an own brother to Diadem) was commencing his winning career as a bull calf at "the Highland." Prince Talleyrand was amazingly liked by the Yorkshiresmen, but the bad colour and strong shoulder points of Earl Derby 2nd (the winner of the challenge cup at "the Durham County"), went far to spoil a good-looking outline. The Canterbury "Queen's Bench" yearling bull decisions, which had been so rigorously "corrected" at the Durham "Court of Common Pleas," underwent a still stronger revision in "the Exchequer" court at Pontefract. Malachite, who had lost much of his hair, was not even commended; and although Reformer kept his second place, Prince Frederick was put over his head. Great Eastern, Gardoni, and Election were also in the class; and the eccentric relative positions which these six bulls have held at the three places form quite a study. For our own parts, we side entirely with Reformer throughout. In the bull calf class, Harkaway held on his unbeaten way with Royal Butterfly Fourth next to him, and a half-brother, Tallyho, commended. There were only four in the cow class; and here the star of Warlabey began once more to rise in earnest with Queen Mab. Rosette was entered, but she had but too recently returned from her Cork journey, and hence Pearl came to do battle for Towneley. Rosebud calved a little roan stranger in the show, and it was no small feather in her cap to receive a high commendation in such company and at such a trying hour. The three-year-old class suffered from the absence of Mr. Atherton's Moss Rose, which was away at Dumfries, and the contest lay between Frederick's Fidelity, the Warwick winner, and Duchess of Gloster, but Fortune smiled on Lady Pigot's pet, albeit she shows strong symptoms of "fool's fat" behind. The scene in the ring when the two-year-old heifers entered was peculiarly exciting; but the word soon passed among the watchers that the judges could not "get away from Duchess 77th," and that they were becoming "very hot upon Queen of the Vale," in preference to the Canterbury victrix. In fact, Faith and Woodrose seemed to be put out of it very early, and Bates (1) and Booth (2) was the judicial fiat. Queen of the Vale is a very improving heifer, and remarkably good in the forequarter, but she has the fault of all the Red Rose tribe behind. Woodrose is only six weeks off calving to Prince Talleyrand, which rather spoils her for a judge's eye; but still we think that she has hardly had her due of late. That fine, level, thick-fleshed top must eventually be more thought of than it has been since Canterbury; but her immense growth has destroyed Faith's chance in heifer classes for this year.

For the yearling heifers it was fully expected that Soldier's Bride might have followed up her Durham County success, but she was declared to be beaten by Sir Charles Tempest's Harmless, winner of the calf-class last year. In addition to her general good points Harmless had nearly five months' advantage over the white, and, moreover, in point of size, she is far beyond the average of the Harbingers. Still, with two firsts and two such seconds, "Cuddy's" cup of happiness was filled to overflowing. Mr. Bulmer's Princess Alice, which had been second to Soldier's Bride the week before, claimed notice for her good hair and generally level make. The heifer-calf decision, as at Canterbury, was generally considered to be a mistake. In fact, those at the side of the ring would hardly believe it. Joyful first and Colonel Towneley's second seemed to be the universal opinion; as, in spite of her unsurpassable Duchess handling, it was almost impossible to see the superior charms of Gracilis, who was a very mean animal in many points, both "fore and aft." Frederick's Granddaughter was the true red type of Towneley, and remarkably even throughout. Lovesome did no small credit to Great Mogul and Bushey; and Summer Flower had more points than her hair in her favour. Pontefract and the neighbouring village of Ackworth were first and second for the dairy cows, and the elegant Emma, the winner in the cow class last year, made up the Towneley winners to two firsts and four seconds, by carrying off the Extra Stock Prize. She was then marched into the ring along with Queen Mab, Duchess of Glo'ster, and Faith, for Lord Harewood's Silver Cup, and, strange to say, the three judges each selected one, and stuck so tenaciously to their fancy, to wit—if rumour be correct—Mr. Drewry to Queen Mab, Mr. Anthony Maynard to Duchess of Glo'ster, and Mr. Dand to Emma, that Mr. William Smith was applied to. That gentleman did not, however, care to have the arbitration of such a delicate point, and hence Mr. Bartholomew was summoned—from the pig classes—and very shortly gave in his allegiance to Queen Mab, who held a crowded court for the two days.

Mr. Sanday adhered to his usual plan of not sending his sheep anywhere but to The Royal; and Mr. Borton swept three out of the four Leicester ram and shearing ram prizes, with Mr. Samuel Wiley second to him in the latter class. This veteran breeder also scored the first prize with his pen of shearing gimmers, and sold five rams during the week to go to India. The Leicesters were generally good, but "The Royal" of this year is calculated to make an eye unduly dainty. In the Southdowns Lord Walsingham took a strong lead, but the class was weak in numbers, and five out of the thirteen belonged to his lordship. Mr. Dyson of Leeds, who was only second at Canterbury, stood first with boars of a large breed; and Mr. Hutton kept his Royal position, with his small sow. Mr. Samuel Wiley was true to his fame, with his sow of the small breed under twelve months old; and in the class for the three best store pigs the first honours were awarded to Sir George Wombwell, with three young Voltigeurs of pure Brandybrey breed.

The horse department of the show extended over 25 classes, and included 204 entries. In fact, the work was so heavy that it took two sets of judges nearly all the day to get through it, and yet the whole six only united to judge the hunters in the Wenlock and Harewood Cups. Taking the horse show as a whole, it was a pretty good one, but nothing beyond the average. In fact, the judges complained that in the point of hunters they had seldom known it worse; but here, with our Northallerton remembrances fresh upon us, we must decidedly join issue with them. The blood sires were a very motley lot, and included Young Conqueror, St.

Clair, Veva, Doctor Sangrado, Farahan, Spencer, King of Diamonds, Cheddington, Lord Fauconberg, Sere-nader, Wild Hero, and Ryedale. Snowdon Dunhill, Caw-ston, and Far West did not come; and after the conventionally tedious inspection, Lord Fauconberg, a son of Birdcatcher and Alice Hawthorne, was called out, along with Spencer, who had been second three times at the show before, to Dagobert, Canute, and Elcot. The judges pondered for a long time, but Lord Fauconberg's superior action carried the day, and Spencer had to wear the green rosette once more. The Yorkshiremen generally did not like the decision, and we certainly think that even giving away the point of action, the rosettes ought to have been exchanged. The twelve roadsters made up a much better class, and a victory declared itself in favour of a clever seven-year-old chesnut. There was much less of the Norfolk trotting stamp among these horses than we have ever seen before. The cart-sire prize went to an immense animal of fine quality, from Manchester, called "Young Napoleon." He was a very good mover for his size; but with many, including ourselves, the second, a grey from Hatfield, and yclept "Young John Bull," was quite the favourite. Farmers, however, like these enormous sires, as, after working their stock up to five or six, they command a fine market for the biggest from the carriers and brewers. The coincidence of the names in this decision was very remarkable; and we trust it may not be an omen. Coaching horses dwindled down to three; and here, too, the second was as much, if not more, liked than the first; but he had been evidently a little "off." In the Harewood Cup it was a very near thing between Mr. Batty's hunting mare and "Marigold"—the one a dark and the other a golden chestnut; but the latter carried the day, after a most anxious consultation between the six benchers; and the capital foal at her side was a good point in her favour. Mr. Phillips, the well-known horse-dealer, showed his appreciation of the three-year-old prize coacher by buying him; and the Duke of Beaufort also purchased two horses for his huntsman, one of which, the property of Mr. George Holmes, of Beverley, won the Wenlock Cup the next day. The best four-year-old hunter, "Esculapius," was a fine sixteen-and-an-inch horse; and there were at least five or six very capital ones among the five-year-old hunters in the Wenlock Cup, although two out of the twelve would have been apparently puzzled to discover their "three-crosses of blood."

The fowl show was much improved, by the fact of the pens being arranged on each side of a privet hedge, which made a beautiful back-ground for the eye. Some silver-grey Dorkings of Mr. Berwick's, of Helmsley, were much admired; and both Game, Hamburgs, and Polish were in great perfection. In fact, the hedge-side never lacked its enthusiastic loiterers; and for the hard-headed gazers from the busy hives of industry in the West Riding, the implement yard seemed to have unwonted charms. It was hardly possible to get near some of the best machines; and the lady who operated on the dirty shirt at the washing-machine "drew crowded houses" at every performance.

This part of the show was remarkably well stocked, and there were nearly 1,000 entries in the catalogue. The trial of steam cultivators, grass mowers, and hay-making machines and rakes took place on Tuesday, in fields belonging to Messrs. Moxon Brothers, Baghill-lane (who won the head prize with a splendid pair of cart-horses), a short distance from the centre of the town. The steam cultivators were tried in the Baghill-field, which consisted of about seven acres of clover ley, the competition being between Fowler's plough and

Smith's cultivator. The mowers, haymakers, and rakes were tried in the Meadow Park, Baghill-lane, a field of some twenty-seven acres. There were only four mowers entered for competition, though there were about a dozen catalogued for exhibition. These were Burgess and Key's (£30), shown by Clay, of Walton, near Wakefield; Wood's reaper and mower combined (£35), an American machine, shown by Robinson, of Leeds; Bamlet's improved, shown by Kearnsley, of Ripon; and a second American machine (£20), shown by Brigham and Beckerton, Berwick-upon-Tweed.

Last year, at Hull, the trial of reapers was the best and most satisfactory we ever witnessed; and this year the mowing machines were well tested, and the reaper trials were very properly postponed till the corn was ready for harvesting. The steam-cultivation trials were rightly managed, and, we believe, a right result was arrived at, viz., to prove that it could be done as well and cheaper than by horse labour, and failing that, the prize was withheld. Mr. Fowler's steam-plough did its work in a masterly way, ploughing deep and straight, and laying its work as well as a Ransome, Howard, or Hornsby could have laid it; indeed, it was universally admired. On calculation of cost, compared with horse power, it was found to be about 45 per cent. cheaper than by horses, and this on comparatively light land, too. We have long set it down as an accomplished fact, that on heavy lands and in deep ploughing it was incomparably better and cheaper; but we were not prepared for such a proof of its efficiency on a mild loam. This trial will go far to prove its general applicability to all soils—a great desideratum. Mr. Fowler next applied his cultivating apparatus; this was a similar balance-plough, without the mould-board, and having a sort of goose-necked prong to beat in pieces the soil as broken up by the plough with its skeleton shares. This operation also made excellent work, which met also general approval. We have seen Mr. Fowler's steam-plough and cultivator at work many times, but we have never seen such good work performed as at Pontefract. The only regret was the small area allotted him.

Robertson, of Spalding, brought forward, rather late in the trial, a set of Smith's tackle and cultivators; but in attempting too much, like other ambitious exhibitors, he failed to do the work satisfactorily, and consequently the judges could not give his apparatus an honourable place. It showed, however, great power and applicability.

The grass-mowers were put to work upon a strong crop of old grass, and, to the surprise of everybody, the greater portion of the work was done in a way that could not have been attained by the scythe. The field was one of those high ridge-and-furrow lands which so greatly obstruct modern improvements. The mowers cleverly cleaned out the furrows and bounded over the ridges, scattering the grass behind so as scarcely to need a tedder. The difficulty was to decide the prize, the competition being the closest between Burgess and Key's machine and Cranston's: the latter, having the advantage of price and compactness, carried the palm. Brigham and Buckston's mower made also excellent work.

The hay-tedders came next, and a close competition ensued between the tedders of Ashby and Co. and of Kearsley. The hay-rakes came next: and here we must remark that this unavoidable circumstance of having to undergo the trial upon fresh-mown grass cannot be considered a fair test of the efficiency of the majority of the sixteen hay-rakes tried; consequently, those provided with means to press down the tines closely to the ground and keep them there had the best

of it. Coultas obtained the prize with a very useful implement.

The other trials were in the yard, and, with the exception of Bradley and Craven's brickmaking machine, were merely nominal. Our readers may probably recollect the full account we gave of the trials of Chamberlain's machine at the Warwick Meeting. It professed to take the clay or material (for it was not particular as to the substance) from the clay-pit or hill-side, and make it into solid bricks at one combined operation of the machine. This was upon a similar principle, and exhibiting great power, it certainly appeared capable of fulfilling its promises. The earth in the present trial was, however, rather moist, but unknéaded. This was thrown by a shovel into the pugging-hopper, where it was apparently ground, and from which it was pressed into moulds fixed in a revolving table. These moulds, on coming immediately under the presser, were, by the nice adjustment of the machinery, detained for an instant to receive the requisite pressure, this varying according to the nature of the material to the extent of three hundred and forty pounds. The table then moves on, and, owing to the same nice adjustment, they are pressed out of the moulds on to an endless web, so arranged as to carry them free of the machine. The time being taken, proved it capable of making 1,800 bricks per hour. Price £220. Bentall again takes first prize for his pulper; the trustees of Mr. Crosskill for waggon; Busby and Co. for cart; James Coultas, for corn and turnip drill, and for another with artificial manure and small seed drill; Watkinson for liquid manure drill; R. and J. Reeve for manure distributor; and Bradley and Craven received the first-class silver medal for their brick-moulding machine. These were the special prizes; for the remaining honours we must refer to the prize list.

The implement show was a superior one, and was exhibited in a very convenient field adjoining the town, and chiefly under shedding. Our leading houses were nearly all represented, either in person or by agents, so that buyers or visitors might inspect their peculiar manufactures in a comparatively short time. There were 119 stands, with implements and articles in great variety, and under more judicious selection than we frequently see at these meetings—the reaping and mowing machines occupying a large space, there being thirty-three entries. For steam engines and thrashing machines there were thirty-two entries. The waggon and cart classes were well filled, as were also the various drill classes. In the miscellaneous department, for which no specific prizes were offered, we saw many very useful implements, machines, and other necessary articles; amongst which we would name Pike's cylinder pump or fire engine, which we saw in work at Canterbury, throwing water in very large quantities to the distance of 80 to 90 feet, requiring but four men to work it, and the price of the five-inch cylinder not exceeding £15. In a recent trial at Spalding it threw water faster than a large engine requiring ten men to work it. It is very compact, and could be easily moved in a common wheelbarrow. Mason had a capital collection of weighing machines in variety. E. Humphries has at length perfected his white water or smut machine attached to his thrashing machine. Goucher's beaters and presses deserve notice. Turners are indefatigable in their exhibition of excellent crushing and other mills. The collection shown by Puckering and Houlgate attracted great attention. Hornsby and the North of England Company declined competition for the prizes; but both showed excellent stands, and Hornsby's ploughs were set out in regular gradation for their several orders of ploughing. Milton's revolving screen deserves mention: it is so arranged, that the wires can

be extended or contracted at pleasure to suit the dressing. James Coultas showed very useful drills at moderate prices. Richmond and Chandler have their usual assortment, including Tennant's Scotch grabber. J. Patterson shows a very novel washing machine and similar churn—they work on a pivot. J. G. Smith has a beautiful collection of saddling and harness and horse accoutrements. Sawney showed an improved Boby's screen, having a blower attached at top. G. Malthouse has a clever apparatus for distributing dry manure in small or large quantities. It merely consists of a shogging board, well-adjusted for its purpose. H. Inman showed some good ornamental rustic houses, vases, and seats. Coleman and Sons exhibit their well-known potato digger for heavy roots. Messrs. Berit, Furbisher, Makin, Thackray, Tyerman, Whardall, and Wrigglesworth and Son, all of Pontefract, add greatly, by their stands, to the excellency of the show.

The dinner in the Market Hall was attended by about 200, and the toast of the Yorkshire Agricultural Society was responded to by Mr. H. S. Thompson, who pointed out at some length the untenable grounds on which the leading implement makers have joined issue with the Royal Society. The annual meeting was held in the Magistrates'-room at the Sessions-house, under the presidency of Lord Herries. The Secretary, Mr. Hannam, stated that at a meeting of the Council previously held, it had been decided that the society should not contribute to the funds of the Royal Society in connection with the Leeds meeting in 1861, and it was resolved "That the society do not hold its annual show next year, and that no prizes be given for implements or for stock." A discussion then ensued with reference to the offering of prizes for the best plans for farm cottages and farm buildings at the ensuing show of the Royal Society, in which Lord Herries, the Hon. George Lascelles, the Mayor of Pontefract, Mr. R. J. Bentley, Mr. P. Saltmarsh, Mr. C. W. Strickland, Mr. J. D. Dent, M.P., Mr. R. M. Milnes, M.P., and others took part. It was ultimately resolved that £75 for the best plans for farm cottages, and £75 for the best plans for farm buildings, be placed at the disposal of a committee, and that the plans be exhibited in some convenient room during the meeting of the Royal Society at Leeds. Lord Harewood was re-elected president for the ensuing year. The following is a list of the awards:—

JUDGES.

HORSES.—Mr. John West, Melton Ross, Ulceby Junction; Mr. Johnson, Brigham, Beverley; Captain Skipworth, Howsham, Brigg; Mr. Charles Nainby, Barnoldby-le-Beek, Grimsby; Mr. Thomas Parrington, Lazenby, Redcar; Mr. S. Slater, North Charlton, Lincoln.

CATTLE.—Mr. George Drury, Holker, Newton-in-Cartmel; Mr. Robert Dand, Highfield House, Alnwick; Mr. Anthony Maynard, Marton-le-Moor, Ripon.

SHEEP AND PIGS.—Mr. Charles Hudson, Blyth, Retford; Mr. James Singleton, Givendale, Pocklington; Mr. W. Bartholomew, Goltho, Wragby.

WOOL.—Mr. Thomas Clayton, Stainley House, Ripley.

IMPLEMENTS.—Mr. John Wells, Booth Ferry House, Howden; Mr. John Brown, Ackworth Moor Top, Pontefract; Mr. J. C. Morton, Sheatley, Reading, Berks; Mr. John Clarke, Long Sutton, Lincolnshire; Mr. Thos. Outhwaite, Goldsbrough House, Knaresbro'.

PRIZE LIST.

SHORT-HORNS.

Best bull of any age £25, Lieut.-Col. Towneley, Towneley Park, Burnley, "Royal Butterfly." Second of £10, Henry Ambler, Watkinson Hall, Halifax, "Prince Talleyrand." Highly commended, H. Smith, Drax Abbey, Selby, "Earliest." Commended, J. Lynn, Stroxtun, Grantham, "Great Comet."

Best yearling bull £20, Sir C. Tempest, Bart., Broughton Hall, Skipton, "Prince Frederick." Second of £10, F. H.

Fawkes, Farnley Hall, Otley, "Reformer." Highly commended, H. Ambler, "Great Eastern." Commended, F. H. Fawkes, "Prince."

Best bull calf upwards of five months old £10, S. Marjoribanks, Bushey Grove, Herts, "Harkaway." Second of £5, Lieutenant-Col. Towneley, "Royal Butterfly Fourth." Commended, T. Jolly, Warlaby, Northallerton, "Rheusa;" S. Marjoribanks, "Tally Ho."

Best cow of any age in calf or milk, £15, R. Booth, Warlaby, "Queen Mab." Second of £5, Lieut.-Col. Towneley, "Pearl." Highly commended, J. R. Middlebrough, South Milford, "Rosebud."

Best three year-old-cow, in calf or milk, and having had a calf £10, Lady Pigot, Branches, Newmarket, "Duchess of Gloster." Second of £5, Lieutenant-Colonel Towneley, "Frederick's Fidelity."

Best two-year-old heifer in calf £10, Captain Gunter, The Grange, Wetherby, "Duchess 77th." Second of £5, R. Booth, "Queen of the Vale." Highly commended, H. Ambler, "Woodrose." Commended, Lady Pigot (2), "Empress of Hindostan" and "Stauley Rose."

Best yearling heifer £10, Sir C. R. Tempest, Bart., "Harmless." Second of £5, R. Booth, "Soldier's Bride."

Best heifer calf upwards of five months old £5, Hon. G. E. Lascelles, Harewood, "Gracilis." Second of £3, Lieutenant-Colonel Towneley, "Frederick's Granddaughter." Commended S. Marjoribanks, "Joyful;" R. Gell, Grimston Hill, York (2), "Summer Flower" and "Gipsy Lass."

Best fat ox under four years old £10, J. Hamilton, Stub House, Northallerton.

Best fat cow of any age £5, Captain Gunter, The Grange, Wetherby, "Princess Royal."

SPECIAL PRIZES

Given by the Right Hon. the Earl of Harewood, Best short-horned cow, entered in any class, in calf or milk, and having had a calf, a Silver Cup, Mr. Booth, Warlaby, "Queen Mab."

CATTLE OF ANY BREED.

Best cow for dairy purposes £5, W. Jefferson, Pontefract, "Daisy." Second of £2, J. Kenworthy, Ackworth, Pontefract, "Bonnie Bell." Commended, J. Grundy, The Dales, Manchester, "Faith," 7 entries.

EXTRA STOCK CATTLE.

Col. Towneley, Towneley Park, "Emma." Second, D. Rapp, Norton, Malton, 6 entries.

SHEEP.

LEICESTER, OR LONG-WOOLLED.

Shearing ram—First prize £15, J. Borton, Borton-house, Malton; second £5, S. Wiley, Bransby, York. Highly commended, T. Stamper, Oswaldkirk; commended, J. Borton, Malton (2).

Ram of any age—First prize £10, J. Borton, Borton-house, Malton; second £5, J. Borton. Highly commended, M. and J. Horalay, Scrayingham, York (2), J. Simpson, Spofforth-park, Wetherby; commended, J. Borton, Malton, J. Simpson, Spofforth-park, Wetherby (2).

Pen of five ewes—First prize £5, W. Lovel, Nafferton-grange, Driffield; second £3, J. Simpson, Spofforth-park, Wetherby.

Pen of five shearing wethers—First prize £5, W. Lovel, Nafferton-grange, Driffield; second £3, W. Lovel. Commended, J. Boast, North Dalton, Driffield.

Pen of five shearing gimmers—First prize £10, S. Wiley, Brandsby, York; second £5, S. Wiley. Commended, W. Angus, Newark, Driffield.

SHORT-WOOLLED.

Ram of any age—First prize £15, Lord Walsingham, Meriton-hall; second £5, Lord Walsingham, also one highly commended and two commended.

Pen of five shearing gimmers—First prize £10, Duke of Devonshire, Holker; second £5, W. Thompson, Hunley.

EXTRA STOCK.

An aged ram, J. Borton, Borton-house, Malton, first prize; two fat ewes, F. Jordan, Eastburn, Driffield, second,

PIGS.

Boar, large breed—First prize £5, J. Dyson, Leeds; second £2, P. Saltmarsh, Saltmarshie.

Sow, large breed, in pig or milk—First prize £5, J. Gledhill, Heckmondwike.

Boar, small breed—First prize £5, J. Harrison, jun., Heaton Norris; second £2, H. Endeacott, Leeds. Commended, H. Endeacott and Viscount Galway, Bawtry.

Sow, small breed, in pig or milk—First prize £5, W. Hatton, Adingham; second £2, W. Hatton. Highly commended, W. B. Wainman, Crosshills.

Sow, of any breed, in pig or milk—First prize £5, W. B. Wainman, Cross-hills; second £2, M. Walton, Halifax.

Boar of any breed—First prize £5, T. M. Richardson, Hibaldstow; second £2, W. B. Wainman, Cross-hills.

Three store pigs of any breed, same litter, from four to nine months old—First prize £5, Sir G. O. Wombwell, Bart., Newburgh-park; second £2, Lord Wenlock, Escrick. Highly commended, S. Wiley, Brandsby.

Boar, large breed, under twelve months old—First prize £3, J. Pygott, Pontefract. Commended, M. Gavins, Leeds, and R. E. Duckering, Northorpe.

Sow, large breed—£3 to M. Gavins, Woodhouse, Leeds.

Boar, small breed—£3 to W. B. Wainman, Carhead, Cross-hills.

Sow, small breed—£3 to S. Wiley, Brandsby, York.

EXTRA STOCK.

First prize M. Gavins, Woodhouse, Leeds; second H. Endeacott, Hunslet-lane, Leeds.

HORSES.

Best stallion for hunters—First prize £25, Mr. J. McAdam, Gallane, Hadlington; second £5, Mr. T. Manfield, Thirkleby, Thirsk.

Stallion for coach horses—First prize £10, Mr. W. Button, Murton Grange, York; second £5, Mr. T. Denby, Rawcliffe.

Stallion for roadsters—First prize £10, Mr. R. B. Ridsdale, Watergate, Ripley; second £5, Mr. W. Robson, Swalwell, Gateshead.

Stallion for agricultural purposes—First prize £10, Mr. J. Robinson, Manchester; second £5, Mr. T. Johnson, Hatfield, Doncaster.

Mare and foal for coaching—£5, Mr. J. Smith, Marton Lodge, Bridlington.

Roadster mare and foal—£5, Mr. H. Bentley, Woodlesford, Leeds.

Mare and foal for agricultural purposes—£5, Mr. Ibbotson, Hook, Howden.

Three-year-old hunting gelding—£5, Mr. S. Musgrave, Market Weighton.

Three-year-old hunting filly—£5, Mr. W. H. Clark, Hook, Howden.

Three-year-old coaching gelding—£5, Mr. W. Robinson, Hemsworth, Pontefract.

Three-year-old hackney gelding or filly—£5, Mr. J. Bell, North Duffield, Selby.

Three-year-old gelding or filly for agricultural purposes—£5, Mr. J. Banks, Wresale Castle, Howden.

Two-year-old coaching gelding or filly—£5, Mr. D. Goun-drill, Hagthorpe, Howden.

Two-year-old hunting gelding or filly—£5, Mr. J. Hannam, Kirk Deighton, Wetherby.

Two-year-old agricultural gelding or filly—£5, Mr. J. Bennett, Snaygill, Skipton.

Yearling hunting gelding or filly—£3, Mr. E. Othor Kirk-bridge, Darlington.

Yearling coaching gelding or filly—£3, Mr. G. Cooke, Gowdall, Snaith.

Yearling gelding or filly for agricultural purposes—£3, Mr. G. Newsome, Kinsley Common, Pontefract.

Pair of horses, of either sex, for agricultural purposes, worked during the season—£5, W. Moxon and Sons, Pontefract.

Hackney gelding or mare, not less than four years old nor exceeding six—£5, Mr. G. Holmes, Beverley.

Four-year-old hunter, gelding, or mare—£80, Mr. W. H. Clark, Hook, Howden.

SPECIAL PRIZES.

Brood mare for hunters, with not less than two crosses of blood—a silver cup, given by the Earl of Harewood, Mr. C. Harrison, Melton House, Brough.

Five-year-old hunter, mare or gelding, warranted sound, and to possess not less than three crosses of blood—First prize £20, given by the Right Hon. Lord Wenlock, Mr. G. Holmes, Toll Gravel, Beverley; second £5, ditto, Mr. C. M. Maynard, Harewood.

EXTRA STOCK.

Society's medal, Mr. J. Lofthouse, Boroughbridge.

LONG WOOL.

Five hog fleeces—£5, C. Barroby, Balderaby.

SHORT WOOL.

Five hog fleeces—£5, Lord Wenlock, Escrick Park.

SPECIAL PRIZES FOR FOXHOUNDS.

FOR AGED HOUNDS.

Best couple of hounds, dog and bitch (the dog hound to be not less than a three-seasoned hunter)—First prize, a piece of plate value not less than £15, Earl of Yarborough; second, a piece of plate value not less than £10, Sir Watkin Wynn, Bart.; third, a piece of plate value not less than £5, Lord Middleton. Nine entries.

FOR UNENTERED HOUNDS.

Best couple of unentered hounds, dog and bitch—First prize, a piece of plate value not less than £15, G. L. Fox, Esq., Bramham Moor; second, a piece of plate value not less than £10, Sir Watkin Wynn, Bart.; third, a piece of plate value not less than £5, Duke of Beaufort. Seven entries.

IMPLEMENT AWARD.

For the best application of steam power to the cultivation of the soil, £50, to Mr. J. Fowler, jun., Cornhill, London. The second prize was not awarded.

For the best grass mower, £10, to Mr. W. Cranston, London, for Mr. Wood's American machine; 2nd ditto, £5, to Messrs. Burgess and Key.

For the best hay-making machine, £10, to Messrs. Ashby and Co., Stamford.

For the best horse rake, £5, to Mr. J. Coultas, jun.

Mr. Bentall, £5, for root pulper; the Trustees of Mr. W. Crosskill, £10, for waggon; Busby Agricultural Implement Company, £10; for cart; Mr. James Coultas, £5, for corn drill with artificial manure, and £5, for small seed drill; Mr. J. Barker, £5, for two-ridge drill for turnip or mangold seed; Mr. W. Atkinson, £5, for water drill; Messrs. R. and J. Reeves, £5, for manure distributor; Messrs. Maggs and Hindley, £1, for straw thatching machine; Messrs. Puckering and Houlgate, £1, for waggonette and other carriages; Mr. R. Mason, £1, for weighing machines; Mr. W. Pike, £2, for cylinder pump; Messrs. Mitton and Co., £1, for improved revolving corn screen, and £1, for meal sifter; Mr. Sawney, £2, for Boby's improved screen; Mr. T. L. Hancock, £1, for butter machine; Mr. H. Inman, £1, for garden house and rustic seats; Mr. T. Radford, £1, for washing machine; St. Pancras Works, £2, for stable fittings; Messrs. H. J. Morton and Co., £1, for strained wire fencing; Mr. F. Morton, £2, for ditto end fittings; Mr. B. Barstow, 10s., for sheep shears and bull rings; and the silver medal to Messrs. Bradley and Craven, for brick moulding and pressing machine.

SAND FOR HORSES' BEDS.—Now that straw is so scarce and dear, a suggestion by Mr. Small, veterinary surgeon, Dundak, merits notice. He states that sand is not only an excellent substitute for straw for horses' beds, but superior to straw, as the sand does not heat, and saves the hoofs of the horses. He states that sand is exclusively used for horses' beds in his repository.

THE ROYAL AGRICULTURAL SOCIETY OF IRELAND.

MEETING AT CORK.

This, now the third meeting of the national Society at Cork, has not been altogether a great one. Whether we interpret the phrase as one merely of numerical strength, or as more of associated excellence there is no doubt but that the Society has known better gatherings. Some of the sections were unusually weak, and, at the same time, one or two more than commonly strong. Never, for instance, has there been, on these occasions, so good an exhibition of agricultural implements. Virtually offering no premiums whatever for any superiority in the manufacture of machinery, the Cork show gave another opening to those recusants who eschew any such system of comparative examination. In a word, the English makers accorded it their hearty support; and the well-known firms of Clayton and Shuttleworth, Barrett, Exall, and Andrewes, the Hornsby, the Howards, and the Garretts had their stands duly fitted with inventions for which they are deservedly distinguished. Alongside of these were Bentall, more directly recommended by a long list of honours just taken in England; Richmond and Chandler; the Turners of Ipswich; the senior Crosskill Firm; Boby of Bury; Burgess and Key; Smith and Ashby; Reeves; Caanbridge of Bristol; Ruston and Proctor of Lincoln; Haywood of Derby; Pickley and Sims; Wallis and Haslam; Fry of Bristol; and other English houses—all as well represented; while Gray of Uddington came from Scotland, and, of course, a number of Irish manufacturers, dealers, and agents made frequently yet larger displays. Prominent amongst these were the Perrots of Cork, Sheekleton of Dundalk, and Gray of Belfast, who with the other Gray of Uddington, entered for the Challenge Cup. The conditions required in competing for this rest the award in the best collection of agricultural machinery absolutely manufactured by the exhibitor himself. The policy of this is more than questionable: for instead of encouraging a man to perfect such implements as he may already have a repute for, the tendency is rather to engage him in working up other articles he has little experience or capability for constructing. As far as the advantage of the agriculturist himself is concerned our plan, of giving the premium for in reality the best collection of implements, let them be made by whom they will, is clearly the better one. The introduction of superior manufactures is thus asked, instead of the mere multiplication of much of an inferior description insisted on. It is true this would put the cup more within the range of the dealer than any one else, but the society would so carry direct good with it, and the neighbourhood be more and more prepared to appreciate the best of everything. Local manufacturers have, no doubt, their particular points of excellence, but it is neither fair nor can it be wise to over-tax their strength in this way. The greatest and the most successful of our implement makers are those who have devoted their attention to one or two inventions, now to be so readily identified with their names and progress.

Indeed, the Irish Gazette Cup does not "go" quite happily under the regulations attached to the annual contest, and it is at this very time in dispute. The Scotch firm—Gray, of Uddington—had won it both at Dundalk last year and at Londonderry in the one previous, so that the third time was only needed to secure

its permanent possession. At Cork, again, the award was in favour of the same house, but certain objections were at once entered, the further consideration of which the Council have deferred to their next monthly meeting. One of these demurrers, that the Cup was not returned within a certain time of the meeting, would be scarcely worth entertaining; but another is of a graver character, and rests more upon the actual conditions determining the award. It is protested that Gray's collection included implements that were not of his own manufacture, although entered and labelled as such. This, of course, if proved, will be followed by a disqualification, and the challenge reopened. But the influence of such an offer is not of the best, especially in a comparatively new country, where rising men should not be asked to do more than they can do well.

The English houses study the actual wants of the Irish farmer, as he is, with far more purpose and method. In this very admirable exhibition one feature was everywhere observable. The more costly essentials for improvement are brought to the least cost possible. The Turners, of Ipswich, started the small engine, and now the Garretts, and others also, turn it out with a direct view to the Irish market. Clayton and Shuttleworth, again, had in a prominent place on their stand a four-horse power thrashing and winnowing machine, "constructed to meet the requirements of small occupiers;" and the Garretts have had a somewhat similar machine for sometime in trial here. A man may buy a "new-fashioned" plough of Howard, or Hornsby, without much effort, as he may a Bentall's cultivator, an Ashby horse-rake, a Crosskill cart, or a chaff-cutter of Richmond and Chandler. But it is to greater things that we must be gradually encouraged, and hence the judicious introduction of these small engines and thrashing machines. The country, moreover, is rising to the occasion, and the trade spoke generally to business being good. The want of trials, however, to a people who above all others should see the implements they are unaccustomed to in work, will become more and more a serious drawback to the real utility of the Society. How are men's eyes to be opened to a better state of things, while you more than hesitate to give any practical proof of all you tell them? The only implements announced to be in work at Cork were the steam-ploughs, and these were to be seen five miles out at Blarney, on the last day only—the Friday of the week. The Messrs. Howard had here Smith's cultivator, in the hands of their own manager, while M'Kenzie, of Cork, was in charge of Fowler's plough. Mr. M'Kenzie's collection in the yard was more what the Society should seek for—an admirably-arranged stand of some of the best implements of the best makers. These, too, are certain to remain in the district, and as certainly with a good and lasting effect. This must surely be preferable to inciting exhibitors to claim the credit of what does not justly belong to them, or to engage in almost unlimited operations to which few, or, as experience assures us, scarcely any are equal. The steam-plough trials excited a good deal of attention, but they should have come on earlier and nearer. In a convenient situation there is no reason, but rather every good one, why they should have been at work on the mornings of Tuesday, Wednesday, and Thursday. The exhibitors themselves were anxious to begin; but the

management, with an eye to the receipts, rather feared the counter attraction, and too many had, consequently, to leave without a sight of what would have been to them the great novelty of the occasion.

And it is in this section of an Agricultural Meeting—the Implement Department—that the Irish require the more initiation. With the stock, their breeds, points, and qualifications, they are now thoroughly familiar. If, indeed, the entry of animals at Cork was not great, it was still very suggestive. Never was there so direct a declaration of what the country means to “go for.” Even almost in their own territory the Kerry cattle made up but an indifferent class. We have seen far better, prettier, rounder, and bigger, on other show grounds. Two or three pair of heifers, and a neat, ferocious little bull were about all one would care to prize from the whole lot of them. Four classes for Herefords resulted in not one of the breed being even nominated. Four classes for polled cattle produced two good heifers from Malahide Castle. Four classes for Devons brought eight animals, and two of those all the way from “home;” Lord Charlemont backing George Turner, with some a little more sizeable, and bred in the country. Beyond these, there was just one West Highlander, also bred by Lord Charlemont, in Ireland. For the future it would clearly be advisable to throw all these “other breeds” into one general class, and then increase the premiums to something worthy of the auspices of a National Association.

The one exception should be in favour of the Ayrshires, which for milking purposes have to some extent established themselves. There were plenty of them at Cork, but scarcely any that could be considered as prime specimens of the sort. The pick of them was the yearling heifer from the Glasnevin farm—a shapely, handsome little thing, brought out in capital condition. The mediocrity of the entry may be probably accounted for from the county of Cork itself taking to another kind of milking cow. This is the Dutch breed: a larger and coarser beast, parti-coloured black and white, and with the recommendation of giving a great deal of milk, but not of a very rich quality. The bulls were not slightly in appearance, but some of the cows had very good points, and many of them neat Shorthorn heads, with the horn itself well turned. They are said, indeed, to make a capital cross with the Durhams; and “the stain” seemed to assert itself even in the animals entered here as pure Dutch. The Judges spoke very favourably of the class, which, while it was interesting as a new feature, at the same time clearly stood second amongst the several breeds of cattle in point of real merit.

But “second” must be read *longo intervallo*; for nowhere does the Shorthorn assert his supremacy more strongly than on an Irish showground. They even seem to forget their first love—the thorough-bred horse, when in his presence, and Soubadar and Rosette had a far longer hold on the crowd than the well-bred Planet or the hunter colt. There have no doubt been better collections of Shorthorns in Ireland than were to be seen at Cork, but never has the sample been so much in the hands of the Irish themselves. There were, in fact, only two entries from the other shores—the famous Rosette, with which Mr. Eastwood for a second time won the Purcell Cup; and her half-brother, the almost equally well-known Statesman, through whose agency Mr. Tod becomes for the third time in succession the owner of the best aged bull. He won this premium at Dundalk and Londonderry with Young Heir-at-law. Of Rosette’s right to her place there could be no matter of question, and her Irish friends, like ourselves, fancy her the more, the oftener they see her. This is not always the case with a prize animal, and most assuredly not so with Statesman. If in the scale quality stands for every-

thing, then perhaps Statesman was entitled to his place; but if size and symmetry and outline go for anything, he far more certainly was not. With his bad crops and now terribly narrow forehead, it was surprising to see the judges take so much to so faulty a bull. Had they not known his antecedents they could scarcely have ventured to give him the place they did. As it is, there was a rumoured objection to the prize being awarded on the ground that Mr. Tod’s beast was of no use in the herd. It is very certain that he went to the hammer at Wetherell’s sale with a very “lazy” character, and was sold dog-cheap for this reason. With such cows as Volga and such bulls as Statesman, Mr. Tod would seem to promise a fine argument on the prolific qualities of his prize stock. The other bulls in the aged class included Foundation, a prize animal at Waterford, and purchased by the late Marquis of Mr. Christy for two hundred guineas; and the Duke of Leinster, placed second here, and a winner on many occasions in the South of Ireland—a good even bull, nice in the handling, but with only a middling head, and very short in the hair. Then, there was Captain M’Clintock’s Comet, a winner more than once in Dublin, and Mr. Barcroft’s Sir Colin, who, now that he has got rid of his formidable opponent, Dr. M’Hale, might have been expected to do better. As it was, the judges placed him third “in reserve,” although they did not think him worthy of commendation, while the public, almost to a man, pronounced him a long way the best-looking one of his class. For real grandeur of form and goodness of flesh combined, there was nothing like him, and those who searched very closely for his failings declared the chief of them must be a certain dark tint in his coat, which, at the worst, must have told for more than it ought. We will not go so far as to say on our own account, that which very many did not hesitate to do, viz., that Sir Colin was all over the bull of his class; but we do think, considering what was before and behind him, it was rather hard to pass him altogether over without one word of distinction. Of course by this decree Sir Colin never ranked so badly in a show-yard before—and as probably he never will again. His own brother, Clydesdale, as at Dundalk last year, was the first of the next class to him. He is now growing into a great fine bull, with capital twist and thighs, but running rather narrow to the top of the shoulder. Taken, however, on an average, neither the aged nor the two-year-old bulls were of the highest order; and by far the best of them all was to be found in the next degree, amongst a very mixed lot of yearlings. There could be no mistake about Soubadar, with his fine quality, soft hair, symmetrical form, and unexceptionable pedigree—by Prince of Warlaby, dam by Baron of Warlaby, and so on. But for a little “drop” by the loin, this young bull is very near perfection, and shows more and more how well laid out was the two hundred Mr. Coppinger gave for him at Dublin in the spring; where, it will be remembered, he finished first in a very large class of yearlings. Mr. Coppinger was able to find him a second at Cork in one of his own breeding, a good square bull, of not quite so high a quality, and with a bad head and horn; whereas Soubadar is nowhere better than in his well shaped characteristic frontispiece—full of breeding, but with nothing of effeminacy about it. Amongst the commendations in this class were a bull of Mr. Regan’s, bred by Mr. Welsted, and a bull-calf still in Mr. Welsted’s possession. This gentleman has one of, if not the largest herd of shorthorns in Ireland, and to show how they “do” generally in his county—Cork—the following point in the proceedings will demonstrate. The Local Committee, amongst other premiums, offered a challenge cup for the best shorthorn bred in the

county, and Mr. Welsted won it with his yearling, Chaplet. To accomplish this she had to beat, amongst others, Mr. Coppinger's Little Wonder; and the judges were a long time with Little Wonder and Soubadar before them, while the latter eventually became the best bull of the yard. On her merits, then, Chaplet separated two very superior animals finishing very close together, although to extend the area of Ireland's adaptability to the breed, she herself could get no higher than third in her own proper class. Captain Ball beat her with the handsome Recherche, and Mr. Crosbie with the useful Golden Vein. The Captain matched the pride of his young things with two other clever heifers, and again carried away with him the Waterford challenge cup. But the entry against him, reduced to a match with Lord Monck, who showed two lots against one, was not very formidable.

With Mr. Douglas out of the way, and we fancy a little out of humour with his Dundalk fortunes, Mr. Christie closed up with Rosette as the next best cow, and a very good one, too. Queen of Beauty is useful to look at, nice to touch, and profitable to keep. At a little more than four years old she has bred two fine healthy calves, and is now in calf again. This is the sort of shorthorn Mr. Christie's brother-farmers should be taught to prize. The best heifer in the next division Sir Edward M'Donnell's The Twin was pretty enough in appearance, but coarse in quality, and with only half a pedigree to run back to. Her second was far better to put your hand over; while Lord Waterford's brace of two-year-olds have not style enough about them to warrant their training on to their present form. An especial favourite of ours as a heifer, the late Mr. Turner's Queen of Trumps, is now the property of the new Lord of Curraghmore; and she, too, has grown into a coarsish, common-looking cow. Her horn has also taken a wrong turn, and we could hardly fancy her the beauty we once remember her. But she has done some service in the herd. If not exactly grand, the show of shorthorns at Cork was, we repeat, a very suggestive one. It goes to assure us that, if our little sister cannot quite run alone, she needs but a hand now and then to help her on, and that she can do something more than say "thank'ee" in returning the compliment.

A very notable instance of this occurred only the other day. Just at the same time when Messrs. Owen and Thunder and Meade were challenging each other, stride for stride, for Mr. Sanday's rams at Holme-Pierrepont, Messrs. Robinson and Howard were on a tour in search of an Irish bull! And the exchange was complete. As the Shorthorn went out the Leicesters came in; and both sides, we trust, are satisfied. So far, however, as Ireland was concerned, this kind of barter was hardly required. The judges deliberately declared at Cork, on Wednesday morning last, that Mr. Thunder and Mr. Meade can breed better Leicester sheep in Ireland than they can hire in England. In a very excellent class, certainly, of shearing rams, they awarded Mr. Thunder the second premium for a sheep of his own breeding; and they very highly commended an English ram, also entered by Mr. Thunder, that took the second prize at Canterbury, and that let at Holme-Pierrepont the week previous for one hundred and eleven guineas. The third prize sheep at Canterbury, let to Mr. Owen at the same time for fifty-three guineas, they could see nothing remarkable in, and so they passed him over. In the all-aged rams they very highly commended a sheep of Mr. Meade's own breeding, but they thought nothing of a ram he was weak enough to hire the other day for 81 guineas, and that turned out to be Mr. Sanday's third prize at both Warwick and Canterbury. They took their "notion" of what a sheep should be in the

shearlings, where they could not get away from a very good-looking ram, especially when out, of Mr. Montisfort Longfield's. They awarded him all sorts of prizes. He was the best of his class; he was the best sheep in the show; and he was the best sheep bred in the county of Cork—Cork again to the fore. He really was a good-looking one, and to back him they put a very middling one of Mr. Thunder's second, with another of Mr. Longfield's very highly commended. Neither Mr. Marris from Lincolnshire, nor Mr. Turner from Devonshire, nor Mr. Owen, nor Mr. Meade, nor Mr. Sanday could make any stand against the now famous Castle-martyr flock. In the next division one of the judges would have put another of Mr. Longfield's first, and they did make him third, while his ewes were at once preferred to a wonderfully good lot George Turner sent as companions for his Devons from Barton. And when the gentle public got so far, it rested for a moment, and asked, "How they had ever dared to do it?" We are very reluctantly compelled to say that we never heard three gentlemen so well abused; and when the President at the dinner referred to Ireland's glorious triumph in this wise, he was met by his own countrymen with something more like a laugh than a cheer. The judges themselves say that they went not so much for wool as for good flesh; while other people say they mistake mere blubber for flesh, and so forth. The unhappy trio were Mr. Barnes, at one period a pupil of Mr. Torr's, but who has spent some years in Australia, and is now again settled in Ireland; Mr. Grey, a son of Mr. Grey of Dilston, also known in Ireland as the agent of Lord Derby; and Mr. Fokes, from near Blandford, who has often officiated as a judge in England, but never before over long-wooled sheep. It needs scarcely to be added that the classes of Leicester sheep were especially good, and that the county of Cork for once scarcely needed Mr. Torr's now annual exordium to "look well to your mutton and wool." It would have been almost better had he addressed himself more directly to his friends in office.

The Cotswolds and Shropshires are more gradually taking root in Ireland, and Dr. Roche has, at last, beaten Mr. Beale Browne. But here, again, the awards were something of an enigma. Last year Captain Carroll purchased Mr. Garne's first and second-prize shearlings at Warwick, and as a matter of course they were first and second again at Dundalk. Now, however, that they are grown into yet grander sheep, they could get nowhere at Cork. Their owner took the first prize with an older sheep, and Mr. Page the second and third with two Lincolns, one of which was very fair and the other very bad. Mr. Hamilton is now doing great things with the Hampshire Downs; but the pure Downs sent by Mr. Marris from England and Mr. Skirving from Scotland do not "tell" here. Mr. Roberts, who has a flock of them in Ireland, was not on this occasion an exhibitor.

Neither the show of pigs nor horses was rated very highly. In a small entry of the former the judges refused to award some of the prizes; but Lord Waterford sent some useful Berkshires, and Mr. Tynte a really admirable sow of the same breed. She is of great length, with famous hair and flesh, and so generally good as to be pronounced by one of the judges "the best pig in all Ireland." Her only striking fault was a very long snout, that gave her a rather hungry-headed look. In the small sorts the Glasnevin commissioners won with a white Windsor pig, which has the honour of having been bred by his Royal Highness the Prince Consort.

The horse show, indifferent as it was in parts, was remarkable for the high place held by the Suffolks. The best cart-horse ever imported into Ireland was

supposed to be a Clydesdale, called Sir William Wallace, which was first at Londonderry, and again as clearly at Dundalk. Here he is beaten by a Suffolk, bred by Mr. Lawes, of Framlingham, but for some time the property of Lord Shannon, who has taken a number of local premiums with him. He is a good topped horse, but, like the Clyde sent against him, with bad action. They were both, though, very good-looking horses, and the brown quite a picture to stand by. But there was another challenge cup—there will be no end to them soon—for the best of all the horses, mares, or fillies for agricultural purposes; and for this the judges pulled out Lord Shannon's Suffolk, and then another Suffolk against him. This was Mr. Christy's three-year-old bred by Lord Stradbroke, and going back on the dam's side to Newcastle Captain. Before the final award was made we were bold enough to pronounce him the best Suffolk ever sent into the sister-kingdom, and the Judges went to confirm our opinion. He has a fine oblique shoulder, plenty of bone *below* the knee, famous action, and every promise of furnishing out into a very fine, handsome horse. It is only right to add that it was a sight of "Chester Emperor" that brought Mr. Christy round to them; and, for exportation, the chesnuts must have finer shoulders and better heads than some of our friends in the Eastern Counties seem to care about. But there is plenty of room for improvement in Ireland; and the cart-mares and young stock were a very ragged lot.

"The Judges beg to observe that the class of horses exhibited do not show those qualities so essential for the production of weight-carrying horses," was the prologue to the award for the thoroughbred stallion. This went, with the Croker Challenge Cup, to Planet, another finely-topped nag, with rare action, but bad Bay-Middleton fore-legs. He was entered in the catalogue as of an "age not exactly known;" which was rather a good joke, when we remember that a look into the Stud Book would tell it as certainly as the almanac does that of the moon, or a young mother when "Baby" was born. But Planet is getting a little too long in the tooth for impertinent inquiries of this kind. Poor Lord George—who looked wofully out of trim to when we last saw him at Waterford—Sir Martin, and Young Colwick, were amongst the other half-dozen. The last-named of these was objected to after Dundalk, as not being thorough-bred, and, as we said at the time, certainly does not look as if it was free from a stain. The judges would not have him now. Four hunting-colts, as so called, gave one a very poor and very inferior notion of what Irishmen can do in this way.

There was a poor show of poultry, and a good one of butter. The cheese was not to be found, and flax and grasses made up a very comprehensive catalogue. This should be completed by an official prize-list, also to be issued by the society. Ours should be correct; but with so many sections, and awards, and cups, and local and general distinctions, it is difficult, even with wind and tide permitting, to steer quite clear.

There is little to add. The dinner of the Society was remarkable for the number of sound sensible speeches, many of which will no doubt read better than they told at the time. Unfortunately, some orators, like Lord Baudon, never know when to stop; and when once an audience loses its patience, as it did with his Lordship, it is rather a difficult thing to settle down again. Nevertheless, the tone of the meeting was more than usually good and encouraging. The county of Cork is itself a fine example of what may be done in the way of advancing agriculture, and never did a locality signalize itself more than Cork on Wednesday and Thursday. And we might add on Friday. Thousands hurried over to Blarney, where not only the two steam ploughs,

but the English wheel plough and some mowers were also at work. The ground was not of the most favourable character, but the effect was still very great. The novelty itself was of course no little attraction; but Messrs. Fowler and Smith have now duly introduced themselves, and steam cultivators may be expected to follow our short-horn cattle, our Leicester sheep, and our Suffolk horses. The great outlay in the first instance will of course make the use of this implement in Ireland—as it is and has been in England—a matter of time. From all, however, that we hear, seldom has there been a greater sensation, and we can only repeat our regret that the trials did not begin earlier in the week. This was the weak place in an otherwise very well managed meeting. It is not our custom to deal in conventional compliment; but in recording the well-merited success of the Cork meeting, we must echo even over the channel the thanks so deservedly due to the two local secretaries, Mr. Meade and Mr. Garde. On their indefatigable exertions and judicious preparations no little depended. The new secretary, Mr. Thornhill, has to warn to his collar; but in such a team, with Captain Croker at his side, and such leaders as we have named, they got him right well off.

PRIZE LIST.

SHORTHORNS.

JUDGES.—R. J. Smith, West Rasen, Lincoln.

W. Torr, Aylesby, Lincoln.

R. Wiley, Winter Hill, Catterick.

Bulls calved on or after 1st January, 1855, and previous to the 1st January, 1858.

First prize of 15 sovs., Wm. Tod, Tranent, East Lothian (Statesman).

Second of 5 sovs., R. Chute, Chute Hall, Tralee (Duke of Leinster).

Bulls calved in the year 1858.

First prize of 15 sovs., Lord Talbot de Malahide, Malahide Castle (Clydesdale).

Second of 5 sovs., W. O. Jackson, Middleton (Narcissus).

Bulls calved on or after the 1st January, 1859.

First prize of 15 sovs., W. Coppinger, Barry's Court, Cork (Soubadar).

Second of 5 sovs., W. Coppinger (Little Wonder).

Commended.—R. Oliver, Rockmill, Mallow (Bottom); and R. Welsted, Castletown-roche (Waterloo Pat).

Cows in Calf or in Milk of any age.

First prize of 10 sovs., R. Eastwood, Burnley, Lancashire (Rosette).

Second of 5 sovs., John Christy, Fort Union, Adare (Queen of Beauty 2nd).

Highly commended.—Marquis of Waterford, Curraghmore (Queen of Trumps).

Commended.—W. Coppinger (Embroidery); T. Ball, Robert's Wall, Malahide (Fidelity); and St. John Jeffereys (Hopeful).

Heifers in Calf or Milk, calved in 1857.

First prize of 10 sovs., Sir Edward McDonnell, Newhazard, Lusk (The Twin).

Second of 5 sovs., Lord Carbery, Castle Freke, Cork (Magnolia).

Heifers in Calf or in Milk, calved in the year 1858.

First prize of 10 sovs., Marquis of Waterford (Antonio).

Second of 5 sovs., Marquis of Waterford (Young Gaudy).

Highly commended.—T. Ball (Woodlass).

Commended.—R. Campion, Old Town (Estella); and R. Welsted (Tattyearan).

Heifers calved on or after 1st January, 1859.

First prize of 15 sovs., Thomas Ball, Malahide (Recherché).

Second of 10 sovs., W. Talbot Crosbie, Ardferit Abbey, Tralee (Golden Vein).

Third of 5 sovs., R. Welsted, Castletownroche (Chaplet). Highly commended.—T. Ball (Nightingale).

Three sovs. for the best short-horn bull, bred in the county of Cork, calved in 1858. William Oliver Jackson, Abanesk House, Middleton (Narcissus).

Three sovs. for the best short-horn bull, bred in the county of Cork, calved on or after 1st January, 1859, William Coppinger, Barryscourt (Little Wonder).

Three sovs. for the best short-horn heifer, bred in the county of Cork, and calved in 1858, Rowland Campion, Oldtown, Shauballymore (Estella).

Three sovs. for the best short-horn heifer, bred in the county of Cork, and calved on or after the 1st January, 1859, R. Welsted, Ballywater (Chaplet).

OTHER BREEDS.

JUDGES.—H. Croker, Dromkeen, Limerick.
W. Fetherston, H. Carrick, Mullingar.
D. Hastings, Orangefield, Belfast.

Hereford Bulls, calved on or after the 1st January, 1855.

No entry.

Polled Angus or Galloway Bull, calved on or after the 1st January, 1855.

No entry.

Devon Bulls calved on or after the 1st January, 1855.

First prize of 10 sovs., Wm. Coppinger (Pomeroy).

Ayrshire Bulls, Calved on or after 1st January, 1855.

First prize of 10 sovs., T. O'Kearney White, Minane Bridge, Cork (Pelham).

Kerry Bulls, calved after 1st January, 1855.

First prize of 5 sovs., the Earl of Charlemont (Young Rory).

Second of 3 sovs., the Commissioners of National Education, Farm Glansnevin (Desmond).

Highly commended.—Richard Mahony, Kenmare (Young Brian).

Commended.—Wm. Stuart Trench, Kenmare (the Rock of Kenmare).

Hereford Cows, in Calf or in Milk, of any age.

No entry.

Hereford Heifers, in Calf or in Milk, calved on or after the 1st January, 1857.

No entry.

Hereford Heifers, calved on or after the 1st January, 1859.

No entry.

Polled Angus or Galloway Cows, in Calf or in Milk, of any age.

No entry.

Polled Angus or Galloway Heifers, in Calf or in Milk, calved on or after 1st January, 1857.

First prize of 4 sovs., Lord Talbot de Malahide (Polled Angus, Ophelia).

Highly commended.—Lord Talbot de Malahide (Grace).

Polled Angus or Galloway Heifer, Calved on or after 1st January, 1859.

No entry.

Devon Cows, in Calf or Milk.

First prize of 4 sovs., George Turner, Barton, Exeter (Piccolomini).

Very highly commended.—The Earl of Charlemont (Beauty).

Devon Heifers, in Calf or in Milk.

Prize of 3 sovs., George Turner (Beeswing).

Highly commended.—The Earl of Charlemont (Young Rose).

Devon Heifers, calved after 1st January, 1859.

Prize of 3 sovs., the Earl of Charlemont (Young Ruby).

Ayrshire Cows, in Calf or in Milk.

Prize of 5 sovs., Richard Harris Purcell, Burnfort, Mal-low.

Highly commended.—Dr. Roche, Fermoy.

Ayrshire Heifers, calved after 1st January, 1857.

Prize of 5 sovs., Wm. Norwood, Dunmanway.

Ayrshire Heifers, calved after 1st January, 1859.

Prize of 4 sovs., the Commissioners of National Education.

Highly commended.—W. Norwood, for two heifers.

Best West Highland Heifer, calved after 1st Jan., 1857.

Prize of 3 sovs., to Lord Charlemont.

Kerry Cows, in Calf or in Milk.

First prize of 5 sovs., Matthew M'Mahon, Churchtown.

Second of 3 sovs., R. Cusack, St. Goulagh's, Dublin.
Commended.—Henry Stokes, Tralee; R. G. Campion, Rathcoormac; and Henry Leahy, Killarney.

Kerry Heifers, in Calf or Milk, calved since 1st January, 1857.

Prize of 3 sovs., Adam Newman Meade, Enniskean.

Highly commended.—Sir E. M'Donnell, for two heifers.

SPECIAL PRIZES

OFFERED BY THE LOCAL COMMITTEE.

Dutch Bulls, calved after 1st January, 1858.

Prize of 5 sovs., to J. Nash, Lake Lodge, Cork.

Highly commended.—J. Nash, for another.

Dutch Cows, in calf or milk.

Prize of 4 sovs., to J. Daly, Ballycannon.

Highly commended.—J. Halloran, Middleton, two cows, and J. Nash.

Dutch Heifers, calved in 1858.

Prize of 3 sovs., to J. Daly.

Highly commended.—J. Nash.

Dutch Heifers, calved after 1st Jan., 1859.

Prize of 3 sovs., to J. Nash.

Dairy Cows not qualified to compete in any other class.

First prize of 3 sovs., to T. Forrest, Clogheen, Blarney (cross bred).

Second of 3 sovs., to Daniel Driscoll, Blarney.

Highly commended.—G. Hewitt, Blarney.

EXTRA PREMIUMS FOR TENANT FARMERS.

Cows in calf or milk.

First prize of 5 sovs., to D. Murphy, Blarney.

Second of 3 sovs., to W. Joyce, Abbey Farm, Waterford (shorthorn).

Heifers, in calf or milk, calved in 1857.

First prize of 4 sovs., to D. Murphy (cross bred).

Second of 3 sovs., to John Byrne, Shanballymore (short-horn).

Heifers calved in 1858.

Prize of 3 sovs., to D. Murphy (cross bred).

Heifers calved in 1859.

Prize of 2 sovs., to D. Murphy (cross bred).

The Purcell Challenge Cup, for the best animal in the cattle classes.—R. Eastwood, for short-horn cow, Rosette.

The Gold Medal to the breeder of the best cow or heifer.—W. Wetherell, Darlington, for Rosette.

The Cork Challenge Cup, for the best bull or heifer bred in the county.—R. Welstead, for short-horn, Chaplet.

The Gold Medal, for the best bull.—W. Coppinger, for short-horn, Sonabdar.

The Gold Medal to the breeder of the best bull.—J. Richardson, Lisburn, for Soubadar.

The Waterford Challenge Cup, for the best lot of three horned animals not exceeding 20 months, and bred by the exhibitor.—T. Ball, for short-horn heifers, Woodlass, Recherché, and Nightingale.

HORSES

FOR AGRICULTURAL PURPOSES.

JUDGES.—C. Garfitt, Foaty, Queenstown.

Silvester Rait, Rathmoyle, Edenderry.

The Hon. R. S. Talbot, Ballinacra, Dalkey.

Stallions foaled on or after the 1st of January, 1853, and previous to the 1st of January, 1858.

First prize of 25 sovs., to the Earl of Shannon, Castle-martyr, Cork (Suffolk).

Second of 15 sovs., to Moore Brothers, Raheen, Dublin (Clydesdale, Sir Wm. Wallace).

Commended.—John Mills, Donobate (Clydesdale).

Stallions foaled on or after 1st of January, 1857.

First prize of 15 sovs., to John Christy, Adare (Suffolk, Champion).

Second of 5 sovs., to N. Barton, Straffan (Clyde cross).

Mares in foal, or with foal at foot, or having reared a foal in 1860.

First prize of 15 sovs., to Alpheus Smith, Ballykistean, Tipperary (English), with foal.

Second of 5 sovs., to the Earl of Shannon (Suffolk), with foal.

Fillies foaled in the year 1857.

First prize of 10 sovs., to J. W. Chapman, Maynooth (Clydesdale, chesnut).

Second of 5 sovs., J. Nash, Lake Lodge.

Fillies foaled on or after the 1st January, 1858.

Prize of 5 sovs., to J. Ellis, Castlemartyr.

The best foreign Ass.

No entry.

The Challenge Cup, value £50, for the best stallion, mare, or filly, for agricultural classes, to John Christy, for Suffolk colt, Champion.

Five sovs. for the best three-year-old colt or filly for farming purposes, bred in the county of Cork, the Earl of Shannon (Clydesdale).

RIDING HORSES.

JUDGES.—Captain Croker, Ballynagorde, Limerick.

W. Quinn, Cologher Castle, Cahir.

The Hon. S. R. Talbot, Killiney, Dublin.

VETERINARY INSPECTOR.—R. W. Olden, Cork.

The Croker Challenge Cup, value £50, with 25 sovs. added, for the best weight-carrying thorough-bred stallion, to G. A. Harris, Kilmallock, co. Limerick (Planet, by Bay Middleton, out of Plenary, sister to Plenipotentiary, by Emilius).

Three-year-old mare or gelding for hunting purposes.

Prize of 5 sovs., to Thomas Garde, Ballinacurra House (colt by Knight of the Whistle).

SHEEP.

LEICESTERS.

JUDGES.—T. Barnes, junr., Moynalty.

H. Fookes, Whit-church, Dorset.

C. G. Grey, Bally-Kisteen, Tipperary.

Shearling Rams.

First prize of 10 sovs., Montisfort Longfield, Castlemartyr.

Second of 5 sovs., George Thunder, Kingston Lodge, Cavan.

Third of 3 sovs., Montisfort Longfield.

Very highly commended.—G. Thunder and Mr. Longfield for two other rams.

Highly commended.—W. R. Meade, Ballymartle, and Mr. Longfield.

Best Rams of any other age.

First prize of 10 sovs., Wm. Owen, Blesinton.

Second of 5 sovs., Thos. Garde, Ballinacurra House, Midleton.

Third of 3 sovs., Montisfort Longfield.

Very highly commended.—W. R. Meade.

Commended.—Mr. Longfield, T. Garde, and George Turner.

Pen of Five Shearling Ewes.

First prize of 10 sovs., Montisfort Longfield.

Second of 5 sovs., George Turner.

Pens of Five Ewes, not exceeding five years old, that have reared lambs up to the 1st June, 1860.

First prize of 10 sovs., Montisfort Longfield.

Second of 5 sovs., representative of the late J. H. S. Barry, Foaty.

Highly commended.—Rd. Welstead.

Commended.—William Owen.

Pens of Five Ewe Lambs.

First prize of 5 sovs., Montisfort Longfield.

Highly commended.—Representatives of the late J. H. Smith Barry.

OTHER LONG WOOLS.

(Not qualified to compete as Leicesters.)

Shearling Rams.

First prize of 10 sovs., N. W. Roche, M.D., Fermoy.

Second, 5 sovs., T. Beale Brown, Andersford, Gloucestershire.

Third, 3 sovs., William H. Carroll, Tullagh House, Nenagh.

Highly commended.—N. W. Roche, M.D.

Rams of any other age.

First prize of 10 sovs., Wm. H. Carroll.

Second of 5 sovs., Francis Page, Eatgate, Lincoln.

Third, 3 sovs., Francis Page.

Commended.—Wm. H. Carroll and Caleb Goug.

Pens of Five Shearling Ewes.

First prize of 10 sovs., T. Beale Brown.

Second of 5 sovs., T. Beale Brown.

Pens of Five Ewes, not exceeding five years old, that have reared lambs up to 1st June, 1860.

First prize of 10 sovs., David Kerr, Clonin Farm, King's County.

Second of 5 sovs., N. W. Roche, M.D., Fermoy.

Pens of Five Ewe Lambs.

First prize of 5 sovs., Martin Mahony and Brothers, Cork. Highly commended.—N. W. Roche, M.D., Fermoy.

SOUTH DOWNS.

Shearling Rams.

First prize of 5 sovs., Thomas Morris, Lincoln.

Second of 3 sovs., R. Scott, Skirling, Drem, N.B.

Rams of any other age.

First prize of 5 sovs., R. Scott, Skirling.

Second of 3 sovs.—No entry.

Pens of Five Shearling Ewes.

First prize of 5 sovs., Thomas Worsfold Mayo, Mallo.

Second of 3 sovs., R. Scott, Skirling.

Pens of Five Ewes, not exceeding five years old, that have reared lambs up to 1st June, 1860.

First prize of 5 sovs., R. Scott, Skirling.

Second of 3 sovs.—No entry.

OTHER SHORT-WOOLED SHEEP.

(Not qualified to compete as Southdowns.)

Shearling Rams.

First prize of 5 sovs., Charles W. Hamilton, Dunboyne.

Second of 3 sovs., Charles W. Hamilton.

Commended.—Peter Broughton, Kells, Meath.

Rams of any other age.

First prize of 5 sovs., Charles W. Hamilton.

Second of 3 sovs., Charles W. Hamilton.

Highly commended.—C. W. Hamilton.

Pens of Five Shearling Ewes.

First prize of 5 sovs., Charles W. Hamilton.

Second of 3 sovs., Thomas Blandford, Ashgrove, Cork.

Pens of Five Ewes, not exceeding five years old, that have reared lambs up to 1st June, 1860.

First prize of 5 sovs., representatives of the late J. H. Smith Barry.

Second of 3 sovs., John Massy Wilson, Roscrea.

The best Shearling Ram, bred in the county of Cork.

First prize of 3 sovs., Montisfort Longfield.

Second of 1 sovs., Montisfort Longfield.

For the best Ram of any age.

First prize of 3 sovs., Thomas Garde, Ballinacurra House.

Second of 1 sovs., Mountisfort Longfield.

For the best pen of Shearling Ewes.

First prize of 2 sovs., Mountisfort Longfield.

SHORT-WOOLED.

For the best Shearling Ram, bred in the county of Cork.

First prize of 3 sovs., Thomas Blandford, Ashgrove.

The best pen of Shearling Ewes, bred in the county of Cork.

First prize of 2 sovs., Thomas Worsfold Mayo, Mallo.

The Gold Medal for the best of all the prize rams, Mountisfort Longfield, for Shearling Leicester.

PIGS.

JUDGES.—Captain Croker, BOLLINAGARDE.

A. Dorker, Rathmoyle, Edenderry.

T. Rutherford, Moreton House, Ardee.

LARGE BREED.

Boars under Eighteen months old.

First prize of 5 sovs., Marquis of Waterford.

Second of 3 sovs., William Joyce, Abbey Farm, Waterford.

Boars over Eighteen months and under Thirty-six months old.

First prize of 4 sovs., Marquis of Waterford.

Second of 2 sovs.—No merit.

The best Boar in the above sections, the Medal, Marquis of Waterford; to the breeder, the Medal, Marquis of Waterford.

Breeding Sows under Eighteen months old.

First prize of 4 sovs., William Joyce, Waterford.

Second of 2 sovs., Thomas Blandford, Ashgrove, York.

Breeding Sows over Eighteen months old.

First prize of 3 sovs., Joseph P. Tynte, Tynte Park, Dunalavan.

Second of 2 sovs., W. Joyce.

SMALL BREED.

Boars under Eighteen months old.

First prize of 5 sovs., Commissioners of National Education, Glasnevin.

Second of 3 sovs.—No merit.

Boars over Eighteen months and under Thirty-six months old.
First prize of 4 sovs., Commissioners of National Education, Dublin.

Second of 2 sovs.—No merit.

For the best Boar in the above sections, the Medal, Commissioners of National Education; and to breeder, the Medal, H.R.H. the Prince Consort.

Breeding Sows under Eighteen months old.

First prize of 4 sovs., Thomas Franks, Mallow.

Second of 2 sovs.—No entry.

Breeding Sow over Eighteen months old.

First prize of 3 sovs., Commissioners of National Education, Dublin.

Second of 2 sovs.—No merit.

The best Boar, bred in the county of Cork.

Prize of 3 sovs.—No entry.

The best Sow, bred in the county of Cork.

No entry.

IMPLEMENTS.

JUDGES.—W. Featherstone.

H. Carrick.

Professor Murphy, Queen's College, Cork.

R. C. Wade, Stonabraney, Meath.

The *Irish Farmers' Gazette* Challenge Cup, value 50 gs. For general collection of implements manufactured by the exhibitor, and suited to the agriculture of Ireland. Award deferred.

DAIRY PRODUCE.

JUDGES.—Garrett Barry, Greenville, Cork.

T. Mc Donall, Carlow.

T. Keating, Meath.

Firkins of butter, not less than 65 lbs. weight, independent of the firkin, suited for the English or London market, and made on the farm of the exhibitor during the season of 1860, £4, Thomas Forrest, Blarney; second best, £3, John M'Auliffe, Carriguavar; third best, £2, Bridget Forrest, Blarney.

To the dairymaid, whose butter wins the first prize and who shall have been at least six months in her employer's service (in addition to the society's certificate), £1; second, 15s.; third, 10s.

Firkins of butter, of not less than 65 lbs. weight, independent of the firkin, suited for the foreign market, and made on the farm of the exhibitor during the season of 1860, £4, William R. Meade, Ballymartle; second best, £3, Thomas Forrest; third best, £2, John M'Auliffe.

To the dairymaid, whose butter wins the first prize and who shall have been at least six months in her employer's service (in addition to the society's certificate), £1; second, 15s.; third, 10s.

Cool of butter, 30 lbs. weight independent of the cool, made on the farm of the exhibitor, during the year 1860, £3, John M'Auliffe; second best, £2, Daniel Driscoll, Blarney; third best, £1, Thomas Forrest.

FLAX.

JUDGES.—De Cooke Kenefick, Cork.

S. N. Penrose, Cork.

W. Shaw, Bandon.

Bundles, not less than 16 lbs weight, of mill-scathed flax, grown on the farm of the exhibitor, being an average sample of the produce of at least half an acre of British growth, and of the crop of the year 1859, first prize, £3, David Patton, Glasslough; second, £2, David Farley, Gleveloughy, Clones.

Bundles, not less than 16 lbs. weight, of hand-scathed flax, grown on the farm of the exhibitor, being an average sample of the produce of at least half an acre of British growth, and of the crop of the year 1859, first prize, £3, David Patton; second, £2, David Farley.

Six hanks of bandspun yarn, £1, no entry.

CEREALS AND GRASS SEEDS.

Four sovs. and medal for the best collection of cereals and

grass seeds, Dickson, Hogg, and Robertson, Mary-street Dublin.

Second of three sovs. and small medal, T. Jones and Sons, Grand Parade, Cork.

Third of two sovs. and bronze medal—no competition.

THE DINNER,

or banquet, took place in the Market Hall on Wednesday evening, when about 400 sat down; Lord CLONBROCK as president of the Society was in the chair, supported by his Excellency the Lord Lieutenant, the Marquis of Waterford, the Earl of Shannon, Earl of Huntingdon, Earl of Belmore, Lord Monck, Lord Caughton, Lord Dunlo, the Earl of Erne, Earl of Cork, Earl of Bandon, Lord Carbery, Lord Doneraile, Lord Talbot de Malahide, Sir R. J. Paul, &c., &c.

After the other customary loyal toasts, his Excellency the LORD LIEUTENANT, in responding to "The toast of his Excellency and prosperity to Ireland," said: "I can assure you all that I look upon it as one of the most pleasant of my functions, when I have the privilege of attending this great annual gathering of the Royal Irish Agricultural Society. For, besides the animation and the gaiety which lie upon the surface, I attach a deep, wide, I may say national importance to these occasions. It seems, from the very nature of things, that agriculture in Ireland is the most important of all subjects connected with her material prosperity. Agriculture employs, as appears from the census of the year 1851, more than 53 per cent. of the whole population, while those occupied in trades and manufactures, some of them appertaining themselves to agriculture, only amount to 24 per cent. It may be mentioned, however, that this proportion is diminished, and that the number represented in 1851 by 53 per cent. stood as high in 1841 as 64 per cent. But I think it cannot be doubted that trade occupations alone are disadvantageous to the full development of the talents and faculties of an advancing people. In sight of this noble harbour and those beautiful waters, I need not remind you that it is not one branch of industry or one kind of commerce which could increase the industry and enterprise of an alert and quick-witted race. Our business, however, tonight is with agriculture. Now, the crops and produce of any country must depend upon her structure, position, and climate; not but that the laws of the market as well as the laws of science will have considerable influence upon the degree in which it may be advantageous to grow one kind of production or another, even sometimes at greater cost, or under comparative difficulties. Now, with reference to the climate of Ireland, some of you may remember a very beautiful passage, in which the late lamented Lord Macaulay speaks of the unrivalled beauties of the scenery in the neighbouring county of Kerry. He says, in his History, "the south-western district of Kerry is now well-known as the most beautiful tract in the British Isles. The beauties of the country are too often hidden in a mist of rain which the west wind brings from the boundless sea, but on a day when the sun shines out in all his glory the landscape has a freshness and warmth of colouring seldom found in our latitude. The myrtle loves the soil, and the arbutus thrives better in it than it would even in Italy." In Ireland, the heat of the land extending to the ocean, through a great portion of the year, draws towards it the western sea breeze, and the atmosphere is thus charged with humidity which breaks upon the surface of the land, which, through more than three-fourths of its extent, consisting mainly of lime-stone, does not rise above 500 feet over the surface of the sea, and being fringed by mountains ready to condense the vapours suspended in the air, necessarily produces a large allowance of rain without a great mixture of extreme heat or cold. Here we find, in the soil and the climate, the condition best suited for pasture; and pasture frequently of too rich a kind to be good for sheep, which—I say it in the face of the show of sheep in the yard—will be found to browse better on such high uplands as Scotland abounds in. Hence it appears that cattle, above all things, seem to be rendered, by the condition of the soil and climate, the most appropriate stock for Ireland, and the laws of the market to which I have before adverted

co-operate in recommending this source of supply. Corn, you all know, can be brought from one country to another, at great distances from each other, with comparatively small difficulty. It is not so with cattle; and hence the great hives of industry in England and Scotland. Shiploads of corn can be drawn from any distance, from the most southern and dry climate, but not so with cattle. They must, therefore, have a constant dependence on Ireland for an abundant supply of meat. Now, a few facts will be found to confirm these general remarks. In the year 1859, I compare Scotland and Ireland, and I find that, whilst the number of cattle in Scotland then was 934,000, in Ireland it was 3,630,000. This shows the immense preponderance of cattle in this country over Scotland. With respect to sheep, as I have said, it is the reverse. Whilst there were in Scotland 5,685,000 sheep, in Ireland there were only 3,452,000. But it appears that, whether for cattle or sheep, nearly half the whole surface of Ireland was devoted to pasture. Now, it is obvious that with these immense quantities of your capital vested in the production of live stock, too much caution and vigilance cannot be taken in providing against the occurrence of occasional bad seasons, such as that, in a great measure, through which we have lately passed, and which, I fear, will be found to have entailed very serious injuries, especially on the small class of farmers. Now, the moral to which I would draw attention is this—that the country ought not to be covered with stock according to the measure of the food which may be produced in one or two favourable seasons. For instance, you ought not to calculate on the abundance of one year for a favourable growth of hay, at the risk of its being succeeded by another year which may prove to be very short in the hay crop, whether from drought or overmuch rain. To show you how difficult it is to calculate upon the same sort of seasons, I may just mention that, in 1859, the falling in May was less than one-third of the average of that month—and June, too, was below the average; whereas in the present year of 1860, the rain falling in May was five times as much as the average, and in June was more than twice as much. These statistics show the necessity of those who give their attention to the production and rearing of stock being sure of being always provided with sufficient supply of corn crops and with due provision for stall-feeding. Arthur Young, a writer who wrote on the agriculture of the United Kingdom in 1776, said he had seen “four men hoeing turnips in a field in Ireland, and that it gave him as much pleasure as if he had seen four admirals.” Now, we are very much in advance of this state of things, but still this very essential growth of turnips and other green crops does not seem to be increasing as much as it ought. In 1859, there were 22,000 fewer acres of turnips, than in 1858; and in 1859, there were 3,000 fewer acres of mangolds than in the preceding year. Vetches, cabbages, and carrots show a proportionate diminution. Now, there was but a scant provision for the very cold and unfavourable winter and spring through which we have just passed, and I think it cannot be too much inculcated upon all who have the interests of Irish agriculture and Irish stock at heart, to pay attention to the cultivation of turnips and green crops, for I fear it will be found, when the annual returns of the Registrar-General will be made, that a serious loss has been sustained in this particular branch of agriculture. The fine old Irish crops of oats, which at one time was considered to be the staple produce of Ireland, still maintains its old prominence of being the largest crop in Ireland, potatoes holding the second place, but it is satisfactory to know that the potato, which used to be grown in much larger proportion in small holdings, is now sown by farmers who can better sustain the loss to which that very tender plant is subjected. With respect, more especially, to the agriculture of the county of Cork, in which we are met together, I am happy to find that there is every reason to congratulate the inhabitants of this old and important county of the general results of their agricultural returns. Within the last twenty years, there has been an increase of 100,000 acres of land producing food crops of one kind or another. The corn crops have diminished since 1847 by 55,000 acres, but the green crops have increased to about 70,000 acres. During the same period there has been a decrease in the number of horses and sheep, and an increase in that of cattle. Twenty

years ago there were only 152,000 head of cattle in the country; now there are 353,000 head. It would be unnatural to speak of agricultural statistics in the County of Cork without saying one word about butter. I find that the number of firkins of butter imported a short time back—as far as 1847—amounted to 253,000; in 1859, to 420,000, or about double, and the value of the butter exported annually amounts to about a million of money. With reference to the agricultural condition of Ireland, I feel I am justified in speaking to you, on the whole, in terms of congratulation and happiness. The number of persons relieved from the poor-rate in Ireland amount to only one per cent. on the whole population. In England it amounts to four and-a-half per cent., and in Scotland to four per cent. The expenditure on the relief of paupers in England is 6s., in Scotland 4s., and in Ireland 1s. 6d. Then with respect to the mud cabins, which were formerly the great barbarisms of the country, and which excited the sneers and condemnation of all travellers, and also the regret of all those public-spirited independent men, who mourned over the state of things which they were unable to relieve. The mud cabins in Ireland, which amounted in 1841 to 461,000, have now diminished to 125,000. The number of emigrants from the country, which had been sensibly diminishing for some years back, has somewhat increased for the present year. And they are a superior class of persons from that which formed the bulk of former emigrations. They now even comprise many young persons of both sexes who have been comparatively well educated, and who hope to find in some less crowded community a better market for their industry, and a more adequate demand for their natural and acquired intelligence. This is hardly a symptom we should be justified in repining at. The success of those who go out will prove a stimulus both to those who are induced to follow them beneath other skies, and also to those who cling to their native soil and to their accustomed homes. Already, the wages of the working man, and I am inclined to look upon this as the most hopeful and the most agreeable sign of the times, have generally and considerably improved, and they frequently now rule, I should say, three times as much as what they were, when many of us were young. Education has been much more widely extended amongst the people, and is improved both in quality and quantity; and we may gather from the official returns, from the addresses and charges of judges, and from the experience which every one of you find at your doors, that with increasing knowledge, we have decreasing crime. I do not, my lords and gentlemen, pretend to say that there are no drawbacks to this improving picture, no scattering clouds amidst this brightening sky; but I do tell all the ill-wishers to the country's welfare and all the disturbers of the country's peace, that we have better hopes and better omens:

“Fond, impious man! Think'st thou yon sanguine cloud,
Rais'd by thy breath, can quench the orb of day?
To-morrow he repairs his golden flood,
And warms the nations with redoubled ray.”

The CHAIRMAN, in reply for his health, said, I deeply feel the kind manner in which His Excellency has been pleased to propose this toast, and the warm reception with which you have equally been pleased to honour it; and believe me, I do not attribute any part of that reception to personal merit on my own part. I gratefully accept it as an indication of your regard to the office which I have the honour temporarily to hold, and your good feelings towards the Society of which I am here as the representative. I have had the honour of being a member of it since its earliest formation, and have for many years watched its progress with feelings of the greatest interest. That progress I find, from returns which I have procured, was in the beginning somewhat chequered, but within the last ten years the progress has been rapid and decided, owing, I will say, in a great measure, to the unwearied efforts of my friend, Captain Croker, who, with so much credit to himself and satisfaction to the whole country, ably sustained the office of our secretary. I find that within the last ten years our numbers have doubled. Now, though this is in a degree satisfactory, I am still bound to say that the numbers of which we at present consist do not bear any adequate proportion, or at least such a proportion as it ought, to the owners and proprietors of land in Ireland, many of whom I should wish to see enrolled among our members. Gentlemen, this society, at its first formation, had three objects proposed for its labours. The first was the annual shows to be held, if

possible, alternately in all the four provinces of the country, at one of which we are assembled here to-day. The second was connection with and assistance to be given to local societies; and the third was the issue of such publications as would prove conducive to the diffusion of agricultural knowledge. With respect to the first of these objects, I shall not take up your time by dwelling at any length upon the value of those annual shows. Irrespective and apart from the knowledge given to, and the bringing together of all classes of society in friendly intercourse—of bringing together people of all conceivable shades of opinion, who here for the moment forget their differences in the pursuit of a common advantage upon which all are bent; and independently of such advantage, I think no one can go through such a scene as I have witnessed this day without feeling the great advantage it presents to the agricultural districts in which it is held. The farmer of the county of Cork has here brought almost to his own door, for inspection, the best specimens of all the most improved breeds of stock, and he has the opportunity of seeing practically tested the best specimens of improved agricultural instruments. He has also an opportunity of meeting and holding personal intercourse with agriculturists from all parts of the kingdom, of the largest experience and highest skill; and I think it is not, therefore, too much to imagine that a man of inquiring mind, who comes to those shows for information, cannot fail of carrying away with him the solution, probably, of some difficulty which has previously perplexed him, and, certainly, many an idea to be worked out and developed by him, conducing to his own benefit, and probably, by his example, to that of his surrounding neighbours. With respect to the show of this day, gentlemen, I think we may consider it as a great success. Murmurs—very slight murmurs, it is true—I have heard, but then we know that the farmer has a prescriptive right to grumble; and in this instance the shorthorn, the great objects of our veneration, have been supposed to be in some degree slighted, not in quality, but in numbers. But, however that may be, there is no doubt that on the article of sheep, this show has been most excellent, and that this country has nobly sustained its pre-eminence, so much so that we find—which is certainly a great triumph—that the prize sheep at Canterbury has been beaten by the home-grown animal. With respect to the implements, all I have got to say is, that I believe this show has been hardly ever equalled, certainly never surpassed, by any of those that have been registered on the annals of this society. I come now to the second object of this society, the connection with and giving assistance to local societies. It is perfectly obvious that those local societies, when well managed, must be of the greatest use in the districts where they may be located, and, as branches from the parent stem, are well calculated for the spread of agricultural knowledge through the more remote parts of the kingdom. With regard to the third object, I have only to express my regret that we have failed in carrying it out; but this failure has not proceeded from want of will on the part of the society, but, I regret to say, from want of funds; and I still look forward to the time when we may become more wealthy, and be enabled to issue such publications as those which reflect so much credit on the sister-societies of England and Scotland. But, within the last two years, a fourth object has been added to those which I have already enumerated. I allude to the encouragement which we have already afforded to the improvement of labourers' dwellings in Ireland. This is a subject of the very utmost importance. I think it is a point on which we are deficient, and one which merits our most serious attention. I trust that an active response will be given by the country to this movement on the part of our society, and more especially at this moment; for it may lessen in some degree that spirit of emigration which seems rapidly reviving. At one time we looked complacently on emigration, when we thought it was an outlet for a redundant population; but better times have now come upon us, and we begin to be alarmed, and justly so, for we cannot but feel that something is wrong somewhere, when, to use a hackneyed, but not less expressive phrase, we see the bone and the sinew, the true capital of the country, when justly employed, flying away from us. Now, I cannot but think that if the alternative of a well-founded and remunerative labour could be tendered to those about to leave, many a strong arm and enterprising spirit—and depend upon it these are the materials that are going from us—I say many of those

might be content to remain and give their labour to their own country instead of carrying it to a foreign land. Without meaning the slightest disparagement to those who had already competed for our prizes, to whom on the contrary I think the greatest credit is due for leading the van of what I hope to see a great national improvement, yet I am bound to state my conviction that our object will not be gained by a few cottages erected here and there of beautiful architectural design and construction, and highly ornamental no doubt, but far too expensive to be adopted as an example. The problem to be solved is how to obtain the largest possible accommodation, with the smallest possible expense; and I think the Committees that have been appointed for adjudicating the prizes have done wisely when they recommended that in future moderation in expense should be a great criterion in the examination of plans—not that I wish to put this great scheme of improvement before you in the light of a great commercial speculation, by which I mean a speculation which will pay a large interest for the money laid out. I do not believe that the rent the labourer could afford to pay will ever amount to a large interest upon the money expended on his cottage, go about it as economically as you please; but I hope we should find no small return in the satisfactory feeling that we have endeavoured to raise the social position of a large number of our people, and also in the hope that that social position being so raised, and habits of self-respect and independence engendered, the labourer would apply himself to the improvement of his skill, in which as a general rule he is now deficient, and would forego his prejudices in favour of his old and cumbersome tools, begin to appreciate the advantages of more improved ones, and thereby give a better return of labour to his employer than he has of late been able to accomplish. In the country in which I reside I firmly believe that half the intrinsic value of a cottage would be made if it could be erected, I will not say to the memory, but to the oblivion of the present terrible long-hauled apade and unwieldy crowbar, which I should like to see buried deep in its foundations. There is also attached to this society a chemical department. I am not going to lead you into any chemical dissertation, but I must remark that when we remember the money wasted in spurious manures, when we remember the money that might have been saved by knowing the proper analysis of the soil we were about to till, I need not go any farther in explaining to you the usefulness of this department; and when I add that it has been confided to the care of Dr. Apjohn, I think that is quite sufficient. I have laid before you the objects of this society, and I ask for it your cordial support. Time was when we looked lightly upon agricultural pursuits: time was when wise and practical men despised such a pursuit; in fact, they considered it rather in the light of an operation calculated to relieve a too full purse of its plethora; they looked upon it as an amusing pastime only fitted for that class which was described by a wit of by-gone days as "having nothing to do, and plenty of money to do it with." But those times are gone by: within the last few years rapid strides have been made in agricultural science; chemistry and manufacturing powers have been brought into action, and the cost of production has been very much diminished. He, therefore, who would not be lost in the agricultural race, must be contented to regard agriculture as an advanced art, and be governed by its laws; and he must learn the use of those many novel designs which mechanical ingenuity has supplied us with. I ask then for support for a society devoted to the diffusion of agricultural science; I ask it because I believe the objects of this society are just, practical, and useful; I ask it because unless some support is given, a society of this kind must be defective; but give it the earnest and cordial support of all classes, and I believe there are materials within it, in the energy and intelligence of its council and officers—materials to enable it to carry out its great mission, and that mission, gentlemen, I believe, if fully carried out, to be most conducive to what we all have most at heart—the welfare and prosperity of our country.

Lord TALBOT DE MALAHIDE responded for the Royal Dublin Society, which, he said, was one with which he was proud to be connected; for of all the societies that had been promoted in Europe, he believed it was the most ancient for the purpose of advancing agriculture, combined with that of the industrial pursuits and fine arts. It might be thought at present that this was too wide and extensive a programme to carry out; but the Royal Dublin Society had done much to carry out all

those objects, and did so still, with the exception, perhaps, of the manufacturers' annual exhibition, which used to be held periodically by the Dublin Society, and was dropped at the period when it began to assume a more general characteristic than it had before, when Cork so nobly took the van in holding out the example of that great national mode of displaying the advance of manufactures. It was no little merit to the Royal Dublin Society to have been connected with a movement which had produced such glorious results; and he might say that in regard to agriculture it was still as active and as useful as it ever had been in the course of its long career. He need only appeal to those people who were in the habit of attending the special shows of that society to confirm his statement that there was no society in this kingdom which was more valued, and which had shown to a greater extent the perfection to which the noble shorthorn breed had arrived. The Royal Society of Scotland, and the Royal Agricultural Society of England, of which he had also the honour of being a humble member, and the Royal Highland Society, were included in the toast. He had great pleasure in adding his testimony to the value of those societies, in bringing into perfection those articles of produce that were worth encouragement, and giving an impulse to the great movement for improving machinery for agricultural purposes. There were other points in which the Royal Agricultural Societies of England and Scotland had earned immortal fame, namely, by the publication of their invaluable journals, containing a mass of agricultural, scientific, chemical and statistical knowledge, which was of the utmost value; and he was obliged with much pain to agree in the statement of the president that the Royal Irish Society had not been able to publish such a journal; but he trusted that that stigma would soon be washed away. It would, he was sure, conduce very much to the general prosperity of the country. He did not at all think there were too many of those agricultural societies, or regret that there were different societies for England, Ireland, and Scotland, as in this rivalry the greatest advantage existed, each being enabled to profit by the examples of the others. By these means many a fine animal had found its way to these shores, after having run the gauntlet in England and Scotland, and given the Society here an opportunity of reviewing their decisions.

The Earl of ERNE proposed "Prosperity to the County of Cork Agricultural Society, and with that the Local Societies throughout Ireland." In doing so he said: I well remember when I came to this county, between eighteen and nineteen years ago, when the first show was held here—it was, besides, the first meeting of the Society—and I can bear witness to the great improvement which has taken place since that time in all kinds of crops, but more especially in green crops. There is an amount of green crops grown now, and there is, moreover, a success in the growing of them, which I can bear witness was not the case some time ago. I have heard that this principle has been adopted extensively in many places, and I must express my wish that the time was arrived when it would be adopted in every union and in every parish in Ireland, because I think it would be well if the principle was brought nearer home, and closer to everybody in this land. Another important advantage resulting from a good local society has always been found to be a good meeting of the Royal Agricultural Society; and for this reason, that by greater exertions and greater means and powers it has always better means of creating a good show, which will always bring the Royal Agricultural Society in greater numbers. I am about, my lords and gentlemen, to make a proposition here to-night, and that is—I think an inspector-general of our local societies would be a very great benefit to the societies in general.

Mr. WM. TORR replied, as usual, for the judges: We have to congratulate you, my lord and gentlemen, upon the very prosperous meeting of your society for this year, for though it was not so perfect in some departments as I have had the pleasure of witnessing it on other occasions, still you have sufficient examples of merit to warrant the adjudication of prizes. Your show has been very successful in the department of agricultural implements. We have really had fine opportunities of witnessing the newest and most successful machines; and the show of sheep was very good, and I hope I never may have less occasion to congratulate you upon your show of sheep. I would not wish to follow too extensively the statistics and suggestions that have

been given to you by his Excellency the Lord Lieutenant. I have no doubt they are most diligently prepared and are most correct; but I demur to any proposed decrease in the breeding of sheep. As regards the humidity of the climate, I must say, such an argument hardly passes in the case of the county of Cork. Cork is of a dry limestone formation in its soil; and in the first county of Ireland are you not to take advantage of that formation? I trust that henceforth you will pay yet more attention to the cultivation and breed of sheep. I heartily recommend this to you. You should remember the old Dutch proverb, "the sheep wears a golden foot," and I think you had better believe the Dutch proverb, and tend your sheep. I think, too, increased green crops in this country would be a step in the right direction. Gentlemen, there is another point. The President referred to the subject of cottages and houses for the poor. I would suggest to you that you would not go too far—that you would build labourers' cottages not too expensive, but comfortable. A comfortable home is the poor man's best resource.

Mr. CROKER proposed the Local Committee, particularizing the names of Mr. St. John Jefferies, and Messrs. Garde and Meade.

His Excellency the LORD LIEUTENANT here rose again, and said: I certainly did not intend one word to drop from me such as would discourage the raising of sheep in Ireland. On the contrary, my wish and desire is to see raised as many sheep as it is at all possible to produce. I only referred to the subject to say that the proportion of cattle in Ireland was much greater than that of sheep.

Capt. BALL, in replying for the "Successful Exhibitors," said he was happy in being able again to claim the handsome piece of plate that stood before his lordship. From the figures laid before the meeting by His Excellency, it appeared that there were in this country 3,600,000 head of cattle. He had to say, on his own part and on that of others, that a great deal of disappointment had been expressed, that at this great annual anniversary of the agriculture of Ireland, a subject that was of the very last importance to the stock owners of the country should have been, in some unaccountable way, passed over and neglected in a way that should not have been done. At a Council meeting held within the last month it had been prominently thrown out that there was stated to be, not only in Ireland, but within a very few miles of the city of Cork, means said to be the most successful in the cure of cattle of any yet brought before the public. The proposition with regard to the Turkish Bath for cattle was, however, put aside by them under a misapprehension of what was the intention of those who made it. A committee was appointed not more than six weeks ago, who came down here on the spot, to investigate the subject, and they reported on the subject. Their recommendation was not that an opportunity should be afforded to the public of bringing diseased cattle into the show-yard for the purpose of trying the Turkish bath, but that the general public who attended the meeting might see in the show-yard the practical working of a simple Turkish bath for cattle. The question had been referred by the Council as one of finance; but at the meeting when it came before them again, he (Captain Ball), who was one of the gentlemen who had reported on the question, was away, and if he was there he would have explained that the Committee had never conceived anything so absurd or monstrous as the introduction into the show-yard of a number of diseased cattle, to have them practised on in the Turkish bath. It was on this ground that the proposition had been negatived by the committee. Where so many thousand cattle were swept off daily by distemper, it was a most important thing that the healing properties of the Turkish bath should be well known.

Mr. JEFFERIES did not think he would be doing his duty if he did not tell the meeting his experience of the Turkish bath for cattle. It was a good thing for the community that some one should sacrifice themselves for the benefit of the rest, and unfortunately in the case of this distemper he had been victimized in putting up a Turkish bath (laughter). A tenant of his had put up a Turkish bath for cattle, and he believed one cow recovered, but certainly two or three died in it, and he himself sent two cows there, both of which died.

While he was absent his clerk took it upon himself, without authority, to put up a Turkish bath, at a cost of £26, and he believed that one had been inspected by Mr. Ball. He was certainly much surprised when he saw a report signed by Mr. Ball, for he had not been aware that any one had been sent to inspect the bath, nor was the steward present, nor any one authorized by him (Mr. Jefferyes) to go there. Dr. Baxter went there with those two gentlemen, and made inquiries from an ignorant man about the details; and they were told this, that, and the other thing. There was one part of the report which he (Mr. Jefferyes) was surprised how those gentlemen were able to swallow—namely, that a cow which was in the bath sick would be well next day and would be turned out (laughter). His experience of the Turkish bath for three or four months was this: he had several cows attacked with distemper during that time. Four or five of those recovered without going near the bath; three or four died in the bath, and he had not a single recovery in the bath; consequently it was impossible to call it a remedy for the lung distemper. Mr. Forrest, a tenant of his, likewise sent two of his cattle into the bath, and both died; they were both young heifers, and the disease was taken at the outset, so that every fair-play was given. He did not, therefore, think that the Turkish bath was at all a remedy for pleuro-pneumonia; it was a perfect sham. If he had all his cows ill with the distemper, and a Turkish bath was within the distance of the post, he would not send one there.

SALE OF STOCK AT THE CORK SHOW.—Several sales took place amongst the shorthorns, Messrs. Gauly, Sons, and Parker having the bulk of the private commissions, for which they are so well fitted from their long connection with shorthorn breeders; whilst Mr. Marsh, of Cork, the respectable nominee of the local committee, conducted the auction.

We have already mentioned some of the principal sales—namely, Lord Talbot de Malahide's Clydesdale to Lord Fitzwilliam, and Mr. Welsted's Waterloo Pat to Mr. Christy. Mr. Welsted also sold Chaplet to the Marquis of Waterford for 105 guineas; and his lordship also purchased Mr. Crosbie's Golden Vein for 120 guineas, the intention being to run Chaplet and Golden Vein, as a pair, against Captain Ball's pair, for the challenge cup at the coming Waterford Show, the Captain having been the winner of the same at the two last shows. We hope his lordship will have them brought out in good style, for he has good stuff to work on, and *rare stuff to meet*; and this he can only do by more skill being displayed in the retention of their quality than was evinced in the case of his pair of two-year-old Cork prize heifers. At the auction, Mr. Anderson's eight-year-old cow Princess, bred by Mr. Welsted, was purchased by Mr. Crosbie for 51 guineas. Mr. Oliver's six-year-old cow Diana, bred by Hon. A. F. Nugent, by Mr. Welsted, for 40 guineas; Mr. Payne's four-year-old bull Professor Anderson, bred by Captain Ball, by Mr. Duke, Cork, for 29 guineas; Mr. Waldo's cow Garland, seven years old, bred by Mr. Welsted, for 49 guineas; a Kerry bull calf, about four months old, bred by Sir Richard Musgrove, for 8 guineas; and Mr. Meade's prize Kerry heifer for 12 guineas, besides a number of animals at various prices. A good many were withdrawn from the auction after being put up for sale, amongst which were Mr. Tod's bulls Tweed and Statesman, Mr. Broderick's Saladin, Mr. Jackson's Narcissus, Mr. Massy's Vulcan, Mr. Campion's Thunderbolt, Lord Waterford's Lord Darnley, Mr. Campion's heifer Estella, and Captain Ball's heifer Florence, &c., &c. The sale was continued on Saturday, contrary to the usual practice; and some sheep and pigs were disposed of on that day, at which time Mr. H. Purdon, Enfield, became the purchaser of one of the prize rams. We believe also that Mr. Crosbie, Ardfer, has become the owner of Rosette.—*Irish Farmers' Gazette*.

NORTHUMBERLAND AGRICULTURAL SOCIETY.

MEETING AT ALNWICK.

The anniversary of this Society, on Thursday, Aug. 9, was beyond all doubt, both in point of attendance and quality of stock, the best that it ever held. In fact, at scarcely any other agricultural meeting do the county gentlemen gather in such array; and a splendid ball which was given by His Grace the Duke of Northumberland, at the Town Hall on the evening before, gave them a still better pretext for closing their ranks. The wet of Wednesday presented but a sorry prospect for the cattle festival, but the sun shone gaily on the show morning, and brought out the holiday folk like bees. The Shorthorn awards were looked forward to by the *cognoscenti* with no little interest, as it was known that Mr. Gunter's victorious Duchess lot were *en route* from Ulverston, and that Mr. Douglas was arming from Athelstaneford with all his cracks, to stand up against them for the honour of the North. Statesman, the winner of the Royal Irish, and Master Annandale, the winner at the Highland Society, met in the aged bull class, and victory declared itself in favour of the white. We have certainly seen him far more blooming, though perhaps he handles all the better for it. He was sold for £37 at the hammer at the Border, Union meeting at Cornhill this spring; and hence his two victories more than cover his purchase money, provided he is qualified to claim them. Master Annandale was rather under the mark for exhibition, and is simply a fair useful bull, but deficient in his ribbing up. Prince Talleyrand, who got the third prize, has a fine flesh, and has been most admirably trained; but his middle is rather slack and narrow, and not likely to improve with age. The decision in the yearling bull class

was not at all liked, and both Reformer and Great Eastern were passed over in favour of Mr. Atkinson's two bulls. Mr. Douglas had three representatives in the cow class—Rose of Athelstane, Lady of Athelstane, and Rose of Sharon; and came first and second with the first two. Rose of Athelstane—who was in a capital state of preservation—won this prize at Cornhill three years ago. In the two-year-old heifer class the spectators were gratified by seeing Duchess 77th and Maid of Athelstane out side by side for a considerable time; and then the judges brought out Clarionet and the white Duchess twin, as if to amuse themselves by comparing notes with their learned brothers at Dumfries. Eventually the award was given in favour of Duchess 77th, and as it is not etiquette to give commendations here, Wood Rose (who has suffered not a little from her travels), Clarionet, and the twins, for the first time in their public career, were left unnoticed. In the yearling heifer class, Mr. Douglas showed five; and, as at Dumfries, Queen of Athelstane (own sister to Maid of Athelstane) was first, and Rose of Cashmere, from Rose of Sharon, second.

The Leicesters were a remarkably good lot; and Mr. Borton supported his Pontefract *prestige* with his aged sheep, while Mr. Chrisp was equally successful with his shearlings. There were also some very useful pens of ewes and gimmers of this breed; and Messrs. Elliot and Turnbull (who had to bow to Mr. Bridon, of Woodlaw, at Dumfries) had it all their own way here, with some very hardy, pure-bred Cheviots. The pigs were excellent, and created almost more interest than we ever remember; and the show of horses was also large,

and very creditable to the district, especially in the half-bred hunting colts and fillies. A very fine grey horse carried off the head Beaumont prize for agricultural sires; and in the Clydesdale mare class, Mr. Douglas's Royal English Victrix of 1855, and the winner at the Highland Society this year, had to strike her colours to a very fine mare of Mr. Lambert's, of Framlington, which was, however, much fuller of flesh than her Scotch rival, and had no foal to nurse.

There were 192 implement entries, principally from Northumbrian and Yorkshire makers, and forty-eight of them were contributed by the North of England Implement Company, of Newgate-street, Newcastle. Upwards of 500 visitors dined together in the evening, under the presidency of his grace the Duke of Northumberland, whose speeches were as pithy and felicitous as ever. Subjoined is a list of the awards.

LIST OF PRIZES.

JUDGES.

SHORT-HORNED CATTLE.—John Thompson, Aston, Coldstream; Mr. Andrew Mitchell, Alloa, Stirling; Mr. Thomas Hunt Thornington, Wooler.

LEICESTER SHEEP.—Mr. W. Smith, East Learmouth, Coldstream; Mr. Thos. Brown, Bamburgh, Belford; Mr. W. Purvis, Linton, Burnfoot, Kelso.

CHEVIOT SHEEP.—Mr. W. Aitchison, Linhope, Hawick; Mr. H. Hall Scott, Alham, Whittingham; Mr. J. Jardine, Arkleton Ewes, Carlisle.

HORSES FOR AGRICULTURAL PURPOSES.—Mr. Jas. Rutherford, Lambton, Fence Houses; Mr. W. Jobson, Buteland, Hexham; Mr. T. Penny, Bards Hill, Birgham.

HORSES FOR FIELD AND COACHING PURPOSES.—Mr. J. C. Langlands, Bewick, Alnwick; Mr. A. Turnbull, Dyket Head, Whitsome; Mr. J. Fawcett, Scaleby Castle, Penrith.

SWINE AND IMPLEMENTS.—Mr. R. W. Fawdon, Tughall, Alnwick; Mr. Thomas Rodger, Embleton, Chathill; Mr. Ralph Morrison, New Bewick, Alnwick.

SHORT-HORN CATTLE.

Bulls, not under two years old nor over seven years old, best £20, Mr. W. Todd, Elphinstone Tower, Tranent, Haddington, "Statesman." Second £10, Mr. Wm. Lambert, Elrington Hall, Haydon Bridge, "Master Annandale." Third £5, Mr. Henry Ambler, Watkinson Hall Farm, Halifax, "Prince Talleyrand."

Bulls, above one and under two years old, best £12, and second £8, Mr. John Atkinson, Bywell Hall Farm, Stocksfield. Third £5, Mr. F. H. Fawkes, Farnley Hall, Otley, "Reformer."

Cows fit for breeding, to have had a calf within the year, or to be in calf or milk at the time of the show, best £10, and second £5, Mr. James Douglas, Athelstaneford, Drem, Haddington, "Rose of Athelstane," and "Lady of Athelstane."

Heifers, above two and under three years old, best £5, Captain Gunter, the Grange, Weirby, Yorkshire, "Duchess 77th." Second £3, Mr. James Douglas, Athelstaneford, Drem, Haddington, "Maid of Athelstane."

Heifers, above one and under two years old, best £5, and second £3, Mr. James Douglas, Athelstaneford, Drem, Haddington, "Queen of Athelstane," and Rose of Cashmere."

LEICESTER SHEEP.

Rams of any age, best £8, and second £4, Mr. John Barton, Barton-house, Malton.

Shearing Rams, best £8, and second £4, Mr. Thomas Crisp, Hawkhill, Alnwick. Commended, Mr. W. Dinning, Nilstone Ridge, Haydon Bridge.

Pen of five Ewes, to have reared Lambs this season, best £4, Mr. Wm. Lovel, Nafferton Grange, Driffield; second £2, Mr. W. Dinning, Nilstone Ridge, Haydon Bridge.

Pen of five Gimmers, best £4, Rev. R. W. Bosanquet, Rock, Alnwick; second £2, Mr. Thomas Cockburn, Sisterpath, Dunse.

CHEVIOT SHEEP.

Rams of any age, best £8, and second £4, Messrs. Elliot and Turnbull, Deadwater, Bellingham.

Pen of two two-year-old Rams, best £4, and second £2, Messrs. Elliot and Turnbull.

Pen of two Shearing Rams, best £4, and second £2, Messrs. Elliot and Turnbull.

Pen of five Ewes, to have reared Lambs this season, best £4, and second £2, Messrs. Elliot and Turnbull.

Pen of five Gimmers, best £4, Mr. Robert Shortreed, Attonburn, Kelso; second £2, Messrs. Elliot and Turnbull.

HORSES.

Brood Mares for Agricultural Purposes, to have a Foal at her foot, or to be in foal at the time of the show, best £10, Mr. Joseph Lambert, Hall Hill, Framlington; second £5, Mr. James Douglas, Athelstaneford, Drem, Haddington.

Three-year-old Colts or Fillies for Agricultural Purposes, best £6, Mr. John Tate, Bilton, Alnwick; second £4, Messrs. John and Edward Lee, Stocksfield Hall, Newcastle-on-Tyne.

Two-year-old Colts or Fillies for Agricultural Purposes, best £5, Mr. William Dickson, Lumley, Fence Houses; second, £3, Mr. Isaac Fawkes, Outer-town, Annan, Dumfriesshire.

One-year-old Colts or Fillies for agricultural purposes, best £5, Mr. Isaac Fawkes; second, £3, Mr. John Henderson, Horsley, South Shields.

Brood Mares for the field, to have a foal at her foot, or to be in foal at the time of the show, best, £10, Mr. Robert Smith Davidson, Newburn, Newcastle-on-Tyne; second, £5, Mr. Robert Dand, jun., Field House, Alnwick.

Three-year-old Colts or Fillies for the field, best, £6, Mr. Jas. Elliott, Akeld, Wooler; second, £4, Mr. W. Forster, Burradon, Rothbury.

Two-year-old Colts or Fillies for the field, best, £5, Rev. Charles Thorp, Ellingham, Chathill; second, £3, Mr. Joseph Atkinson, Brandon, Alnwick.

One-year-old Colts or Fillies for the field, best, £5, Rev. Charles Thorp, Ellingham, Chathill; second, £3, Mr. Robert Dand, jun., Field House, Alnwick.

Horse or Mare, four year old and upwards, £5, to which was added a sweepstake of 10s., Mr. Thomas Crisp, Hawkhill, Alnwick.

Brood Mares for Coaching Purposes, to have a foal at her foot, or to be in foal at the time of the show, best, £6, Mr. Joseph Snowball, Netherwitton, Morpeth; second, £4, Mr. John Charles Dennis, Rosebrough, Chathill.

Premiums given by Wentworth Blackett Beaumont, Esq., M.P., for Stallions for Agricultural Purposes, best, £10, Mr. R. Gibson, South Bensell, Newcastle-on-Tyne, "Young Blyth"; second, £5, Messrs. North, Charlton, Alnwick, "Wander."

SWINE.

Boars of the Large Breed, best, £4, Mr. John Dyaon, Adelphi Hotel, Dock-street, Leeds; second £2, Mr. John Harrison, jun., Heaton Norris, Stockport.

Boars of the Small Breed, best, £4, Mr. Henry Endeacott, Hunslet Lane, Leeds; second, £2, Mr. John Harrison, jun., Heaton Norris, Stockport.

Sows of the Large Breed, best, £4, Mr. Michael Gavina, Woodhouse Carr, Leeds; second, £2, Miss Rebecca Bell, Woodhouselees, Canonbie.

Sows of the Small Breed, best, £4, Mr. George Mangles, Giveadate, Ripon; second, £2, Mr. Henry Endeacott, Hunslet-lane, Leeds.

Pen of five Pigs of the Short-eared Breed, under twelve weeks old, best, £5, Mr. Henry Endeacott, Hunslet-lane, Leeds.

IMPLEMENTS.

North of England Implement Company, St. Martin's-court, Newgate-street, Newcastle, £3, for a number of implements.

Mr. Matthew Gibson, St. Andrew's Works, Newcastle, £1, a corn drill, a haymaker, and a reaping machine.

Mr. John Richardson, Brunton-place, Carlisle, £1, corn dressing machine.

Mr. James Scott, mill and engine wright, Tweedmouth, £1, a winnowing machine, a corn drill, a stubble rake, a single coup cart, and a 2-horse grubbing harrow.

Mr. Robt. Brown, joiner, Bedlington, 10s., a coup cart, Messrs. E. Scott and Sons, Felton, £1, a turnip grubber, a

grubbing harrow, a horse rake for whichen hay or corn, with improved patent regulator, an improved mowing and reaping machine, and a corn dressing machine.

The Trustees of W. Crosskill, Beverley Iron Works, Beverley, £3, a Newcastle prize 1-horse cart and harvest shelving, with double draw tipper and spring tail board, 3½-inch tire, to carry 20 cwt.; and other articles.

Messrs. Maule and Sons, 10s., a stand of various carriages and harness.

Mr. James Wood, Eglington, Alnwick, £1, a hay and corn rake, a pair of grass seed harrows, a grubbing harrow, a swing

plough, and a ribbing plough with two mouldboards and cleaning coulters.

Mr. John Turner, Alnwick, £2, a reaping machine, two ploughs, set of iron harrows, and two turnip cutters.

Mr. J. Gregory, agricultural implement maker, Westoe, South Shields, £2, Cuthbert's patent double and single horse reaping machine, and other articles.

Mr. W. Trotter, South Acomb, Newcastle, £1, a patent flexible combined reaping and mowing machine.

Messrs. Wilkin and Dickman, £3, for a quantity of agricultural implements.

CLEVELAND AGRICULTURAL SOCIETY.

MEETING AT MIDDLESBRO'-ON-TEES.

To enlarge the area of show-yard competition seems to be the special aim of this spirited society. Last year it revived the hound shows, which had long since sunk into oblivion, and appropriately placed its first wreath on the brow of the "Premier Huntsman of England." The experiment was so successful that the committee decided on having three classes in the foxhound department; and by way of adding further *éclat* to their first day, instituted a £100 and a £20 prize for the stallion "best calculated to improve and perpetuate the breed of the sound and stout thorough-bred horse, not only for racing but also for general stud purposes." At one time it was thought that the twenty horses mentioned in the conditions would not be forthcoming; but the entry closed at last with twenty-one. And when the word was passed from town to hamlet, throughout the whole breadth of Yorkshire, that "Volty" and Fandango were in, the prize assumed the proportions of "a great fact" at last.

The weather was rather unpromising on the morning of the Thursday; and such had been the heavy wet of the previous day and night, that hay-making was quite suspended. Hence the attendance was anything but large; and the state of the show-meadow, which was in some places little better than a morass, sadly interfered with the horses' action. The arrangements in the yard were remarkably good. The hounds were located under a large tent, from which two union-jacks waved; and the thorough-breds were stabled in a long row of extempore sheds, closed in with a canvas passage, along which the judges were conducted for a preliminary survey. The three judges were chosen with great care and tact. In the absence of Mr. George Payne, the turf interest was represented by Mr. James Wetherby, the Secretary to the Jockey Club; the hunter breeders, by Mr. Hobson, of Kettleby, the breeder of North Lincoln; and the trainers by Mr. Thomas Dawson, of Middleham. Ethelbert, Cavendish, and Wild Huntsman did not come. At twelve o'clock the first of the eighteen candidates was called into the ring, in the shape of Hunting Horn, the winner of the royal prize at Warwick last year. Motley, Tirailleur, Lord Fauconberg, Voltigeur, Fandango, Backbiter, The Hadji, Claret, Windhound, De Clare, Farnham, Dr. Sangrado, Saunterer, Neville, The Cure, Hospitality, and General Williams followed. After looking them through, in rather more than two hours, the judges retired to lunch; and then the office was given that Lord Fauconberg, Voltigeur, Fandango, De Clare, Saunterer, and The Cure "would be wanted again;" and they were summoned into the ring together. De Clare's friends had become very confident; and the very long second inspection he received raised their hopes not a little. However, matters took the opposite turn, and he and Saunterer received their *congé*. The inspection was just reaching its most interesting point, when a sudden hurricane of rain sent horses,

judges, and spectators flying beneath canvas for shelter; and gossip was left to do the rest, till "the momentous question" was set at rest at dinner. The general impression prevailed that Voltigeur (1) and Lord Fauconberg (2) would be the fiat, but after dinner the secret was announced that The Cure had come up next to the great Richmond horse, and that Fandango and Lord Fauconberg were commended. We believe that the decision was quite unanimous, and although The Cure and Lord Fauconberg had each strong parties, it seemed to be the one most acceptable to the public.

The hound decisions were very quickly got through by Messrs. Hodgson, Milbanke, Williamson, and Steere, all ex-masters; but they lost their interest in a great measure, owing to the absence of the Duke of Beaufort's lot. Tom Sebright was not in such force as last year, and a second to Ben Morgan, Lord Middleton's huntsman, in the puppy class, was all he could achieve. Ben was beaten in his turn by Mr. Hill's couple, in the three-season-and-upwards class, and again by the Durham County for the best stallion foxhound. The grey and white Splendour, of Foljambe and Ainsty blood, was the winner in the latter class; but the decision was not generally liked, and public opinion ran in favour of Middleton Corporal, who was substituted by "Ben" for his favourite Chanticleer. Much credit is due to the Society for having taken the initiative, but the exhibition bore no comparison with that at Pontefract, and the only pull in its favour was that the huntsmen all appeared in scarlet.

The shoeing match was in its way a hit, and eighteen sons of Mulciber entered their names in the lists. Unfortunately they got it into their heads that pace was the great requisite, and hence those who felt sure of winning because they had made and fixed on a shoe in something like a quarter of an hour were rather astonished to find that the winner had taken rather more than double than time. The crowd also caught "the short time" notion, and vigorously clapped the candidates which passed through the ordeal most rapidly. A silver medal and £3 was the prize for the first, and £2 for the second, and never did men wear their tickets more proudly than the winners. Still, the work, on the whole, was far from good.

Thursday was a most cheerless day, and from the time that the animals entered the yard, until the lunch was over, and the company adjourned to see the leaping, it rained unceasingly. The attendance of Shorthorns was stronger in quality than in quantity. Mr. Richard Booth sent his Queen Mab and won the head prize, for cows, with Lady Pigot's Duchess of Glos'ter for her second. The latter seems to improve with travel, and at her six shows this year, she has been four times first, once second, and once third. She returned home from

Canterbury to calve, but only lay-in five days, and then started on her tours once more. Lord Feversham's neat little cow Symphony was commended, and his Lordship won the head bull prize with his Skyrrocket. He is a particularly fine-quartered bull, though a little deficient in the back, and barring the mane, he not a little resembles in his forehead his sire Fifth Duke of Oxford. Earl Zetland was second with his white Savilla by Lord Scarborough', a very promising young bull with long quarters, and a very nice touch, but rather strong shoulder points; and Mr. Joseph Dent was commended with his Sir Colin, a thrifty sort of bull on a short leg, but with very little hair. Queen of the Vale had Stanley Rose (2) and Empress of Hindostan (commended) in her very select class; and Soldier's Nurse carried on the Warlaby charter in the yearling heifers. Mr. Jeffrey Bulmer was again second to her with his Princess Royal 2nd, who wants only a little time to ripen into a very nice heifer. The other stock do not call for much comment. In the Leicester shearling ram class, Mr. Wiley of Brandsby was first, and Mr. Simpson of Spofforth second, against a good field, and the former kept up his ancient renown, with a pen of five shearling gimmers. The pig classes were strong, Mr. Wainman taking first prize with his boars of the great and small breed, and Mr. George Mangles with his small sow.

The show of Clevelands, and especially of brood mares, was most excellent. Trimmer, the winner in the latter class, is the property of the Guisboro' Alum Company, and has won eleven prizes. The colour of her legs, and her style and quality altogether, were hardly so striking as that of the second mare (Wonderful Lass), who is considerably younger, and has taken, we believe, upwards of twenty first prizes. The best three-year-old coaching-gelding prize fell to a very good brown by Pato, and the grey draught brood mare of Mr. Turner, of Thornton le Beans, not only won the first prize herself, but presented her son at the Cleveland Court of Agriculture as the best draught foal. The display of hunting foals was remarkably interesting; Fandango winning second honours with his stock, and Bondholder

the first; while in the three-year-old, two-year-old, and yearling hunter gelding classes, Barnton, Wingenund, and Motley, all came to the fore. In fact, we scarcely ever remember seeing so many good horses of every class in one field, and out of the 288 entries very few were absent. For the best thoroughbred stallion of the district Dr. Sangrado, Motley, Farnham, and one or two more of less pretension were again marched into the ring with another set of judges to re-try their claims. The case really seemed to settle itself and the handsome Motley, a son of the famous old Touchstone, took the white ribbands out with him. The implements were numerous and good, but the "Bradford Company's washing machine," and the "Universal Company's washing machine" were, as at Pontefract, the pets of the multitude.

The meeting was wound up by the jumping trials of some very capital hunters, over stiff timber and fences; and so thorough were the secretary's arrangements, that a temporary grand stand was erected for spectators. In fact, it was the aim, as much as possible, to combine a show and "a spectacle;" and but for the sad weather, he would have been most completely successful. "The jumping horses" were divided into two classes—four-year-old geldings in one and fillies of the same age in the other—and Mr. Parrington took both the premiums. King Charming, who was first at Redcar last year, was declared to be the best horse, and a very clever one he is. He was sold on the ground for £230. The mare was perhaps more clearly the best of her lot, as the King was run home very closely by a Dagobert horse, whose rider very deservedly received the whip as the best horseman. Mr. Parrington himself, did not this year show his own nags, but satisfied with his previous success entrusted their handling to a friend. Other agricultural societies will, no doubt, follow suit; but we trust it will never be forgotten that the men of Cleveland took the initiative, and that it may be the pride of many an owner, to see his pet blood horse ranked in that Hundred Plate List, which has been so gallantly headed by Lord Zetland and Voltigeur.

FRENCH AGRICULTURE.

THE POLICY OF NAPOLEON III.

Napoleon III., writing in 1839 from Carlton-house Terrace, expresses himself in the Preface to the celebrated "Idées Napoléoniennes" in the following manner:—

"If the destiny which my birth promised me had not been changed by circumstances, as nephew of the Emperor I should have been one of the defenders of his throne—one of the propagators of his ideas. The glory would have been mine to form one of the pillars of his edifice, or to die in one of the squares of his Guard, fighting for France. The Emperor is no more, but his spirit is not dead."

The genius of Napoleon I. was apparent on the quick analysis he made, on accession to power, between the relation of the past and the present—the present and the future.

The nephew says that his illustrious uncle had three questions to solve:

"1st. What are the ideas that have passed away never to return?"

"2nd. What are those likely eventually to triumph?"

"3rd. What ideas are those which admit of an imme-

diately application, and which will accelerate the reign of those that will ultimately prevail?"

That uncle, casting his keen glance around, sought in the past a reason for the then state of misery in France—the rapid decrease of wealth and population. Struck with the comparison of the soil and climate, the extent and population of France with that of England—a comparison all in favour of his own country—he may naturally be supposed to have exclaimed, What means starvation here, and abundance there? The problem he found the more interesting, too, from the fact that two hundred years ago France was farther advanced in agriculture than England; so that for the whole of that period during which the population of England was being decimated by intestine war, and insecurity opened its incendiary fire upon the ranks of progress and laid waste three-fourths of the land, France supplied England with corn.

But the pages of the "Théâtre d'Agriculture," written by Oliver de Serres, a Protestant nobleman, in 1600, by the beneficent light of which we read of a people "dwelling safely under their own vine and fig-tree,

cultivating their land, and finding shelter beneath the justice and peace" that characterized the luminous reign of Henry IV., were closed as with the hand of blood, and sealed with the ominous seal of blood, when the assassin's steel sought and found the heart of that great monarch, and plunged France into chaos. The good systems of culture instituted by Serres, and patronized by the king, were swept away; and the resources they had been the means of creating and husbanding were exhausted by the follies of Louis XIV. Then came war with all its terrors. The war of succession—the defeats of Blenheim, Ramillies, &c.; the seven years' war—the loss of fleets and colonies—all produced their cruel effects; but such an eye as Napoleon's could not fail to discern a much more influential cause of decay in the severing of those bonds which had long bound together the nobility with the rural population.

As early as the beginning of the seventeenth century Henry IV. complained that the nobles were quitting the rural districts. In the eighteenth century there did not remain in the rural districts any of the gentry except those whose means compelled them to remain there, who, being exempt from the heavy pressure of taxation, shared neither the grievances nor the hardships to which the miserable peasantry were exposed. The kings of France lost no opportunity of separating the nobility from the people. They were afraid of them, and, wishing to attract them to court, sought to effect their purpose by restricting their powers in their several districts; so that, when they were completely dispossessed of their political rights under Louis XIV., when freedom had disappeared—when, in fact, they had been reduced to ciphers, where they had formerly exercised the power of lordship in the most plenary fashion—this emigration of the nobles increased. Rural life was rendered distasteful to them.

Richelieu, the crafty minister of Louis XIV., significantly says to one of the intendants—a class of men who were employed by the Government to destroy the influence of the nobles in the rural districts, and gradually to succeed to their functions—"Do the gentry of your province like to stay at home or to go abroad?" The intendant laments that the gentry of his province "like to remain with their peasants instead of fulfilling their duties about the king." This was replied from the province of Anjou, afterwards La Vendée; and these country gentlemen who refused, as the intendant stated, to fulfil their duties about the king, were the only country gentlemen who defended the monarchy of France, and died fighting for the crown. This distinction they owed to the fact that they retained their hold over the peasantry, the peasantry with whom they were blamed for wishing to live.

The middle classes, yielding to the same influence, fled to the towns. So notable was this fact, that all contemporary writers upon the state of society previous to the French Revolution show that a second generation of rich peasants was a thing almost unknown. No sooner did a farmer make a little money than he took his son from the plough, sent him to the town, and bought him an appointment. Since the cause has vanished, we are told that the effect continues; for even to this day may be discovered a very evident aversion, in the French husbandman of our own times, for the calling that has enriched him.

The noxious spider of centralization had woven the thread of its web over all France, and lay gorging at Paris the produce it drew from N. and S., and E. and W., consuming all, and returning none.

The peasant was then isolated; tenfold more lonely and more desperate than in the fourteenth century. He was then under the bonds of feudalism; but he had

the rough sympathy and protection of his oppressors, whereas in the eighteenth century he found himself equally oppressed, and totally bereft of sympathy. The notable saying of Montesquieu, "It is not fertility, but liberty, which cultivates a country," received a remarkable illustration then—an illustration which is the more pointed by the fact that France was no longer exporting to England; but England, benefiting by a representative Government, and the agricultural prosperity which increased under it, had become the garden of Europe, and, besides feeding her own vastly-increased population, could supply France with cereals to the value of £40,000,000.

An English poet, in 1750, contrasting the blessings of England with the oppression under which Europe was languishing, says—"Liberty reigns here in the humblest cottage, and brings with it plenty." Addressing England, he exclaims, "Thy fields abound in riches, the possession of which is secure to the contented labourer!"

The Marquis d'Argenson wrote thus in 1739, five years before his appointment as Minister of Foreign Affairs:—"The real evil, that which undermines the kingdom, and cannot fail to bring ruin upon it, is that at Versailles—they shut their eyes too much to the distressing state of things in the provinces. In my own day I have observed a gradual decrease of wealth and population in France. We have the present certainty that misery has become general to an unheard-of degree. While I write, in the midst of profound peace, with indications, if not of an abundant, at least of an average harvest, men are dying around us, like flies, of want, eating grass. The Duke of Orleans lately laid before the Council a piece of bread, which we got for him, made of *ferns*; in placing it upon the king's table, he said—"Sire, here is what your subjects live upon!"

Under this worst form of *absenteeism* the rents of the land diminished, and the extravagance and recklessness of the court increased. To provide the means for this lavish expenditure the peasantry was coerced. The *taille*—a most oppressive tax, the primary object of which was to purchase recruits, so as to dispense the nobles and their vassals from military service—fell upon and obliged the French peasantry to become ostensible paupers, for the sake of evading its crushing weight. When Richelieu's maxim, that "want was the only security against idleness and rebellion," had become law, and the people had, by the addition to their other wrongs, been compelled to mendicity by forced labour—labour in lieu of taxes—there was a great calm. This calm deluded the rich, who, having nothing now in common with the poor—for now they were beyond the hearing of their sorrows—commenced to compliment the great financier of the day, and to discourse on the virtues of the common people, till themselves and their foolish hopes were shocked and shivered by the contrast of '93.

Napoleon I., then, analyzing the sources of this terrific ruin, commences synthetically the work of reclassification. "Agriculture," says he, "is the soul and basis of the empire;" "Industry is the comfort, the happiness of the population;" "Foreign commerce, the superabundance, the good employment of the other two." "This latter is made for the two first; not they for it."

To this scheme for political new birth, he adds the climax—"And the foundation of this structure must be laid in the cement of Liberty!"—in the translation of which sentiment, however, we have regarded more the spirit than the letter.

Now, the extent to which Napoleon I. was able to execute his own design, it is not within our purpose to state. He is no more. "But," says the Emperor

Napoleon III., "his spirit is not dead. It lives with me; I am his political executor, and bend my best energies to the execution of his vast designs."

We have a great political spectacle to be wrought out, therefore, before our own eyes—let us watch it.

France is now, so far as agriculture is concerned, about in the same position as we were under the Stuarts.

We know our own strength, and where it comes from. But the same means that conduced to our wealth, will they prove effectual for France—that is the question? Which will redound most to her profit, to produce soldiers or mutton? to increase her territories, or to cultivate them? Such considerations may well have their weight with the British farmer. F. R. S.

ON THE INFLUENCE OF CLEARINGS IN THE DIMINUTION OF RIVERS AND STREAMS.

[TRANSLATED FROM THE "JOURNAL D'AGRICULTURE PRACTIQUE."]

(Continued.)

In leaving Ibarra, on our return to Quito, we cross a charming valley in which we meet with the Lake of San Pablo. The Indians preserve its ancient name of Chilcapan. I found that it is elevated 2,763 metres above the ocean. The temperature corresponding with this is not favourable to the cultivation of wheat or maize; but we saw numerous fields of barley, oats, and potatoes. The level country consists of fine pasturages; the hills are covered with sheep, which are reared for the exportation of the wool used by the manufacturers. The villages in the vicinity of the lake were in existence before the conquest, and the mass of the population is still purely Indian, preserving its customs and idioms. Everything, in short, appears in the same state in which they existed under the empire of the Incas; the only essential difference it is possible to discover is, the substitution of the pasturage of sheep for that of the llamas. However, these last animals are still common enough; we frequently met on the roads droves of llamas, conducted by an Indian who directed them, laden with merchandise, to the neighbouring towns.

It is a fact, admitted by everybody, that the plateau of San Pablo has never been covered with wood. Under the Incas it was still a pastoral country. Sheep farms established more than a century back on the borders of the lake have not seen the shores extended; and the road which was taken by Huayna-Capai, when he set out from Quito to make the conquest of Otavahu, still determines the limits of the waters.

The cordillera which separates the Valley of San Pablo from the coast of the South Sea is covered on the eastern slope with impenetrable forests. I notice this circumstance because I am convinced that an extensive clearing of timber taking place below an alpine lake, though at a considerable distance, would still influence the level of the water.

Without going far from the locality which I have now made known, I might speak of the singular Lake of Cuicocha, which occupies a trachytic basin, in which two isles, examined with much care by Colonel Hall, attest the stability and constancy of its level. The study of the Lake of *Yaguar Cocha*, or the Lake of Blood, so called since Huayna Capai reddened its waters with the blood of 30,000 Indian canares by cutting their throats, would lead us to a similar result. These two lakes have no outlet, but I have chosen in preference that of Chilcapan, precisely because it has a natural opening to the north, by which flows the *Rio Blanco*. I wished to show that thus, as I have said before, the observations made upon open lakes are not to be rejected. The effect that tends to produce a water-course, issuing from a lake by a gully, will also dig it deeper, and consequently lower the waters. I have shown that, in spite of this circumstance, the waters of Chilcapan have not been perceptibly lowered. In examining attentively the trappan rock whence the *Rio Blanco* takes its rise, I saw nothing that indicated an erosive action in the water-course. In the numerous cascades which I have also been enabled to examine, I think I have noticed that a mass of water might in falling cut deeply the hardest stones; but I have not found that water had a very decided action when it flows over a rock, unless, as is generally the case with torrents, the stream drags with it boulders, the friction of which wears the surface over which they slide.

I shall finish what I have to say upon the lakes of South America by speaking of that of Quilatoa, situated in the other hemisphere, because it has been correctly observed at two periods sufficiently distant from each other, namely, 1740 and 1831.

Those who make a stay at Latacunga, a city situated at a short distance from Cotopaxi, often hear speak of the wonders of the Laguna Quilatoa. From time to time it throws up flames which destroy the shrubs. It produces frequent detonations, which are heard at very great distances. It did not require more to instigate Condamira, who, in September, 1738, found himself at Latacunga, to undertake a journey to the Lake of Quilatoa. He gives to this lake a diameter of 200 toises (1,270 feet English), for it is circular. The shore round occupied about 20 toises more.

On the 28th November, 1831, I found myself in my turn near the Lake of Quilatoa, which I cannot compare to any thing else than a crater, the bottom of which is occupied with water. I found that it was elevated 3,918 metres (about 12,850 feet), that is to say, it belongs to a cold region. In fact, it is surrounded with immense pasturages, and 500 metres lower are the sheepfolds of Philippeitzin. To the east the cordillera of the Andes is covered down to the South Sea with forests, almost unknown. The information given me by the shepherds soon dissipated in my mind all the wonders that were attributed to the Lake of Quilatoa. Never had they seen flames issuing from the waters; never had they heard detonations. The result of my excursion was, to ascertain that things remained in the same state in which they were at the time of La Condamine's journey.

The study of lakes, so common in Asia, will probably lead to a conclusion conformable to that with the deductions made from the observations in South America, namely, that the waters flowing from a country diminish in proportion as the clearing of the forests are multiplied, and cultivation becomes extended. The works of Humboldt, in throwing so new a light over that part of the globe, appears to leave but little doubt on that subject. After having shown that the system of the Altai diminishes to a range of hills in the Steppes of Kerghes, and that consequently the Oural chain is not united to the Altai, as is generally believed, the celebrated geographer shows that just at the point where it was the custom to place the Alghinic mountains, commences a remarkable region of lakes, which are continued in the plains traversed by the rivers Ichim, Onisk, and Ob.* It will be said that these lakes are the residue of the evaporation from a great body of water which formerly covered the country, and which have been broken into so many distinct lakes by the conformation of the soil. In crossing the Steppes of Baraba, in going from Tobolsk to Baraval, Humboldt states that everywhere the drying-up increases rapidly from the effect of cultivation.

It remains for us to examine the lakes of Europe in the same point of view that we have taken. I have gone too rapidly over those of Switzerland, but fortunately an illustrious observer has left us documents proper to furnish us with new proofs of the influence of cultivation upon the diminution of the waters.

* Humboldt's *Fragments Asiatiques* t. 1, p. 40, 50.

Saussure, in his first researches into the temperature of the lakes, examined those placed at the foot of the first range of the Jura. The Lake of Neuchâtel is eight leagues in length, and the greatest width does not exceed two leagues. Saussure was struck, in visiting it, with the extent that it must formerly have had; "for," says he, "the great horizontal meadows and marshes which terminate it to the south-west have indubitably been covered with water, as have been the plains that we crossed up to the Lake of Bienné."

The Lake Morat is also separated from the Lake of Neuchâtel by horizontal marshes, which beyond a doubt were formerly submerged. "Then," adds Saussure, "the three great lakes of Neuchâtel, Bienné, and Morat were included in one basin."

In Switzerland, as in America and Asia, the ancient lakes, which we might call the primitive lakes, those which occupied the bottoms of valleys when the country was wild and uncultivated, have been divided, by the effect of drought, into a certain number of independent lakes.

I shall finish the task I have imposed upon myself, by utilizing, for the benefit of the discussion, the observations of Saussure on the Lake of Geneva. That lake is, it may be said, the point of setting out of the immense labours of that celebrated physician. No one has studied it more than he.

Saussure admits that at a period much anterior to historic times the mountains which overlook the Lake were buried under the waters. A catastrophe occasioned a breaking-up, and soon the current occupies only the base of the valley, and the Lake of Geneva was formed.

In basing our opinion on the monuments constructed by men, we should have no doubt that for twelve or thirteen hundred years the waters of the Lake of Geneva have been gradually retiring. It is decidedly evident, that upon the shores they have abandoned, the quarter of Rive, and the low streets have been built.* "This lowering of the surface of the level of the Lake," continues Saussure, "is not alone the effect of the deepening of the channel of discharge; it has been produced also by a diminution of the quantity of water flowing into it.

The consequence we are allowed to deduce from the observations of Saussure is, that for twelve or thirteen hundred years the water-courses have gradually diminished in the countries adjacent to the Lake of Geneva. None I think will dispute that during that long period there have been in Switzerland immense clearings, and a continual progress in the cultivation of that fine country. By an examination of the level of the lakes we have arrived at this conclusion, that in countries in which have been carried on extensive clearings there has probably been a diminution of the running waters which flows over the surface of the land.

Forests should therefore have the effect, in the first instance, of preserving the waters, by forming a barrier to their uniting and flowing with too great a rapidity, and by presenting an obstacle to their evaporation.

That a soil covered with trees is less favourable to evaporation than a country denuded of trees is what every body will admit without dispute. But in order the better to observe the difference of these two conditions, it is necessary after a rainy season to go over a road which reverses successively an open and a wooded country. We then remark that the forest road is still covered with mud, whilst that in the open country is entirely dry.

It is, above all, in South America that the difficulty of evaporation on a soil shaded by abundant vegetation is most decided. In the forests there, the humidity is constant, even a long time after the rainy season. The hills remain during the whole year true bogs. The only means of drying these forest roads is, by giving them a width of 80 to 100 metres, which is as much as to say that it is necessary to make a real clearing.

If it is once admitted that the streams are diminished by the effect of clearings and cultivation, it is proper to examine whether this diminution proceeds from a less quantity of rain, a greater evaporation, or rather to the exhaustion of irrigation.

I have laid down the principle at the commencement of this memoir that it is necessarily nearly impossible to

assign precisely the part of each of these several causes, I will however endeavour to estimate them in a general way; and the discussion will gain something if I prove that there may be a diminution of the streams from the sole effect of clearings, without taking into account those other causes which act at the same time.

In regard to irrigation I must necessarily make a distinction between the case in which high cultivation is substituted for the forest, and that in which an arid soil destitute of wood is rendered cultivable by the industry of man. In the first case, it is very probable that irrigation alleviates in a very slight degree the body of the stream; for we must admit that the quantity of water consumed for supplying the vegetation of a given surface of forest, equals, if it does not surpass, that which would be absorbed by a similar surface appropriated to cultivation after the clearing. Then the influence exercised by this cultivated land enters into the condition of a cleared soil, acting especially by favouring evaporation. In the second case, that is, in that in which a great extent of uncultivated country shall have been converted by tillage, there would evidently be a great consumption of water by the vegetation which would have been promoted by it. The introduction therefore of agricultural industry will tend to diminish the streams that flow through such a country. It is very probably to such a circumstance that we must attribute the gradual drying up of the lakes in which are collected a great part of the running waters of Northern Asia.

In the considerations on the lakes of Venezuela, New Grenada, and Switzerland, I said that we might attribute the disappearance of a part of the streams, tributaries of those lakes, to a less quantity of rain; but it might be sustained with quite as much reason that it is simply the consequence of a more rapid evaporation. It is in reality from circumstances, under the influence of which the diminution of the running waters is occasioned by a more active evaporation. We have quoted on this subject numerous examples; but in a discussion of this kind it is only facts well authenticated that it is safe to accept. From this motive I shall confine myself to stating two observations; one made in the Isle of Ascension by M. Debassyns de Richemont, the other in the Mines of Marmato.

In the Isle of Ascension he saw a fine spring, situated at the foot of a mountain originally wooded, lose its abundance and dry-up where the trees had been cut down. It was planted again, and some years after the spring re-appeared by degrees, and soon flowed with its accustomed abundance. Its temporary loss therefore was justly ascribed to the cutting down of the timber.

The metalliferous mountain of Marmato is situated in the province of Popayan, in the midst of immense forests. The stream upon which the stamping mills are erected is formed by the junction of several small rivulets, which take their rise on the plateau of Saint George.

In 1826, when I visited these mines for the first time, Marmato consisted of several miserable huts, inhabited by negro slaves. In 1830, the period at which I finally left that locality, Marmato presented a more animated aspect. Large workshops had risen up, with a gold foundry, and machines for separating and amalgamating the minerals. A free population of nearly 3,000 inhabitants found themselves gradually collected on the slope of the mountain. For this purpose a copious fall of timber had been effected, as well for building purposes as for making charcoal. In order to facilitate the transport the cutting had been extended to the plateau of San Jorge. The clearing had scarcely proceeded for two years before it was perceived that the volume of water employed in working the machines had sensibly diminished. Its amount was ascertained by the working of the machines.* The question was a serious one, for, at Marmato, a diminution in the quantity of working water will always be followed by a diminution in the quantity of gold produced.

At Marmato and at the Isle of Ascension, it is not at all probable that a clearing so local and limited would exercise any influence on the meteorological state of the atmosphere, so as to vary the quantity of rain-fall still more; at Marmato, as soon as they had ascertained the

* Saussure, Voyage dans les Alpes, t. 2, ch. 16.

* A gauge taken exactly at different times has proved the real diminution of the motive waters.

diminution of the waters, they established a pluviometer.* In the course of the second year of observation they measured a quantity of rain greater than that collected during the first year, although the clearings had continued, and without having observed any appreciable increase in the working stream.†

It is therefore very likely that local clearings of timber of small extent are capable of lessening, and even of causing the disappearance of, springs and rivulets, without that effect being in the least attributable to a less quantity of rain-fall.

We have no means whereby to ascertain whether extensive clearings would render the rain-fall less abundant. The redometrical observations will alone enable us to resolve the question. Unfortunately the observations we have been permitted to speak of are too recent, for in Europe they have in general commenced when the great clearing had been already carried out. In the United States of America, where the forests disappear with inconceivable rapidity, we shall be presented perhaps, at a period not very far distant, with a series of valuable facts.

In studying under the tropics the phenomena of rain, I have formed for myself an opinion on the effects of clearings, which I have already imparted to other observers. For myself it is a settled point that a very extended clearing diminishes the annual quantity of rain-fall over a country.

It has been said for a long time that in the equinoxial regions the period of the rainy season returns annually with astonishing regularity, that is, with the greatest exactness; but this meteorological fact must not be announced in too general a manner.

The regularity in the alternation of the dry and rainy seasons is the greatest in those countries which possess an extremely varied territory. Thus, a country which exhibits at once forests and rivers, mountains and large plains, lakes and extensive plateaus, presents, in fact, periodical seasons perfectly decided.‡

It is no longer so if the territory is more uniform—if it becomes in a manner special. The period of the return of the rains will be less regular if the open arid lands prevail; if cultivation on an extensive scale replace in part the forests; if the rivers are less numerous, the lakes more rare.§ The rain will be then less abundant, and in such a country they will be visited from time to time with droughts of long duration.

If, on the contrary, thick forests cover almost entirely the country, if the rivers are numerous and cultivation limited, the irregularities in the season will still take place, but in a different manner. The rains will predominate, and in some years they will become almost continual.||

The American continent affords us, on an immense scale, two regions placed under the same conditions of temperature, and in which we meet successively the most favourable circumstances for the formation of rain, and those which are of an entirely opposite character.

Setting out from Panama, and directing our course towards the south, we find the bay of Cupica, the provinces of Buenaventura, Choco, and Esmeraldas. In this country, covered with forests, and irrigated with numerous rivers, the rains are almost continual. In the interior of Choco not a day passes without rain. Beyond Tumbez, towards Payta, begins an order of things entirely different. The forests have disappeared, the soil is sandy, the cultivation nearly nil. There, it may be said, rain is unknown. When I found myself at Payta, I was informed by the inhabitants that they had had none for seventeen years. This want of rain is common in all the country bordering on the desert of Seclura, and extends even from thence to Lima. In those countries rain is as rare as trees.

Piura is not more distant from the Andes of Assuay than

* Annales de Chimie et de Physique, t. 61, p. 167.

† Two years of redometrical observations are insufficient even beyond the tropics to charge a variation in the quantity of annual rain-fall. But the observations at Marmato prove that the body of running water has diminished, although the quantity of rain-fall was larger the second year.

‡ Venezuela, the Llanos, plateaus of New Grenada, and of Quito, plains of the Magdalena, the province of Antioquia, the provinces of Guayaquil and Cartagera.

§ The provinces of Socotro, Sogamoso, Cumana, Coro, Cuenca (towards Piura).

|| Choco; the forests of Oronoko.

are the humid plains of Choco from the Western Cordilleras.

The facts disclosed in this memoir appear to establish:—

1st. That extensive clearings diminish the quantities of running water which pass over the surface of a country.

2nd. That it is impossible to say whether that diminution is due to a less annual quantity of rain, to a greater evaporation, or to these two causes combined.

3rd. That the quantity of running water does not appear to have varied in those countries which have not been subject to changes arising from cultivation.

4th. That independent of the preservation of rivers and streams, by opposing an obstacle to evaporation, the forests modify and regulate their flow.

5th. That the cultivation established in a country, arid and not covered with forests, dissipates a part of the waters of the rivers.

6th. That by purely local clearing of forests, springs may disappear without giving us reason to conclude that the annual quantity of rain has decreased.

7th. That, in dependency upon meteorological facts collected in equinoxial regions, we must assume that extensive clearings diminish the quantity of rain that annually falls upon a country.

BOUSSINGAULT,

Member of the Academy of Sciences,
and of the Imperial and Central
Society of Agriculture.

MR. COTHER'S COTSWOLD RAM SALE AT MIDDLE ASTON.

The twenty-ninth annual sale of the Aston flock of Cotswold rams took place at Middle Aston. There was a large attendance of breeders; but the sales, upon the whole, did not realize quite so high a figure as in other years. Previous to the sale, Mr. Cother explained the cause why his flock this season appeared somewhat out of condition. In many of the best flocks in this country disease sometimes inauinated itself; and this had been the case with his flock, the disease called hamberris having shown itself in the form of a black fungous spot, first appearing upon the legs, and spreading more or less over the body. Had they seen his sheep last Christmas, they would not have believed he could have had a sale this year; but he was glad to say that the disease had been eradicated, and the sheep, though not having yet attained a perfect condition, were full of promise for the future. Two fine rams, which had taken six prizes, and a pen of ewes, were exhibited upon the lawn, but not for sale. Mr. Lyne conducted the auction. There were about sixty shearlings for sale, and some older sheep to be let for the season.

The few sheep to be let were first brought forward. Nos. 1 and 2 were knocked down for 7½ and 6½ guineas to Mr. Barlow, of Great Tew; No. 3 to Mr. Alban Bull, of Drayton, for 7 guineas; No. 4 to Mr. Root, Bacon Field, Great Tew, for 6½ guineas; and No. 5 to Mr. Berner, Costow, near Sulgrave, for 6 guineas. No. 5 of the shearlings was let for 11 guineas to Mr. Taylor, of Shipton; No. 30 to Mr. Newton, Campfield, for 8½ guineas; and No. 50 to Mr. Freeman, Handborough, for 6½ guineas. Three two-shear sheep were sold for 8, 7, and 6 guineas respectively—the latter to Mr. Stilgoe, Adderbury. The shearlings were then brought forward for sale, and No. 1 was knocked down to Mr. Bliss, Great Tew, for 10½ guineas; No. 2 to Mr. Fletcher, Great Rollright, for 13 guineas; Nos. 3 and 24 to Mr. Guy, Wytham, for 10½ and 8½ guineas; Nos. 4, 17, and 46 to Mr. T. Kimber, Tracy Farm, Great Tew, for 16, 10½, and 9 guineas; No. 6 Mr. Carter, Steeple Aston, 8½ guineas; Nos. 7, 12, and 52, Mr. Robinson, Dorxford, 17, 14, and 7½ guineas; No. 8, 6½ guineas; No. 9, Mr. T. Berry, Eastone, 12½ guineas; No. 10, Mr. Pratt, Wyckham, 8½ guineas; No. 11, Mr. Rogers, Ditchley, 7 guineas; Nos. 13 and 21, Mr. White, Shotteswell, 8 and 9 guineas; Nos. 14 and 34, Mr. Atkins, Rousham, 7½ and 6½ guineas; Nos. 15 and 20, Mr. James Smith, Kirtlington, 6½ and 12½ guineas; No. 16, Mr. Coleman, Sulgrave, 9½ guineas; No. 18, Mr. Symons, Fringford, 10 guineas; No. 19, Mr. Churchill, Tackley, 11½ guineas; Nos. 22 and 54, Mr. Hawkes, Hunscombe, near Wellesbourne, 14 and 7 guineas; Nos. 23, 26, 42, 43, and 55, Mr. J. Ellis, Allington, near

Guildford, 9, 9, 6, 6, and 6½ guineas; No. 25, Mr. Baunard, Culworth, 7 guineas; Nos. 27, 28, 40, 53, and 58, Mr. John Harris, Worton, 6½, 6, 6, 6, and 6 guineas; No. 29, Mr. Denchfield, Easington, Banbury, 6½ guineas; No. 31, Mr. Mansfield, Hethe, 6½ guineas; No. 32, Rev. Mr. Lockyer, Westcote Barton, 6 guineas; Nos. 33 and 43, Mr. Hubbard, Leicestershire, 6 and 9 guineas; No. 35, Mr. Banwell, Marlow, 8½ guineas; No. 36, Mr. Fortescue, Barton-on-the-Heath, 6 guineas; Nos. 38 and 45, Mr. Gonn, Tackley, 7 and 6 guineas; Nos. 39 and 60, Mr. Court, Charlecote, Warwickshire, 10 and 6 guineas; Nos. 41 and 56, Mr. Savidge, Saraden, 10 and 6½ guineas; No. 44, Mr. Hames, Middle Barton, 7½ guineas; Nos. 47 and 57, Mr. F. Coleman, Worton, 9 and 6 guineas; No. 49, Mr. Caldicott, Heyford, 10 guineas; No. 51, Mr. Phillips, Bicester, 7 guineas; Nos. 37 and 59, Mr. Anstin, Deddington, 9 and 6 guineas. The highest figure reached was upon the sale of No. 7, which was bought by Mr. Robinson, of Dornford, for 17 guineas. The average of the letting and sales was £8 14s. 2d. The average of 1859 was £9 1s. 1½d.

OXFORD RAM SALES.

The annual ram sales took place, as usual, on our August monthly cattle market-day (Wednesday, Aug. 8), and, in point of number, far exceeded all previous years. The following is a brief notice of the various sales:

BY MR. JONAS PAXTON.

Forty Oxfordshire Down shearing rams, the property of Mr. Joseph Roberts, of Caswell. Average 7l. 2s. 2d., highest price 11l. 11s. Lord Dillon was the buyer of the highest-priced sheep.

Thirty-two Oxfordshire Down rams, the property of Mr. Charles Gillett, of Cote House, near Bampton, excited great interest. Four let at an average of 6l. 19s. 1d. to the Duke of Marlborough, Mr. Buckland, and Mr. Baldwin; 28 sold at an average of 11l. 15s. 10d.; the highest price realized was 22½ guineas, lowest 5½ guineas.

Forty-two Cotswold shearing rams, the property of Mr. Richard Lord, of Stanton Harcourt. Average 11l. 7s. 9d., highest price 17l. 17s., lowest 8l. 8s.

Forty very fine Cotswold ram lambs, the property of Mr. William Gillett, of Southleigh. Average 6l. 9s. 6d.; the highest price was 10l. 15s.

Thirteen Oxfordshire shearing rams, the property of the Duke of Marlborough. The highest price was 16l. 16s., lowest 6 guineas.

Eight Oxfordshire Down rams, the property of H. L. Gaskell, Esq. Average price 6l. 11s. 3d.

Twenty Oxfordshire Down shearing rams, the property of G. H. Barnett, Esq., of Glympton Park. Average 7l. 1s. 3d., highest price 11½ guineas.

BY MR. W. COTHER.

The Cotswold shearing rams belonging to Mr. Hewer, of Bradwell, averaged 7l. 14s.

Fourteen Cotswold rams, the property of Mr. J. Gillett, of Fawler, averaged 7l. 16s. 9d.; the highest sold for 9l. 19s. 6d. Two rams were let at 16l. 16s. and 9l. 19s. 6d.

Ten rams, the property of Mr. Hobbs, of Kencott, averaged 6l. 8s. 1d.

Mr. C. Howse's rams, of Coln St. Dennis, averaged 5l. 5s. 2d. each.

Sixteen ram lambs, the property of Mr. Osborne, of Church Handborough, averaged 5l. 2s. 6d.

Mr. Cother let one of his own rams at 16l. 5s. 6d.

BY MR. JAMES MALLAM.

Mr. Mallam sold a number of Oxfordshire Down rams from the well-known flock of Messrs. Druce, of Eynsham; but the extreme inclemency of the weather prevented the attendance of many buyers who have been in the habit of attending this sale. The sheep which were sold averaged 8l. 9s. 4d.

About twenty Oxfordshire Down rams, the property of Mr. Charles Hobbs, of Maisey Hampton, near Cricklade, Wilts, averaged 7l.

A number of Oxfordshire Downs, the property of Mr. John Hitchman, of Little Milton, averaged 5l. 13s.

A nice lot of Oxfordshire Down rams, belonging to Mr. Button, of Botley, near Oxford (bred by him with sheep selected from the flocks of Mr. Garne, Messrs. Druce, and other eminent breeders) averaged 4l. 10s. 9d.

THE BICESTER RAM SALES.

These annual ram sales took place on Monday, Aug. 6, the August Fair day, when Mr. Jonas Paxton first submitted to public competition 25 shearing Cotswold rams from the celebrated flock of Mr. John Godwin, of Troy farm, who has attained a high reputation for this class of sheep. The prices made were as follow: Lot 1, 7 guineas, Mr. Griffin, of Brill; lot 2, 7½ guineas, Mr. Cheeseman, of Heyford; lot 3, 6½ guineas, Mr. H. Foster, of Newton; lot 4, 11 guineas, Mr. Millington, of Arley; lot 5, 10½ guineas, Mr. Stuchbury, of Stoke; lot 6, 27 guineas, Captain Dewar, of Middleton; lot 7, 15 guineas, Mr. Millington, of Arley; lot 8, 12 guineas, Mr. R. Greaves, of Fritwell; lot 9, 7 guineas, Mr. Nevell, of Great Tew; lot 10, 9½ guineas, Rev. Mr. de Salis, of Fringford; lot 11, 7 guineas, Mr. Holloway, of Stoke; lot 12, 6½ guineas, Mr. Tubb, of Blackthorn; lot 13, 6 guineas, Mr. Hurlston, of Souldern; lot 14, 6½ guineas, Mr. May, of Stoke; lot 15, 7½ guineas, Mr. Atkins; lot 16, 8 guineas, Mr. Basley; lot 17, 7½ guineas, Mr. Smith, of Somerton; lot 18, 6 gs., Mr. Hurlston, of Souldern; lot 19, 7½ guineas, Mr. Millington, of Arley; lot 20, 6 guineas, Mr. Denchfield, of Barston; lot 21, 6 guineas, and lot 22, 6 guineas, Mr. Buckmaster; lot 23, 7 guineas, Mr. Rogers, of Stoke; lot 24, 8½ guineas, Mr. R. Greaves, Fritwell; lot 25, 5 guineas, Mr. Tubb, Blackthorn. The average was £8 19s. 10d.

Mr. Paxton next submitted four Oxfordshire Down shearing rams, belonging to Mr. K. Foster, of Wendlebury, near Bicester. These made as follows: Lot 1, 11 guineas, Mr. H. Howes, of Weston; lot 2, 5 guineas, Mr. Probbets, of Brill; lots 3 and 4, 4 guineas each, Mr. West.

In the afternoon Mr. Paxton submitted 17 first-class Oxfordshire Down shearing rams, from the celebrated flock of Mr. John Rowland, of Islip, who, as a breeder of this class of sheep, has attained in the course of a few years a reputation which year by year is on the increase. The lots were disposed of as follow: Lot 1, 5 guineas, Mr. Stilgoe, of Adderbury; lot 2, 7 guineas, Mr. J. Greaves, of Elsfield; lot 3, 7½ guineas, the Duke of Bedford; lot 4, 12½ guineas, Mr. Harbridge, of Donnington; lot 5, 13½ guineas, Mr. A. Lee, of Aylesbury; lot 6, 12½ guineas, Captain Dashwood; lot 7, 14½ guineas, Mr. J. Greaves; lot 8, 10 guineas, Mr. Stilgoe, of Adderbury; lot 9, 6 guineas, Mr. Jakeman, of Chesterton; lot 10, 11½ guineas, Mr. Stop, of Luton; lot 11, 5½ guineas, Mr. Buckmaster; lot 12, 5½ guineas, Mr. Sylvester; lot 13, 5 guineas, Mr. May, of Stoke; lot 14, 5 guineas, Mr. Denchfield; lot 15, 6 guineas, lot 16, 4½ guineas, and lot 17, 3½ guineas, Mr. Stilgoe, of Adderbury. The average of the sale was £8 4s. 10d.

Mr. Cother submitted 10 Cotswold shearing rams, belonging to Mr. Charles Howse, of Coln Saint Dennis, near Northleach; and they averaged £6 13s. 10d.

GREAT SHROPSHIRE SALES FOR 1860.

On Tuesday, Aug. 15, the first sale commenced, at the Flash, near Shrewsbury, under the management of Mr. W. G. Preece. The following are the names of the gentlemen whose sheep were sold, and the prices they realized:

The Rev. C. P. Peters, of Pitchford Rectory—6 rams, from 11 to 25 guineas, and ewes 5 guineas each.

The Messrs. C. and J. Crane, of Shrawardine—30 rams (sold and let), from 9 to 73 guineas; 100 ewes from 3½ to 9 guineas. Rams made an average of 22 guineas each.

Mr. Henry Smith, jun., Sutton Maddock, Shifnal—20 rams, at an average of 14 guineas.

Mr. John Evans, of Uffington—24 rams, from 10 to 53 guineas; 95 ewes, from 3 to 8 guineas.

Mr. Edward Stanier, Wroxeter—16 rams, from 8 to 20 guineas.

Mr. John Maddox, of Harley—12 rams, at an average of 15 guineas each.

Mr. W. P. Claridge, of Pitchford Park—13 rams, at an average of 11 guineas each; 40 yearling ewes, at an average of 3 guineas each.

Mr. Meire, of Berrington—14 rams, at an average of 11 guineas each; 30 ewes, at an average of 3 guineas each.

Mr. Jukes, of Tern House, Wellington—16 rams and lambs, from 9 to 20 guineas.

Henry J. Sheldon, Esq. (High Sheriff of Warwickshire), Brailes House, Warwick—15 rams, from 9 to 42 guineas.

Mr. R. R. Landor, of Evelith Manor, Stafford—12 rams, at an average of 12 guineas each.

Mr. Evan Bowen, of Ensdon House—50 rams, at an average of nearly £1 each.

Messrs. C. Chandler, Meredith, and Bickerton—90 ewes, from 2 to 3½ guineas each.

Amongst the buyers and takers were Mr. J. Coxon, of Freeford, Lichfield, one at 73 guineas; Mr. W. P. Bowen, of Shrawardine Castle, one at 42 guineas; Mr. Henry, Smith, of Sutton Maddock, one at 53 guineas; Lord Aylesford, one at 42 guineas and other sums; Colonel Pennant, one at 31 guineas; Mr. R. Lee, of Brompton, one at 22 guineas each; Mr. Jones, Norton, at 26 guineas; Mr. Edward Stanier, at 21 guineas; E. W. Hamilton, of Hamwood Hall, Ireland (the gentleman who last year gave Mr. Prece 100 guineas for Mr. Coxon's R.A.S.E. prize ram), one of Mr. Evans's for 53 guineas, and for which he was afterwards offered 80 guineas in the sale-yard; Mr. Coxon, of Freeford, one at 25 guineas; Mr. C. R. Keeling, of Yewtree Farm, Penkridge, one at 25 guineas; Mr. Plimley, one at 21 guineas; Mr. Peake, on Lord Hatherton's estate, one at 21 guineas; Mr. Davies, one at 21 guineas; the Duke of Sutherland, one at 20 guineas; Mr. Taylor, one at 24 guineas; Mr. W. G. Prece, for himself, the ram "Old Shropshire" for 20 guineas, and two for the Rev. A. G. Cornwall, of Ashcroft House, Gloucester, at the prices of 23 and 24 guineas respectively; Mr. James Hand, of Ludlow, one at 32 guineas; Mr. Kempster, of Eytton, one at 20 guineas; and Mr. Meire, of Berrington, one of Mr. Sheldon's, at 40 guineas.

MR. JAMES RAWLENCE'S RAM LAMBS AND RAMS.—Tuesday, Aug. 7, the sale and letting by Mr. Ewer of 100 ram lambs and 12 rams, the property of Mr. James Rawlence, took place on a piece of land adjoining the South Western Railway Station, at Salisbury. The sale was conducted with Mr. Ewer's well-known ability and good humour, and the business commenced with the letting of 14 ram lambs, singly, the highest price reached being 31 guineas, which was given by Alfred Morrison, Esq., of Fonthill, who took several other high-priced rams. Then followed the sale of lambs, in pairs, the highest price being £42, which was also given by Mr. Morrison. Another splendid pair of lambs were sold to Mr. Spencer, of Barton Stacey, Hants, for £38. Captain Harbin, near Yeovil, Mr. Shittler, of Elston, Mr. Davis, of North Waltham, and Mr. W. Long, of Amesbury, purchased several of the highest lots in this class. We may here remark that among these lambs only seven pairs were sold under 10 guineas per pair. The next business was the sale and letting of 12 rams, which averaged fair prices. No. 1, a six-tooth ram, was let for the season to Mr. Shittler, of Elston, for 25 guineas. The sale and letting of the lambs and the 12 rams averaged £8 9s. 6d. per head. The arrangements of Mr. Ewer gave great satisfaction.

MR. GARNES'S COTSWOLD RAMS.—The annual letting and sale of Mr. W. Garnes' Cotswold rams took place at Kilkenny Farm, Bibury, on Friday, the 10th of August, when a very numerous company assembled. The sheep were large-sized, with remarkable good necks, beautiful symmetry and quality, with great quantity and good quality of wool. The sheep were all bare shorn with the exception of eight. Three two-shear were let at the following prices, for the season, to the undermentioned gentlemen: Messrs. H. Lane 11 guineas, Haines 19, Bateman 16. Four shearlings let for the season: To Messrs. Cook 10½ guineas, Nicholson 16, W. Hewer 27, and J. Lane 45. Shearlings sold: To Messrs. Porter 60 guineas, Walters 41, Oakley 14, Walters 26, Bradstock 20, Fowler 28, Mace 12, Haver 15, Mills 22, Long 15½, Read 11, Payne 9, Nicholson 7½, James 26, Consins 26, R. Hewer 22, R. Garne 25, Stephens 14½, Nicholls 21, J. Garne 16, Nicholls 8½, Yeomans 7½, Nicholson 22, Stone 22, Secker 11, Taylor 33, Wakefield 22, Lane 17½, Edginton 11, Mace 16, Nicholls, 14½, T. Lane 16½, Hart 16½, Palmer 8½, Palmer 7½, Bennett 10, Warren 5½, Cunley 8, Forshaw 8½—making an average of £19 4s. 4½d.

THE WALSOKE RAMS.—This gathering came off on Wednesday, Aug. 15. From 120 to 130 gentlemen attended from the surrounding counties—R. Young, Esq., Mayor of Wisbech, in the chair. Among the company we noticed Cooper, from Suffolk; Sartoris, Northamptonshire; Pratt,

Spencer Allaby; Griffin, Kemp, Lincolnshire; Brownjoy and Topham, Huntingdonshire; Hudson, Castlere; Coles and King, Cambridge; Wharton, Norfolk. 75 sheep were offered. The greater part were let by auction; and afterwards £22 was obtained for the best shearing, and £22 10s. for the old sheep. The average was nearly £9. Several of the sheep made over £20. Much interest and competition took place to obtain the favourite sheep. We understand Mr. Ollard did not offer the whole, retaining four for the use of his friends who could not be present. The price of wool and mutton now is a subject of deep interest to the public as well as the breeders.

THE COTSWOLD RAM SALES.—The prices of the various sales held since our last report have been fully equal to former years. Yesterday, Mr. Ancock sold for Mr. John Barton, of Coln St. Aldwyns, when an average of £11 8s. was obtained for forty-five sheep. On Monday, Mr. Villar offered for Mr. John Lane, of the Barton Mill, to a very numerous and highly respectable company, estimated at 300, about fifty sheep, which produced an average of £10 10s. 4d. On Tuesday, Mr. C. F. Moore sold for Mr. Charles Barton of Pyfield, when, after a most spirited sale, the average was found to be £5 3s. 6d. On Wednesday Mr. Cother sold for Mr. Ruck, of Castle Hill, about sixty sheep, which made an average of £8 2s. 6d. On the same day, at Ewee, Mr. C. F. Moore had a capital sale, for Mr. John Howell, whose sheep were very superior, and produced an average of £12 8s. 4d. On Thursday, at Coates, Mr. Henry Howell, whose sale is almost the last of the season, had a first-rate trade. His sheep were generally considered to be superior to any he had ever previously exhibited, and, under the hammer of Mr. C. Moore, produced an average of £14 10s. 2d.

MR. HUGH AYLMER'S LEICESTER RAM LETTING.—The annual letting of Mr. Hugh Aylmer's long-wool rams from his celebrated flock took place on Thursday, Aug. 7, at the Abbey Farm, West Dereham, and was attended by even a larger company than usual; a proof that the reputation which the West Dereham flock has enjoyed for so long a period is still maintained without diminution. Not many years ago no small portion of the West Dereham Abbey farm was a wet unhealthy fen, undrained, and comparatively unproductive. Now

"Disorder yields to order—
Fair the place."

and pastures and arable containing in themselves the elements of fatness, have become, by the conjoint exertions of the landlord in some degree, and the skill, enterprize, perseverance, outlay, and judgment of the tenant, clothed, not only with wavy corn and rich grass, but tenanted by what judges on Thursday declared to be animals unrivalled for their beauty, size, symmetry, and excellence of fleece. The Leicester ram show and letting which the name of Aylmer, father and son, originated and have carried on now for fifty years—these years in themselves carrying a character with them—has never, we believe, either in attendance or in their leading feature, been of so important a character as in this year of 1860. Nor has it been ever so universally admitted by its visitors to have exhibited so complete and perfect and uniform a number of animals as the 220 Leicester rams, which, as lambs, shearlings, and two-shear sheep, covered the homestead pasture of Mr. Hugh Aylmer. Although Leicester rams were the main object of the day, there were other descriptions of animals, which showed that Mr. Aylmer did not confine his experience to sheep alone, but that excellence and perfection in everything he undertook was his honourable object. The competition from the commencement was well kept up, and only one two-shear sheep was passed. Of the lambs let, 20 averaged £7 15s. 3d., 60 averaged £6 10s. 5d., and 100 averaged £5 16s. 10d., the highest price being £17. With reference to the shearlings, 20 averaged £12 7s., 40 averaged £10s. 9s. 6d., 60 averaged £9 13s. 5d., and 80 averaged £9 8s., the highest price being £30, and the lowest £6 10s. Thirty-nine of sheep were let at £6 13s. each, the highest price being £17. The whole of the 220 sheep were let in the short space of two hours and five minutes. Five of the sheep were sold for the purpose of being sent to Australia, and 60 sheep were hired by private contract after the letting was concluded.

MR. BENNETT'S SHEEP SALE.—The letting and sale

took place on Friday, Aug. 3, the quality of the animals drew together a large number of gentlemen from our own and distant counties. There were between 60 and 70 sheep, most of which were let and sold at good prices, many gentlemen from

distant counties present acknowledging that there never was a better quality of sheep shown. The result of the sale was that there were 30 let and sold, the average being from £14 to £6 and everybody being satisfied with their bargain.

“WASTE NOT, WANT NOT.”

SIR,—At the present time, with the probability of high prices before us, and the consequent scarcity and, I fear, want, which will doubtless be too prevalent amongst many of our poorer population during the coming winter, painfully protruding themselves upon our notice, you will perhaps pardon my intruding so far upon your space as to draw, as briefly as may be, the attention of your readers to what, doubtless, has often occupied, more or less, the thoughts of many of them. I refer to the shameful—possibly, shameless might be the better word—lack of care in the preservation and economization of food prevalent amongst the poorer classes. I use this term “shameful” or “shameless” very deliberately, not with a view, however, of adding aught to the heap of odium which too many amongst us delight in casting upon the character of our poor—the “great unwashed,” as they are pleased to term them. Many amongst us devote no small portion of our time to a practical study of the habits and manners of the labouring poor, and, while sympathising deeply with them amidst the evils which undoubtedly press upon them, and while advocating, to the best of our ability, those measures which will relieve them of these evils, nevertheless deem it but honest, no less distinctly, yet kindly, to point out their faults whenever and wherever we find them. Experience, therefore, I have, to some extent, of their ways; and I do not characterise, in the terms I have employed, loosely and without thought this very painful feature in the condition of the labouring poor. Nothing, indeed, fills one with so much hopelessness, when endeavouring to raise the labourer's life to a higher level, as the frequent proofs met with of the wide-spread existence of this habit, and painful in no small degree is it to find that the greatest wasters are often the greatest wasters.

I do not here refer to bad and wasteful habits of cookery, for in this they are less to be blamed than the middle classes, who are curiously careless in such matters; but specially and distinctly to the habits the poor have of absolutely throwing away good food—not to the dogs or to the swine, for that would be productive of some benefit, but to be tossed aside, and trodden under the foot of the passing stranger. Not seldom have I been pained to see large pieces of good bread cast out of the cottage door, as a thing of poison. Children often have I seen, and in the sight of their parents too, throw away their bread when tired of it. For the waywardness of infancy or the thoughtlessness of childhood there may be pardon or excuse; but there should be none for the parent who can see the waste perpetrated, the God-sent food left to rot on the highway, and the child to grow up without the lesson of warning or the pain of chastisement. It is the curse of a bad habit that it brings others in its train, and the weary waste of one thing leads to that of many, or of all; hence is found a looseness of care in nearly all the departments of the households of too many of our poor. Half-burnt coals and good cinders, which might make many a cheery fire in the dreary winter time, are thrown out as useless, and the dust-heap or the yard is broadcast with serviceable pieces, absolutely untouched by fire. I have noticed this waste in every department. It is to be found, if looked for, in potatoes not *pared* for the pot, but whole pieces of the root actually hacked off to be thrown in the “midden;” leaves hot from the oven are eaten in that state, when they do not go half the way they would do if longer kept or staler bought; crusts of bread, large and numerous, which would make many a nice Sunday's dinner pudding—nothing better for the purpose, as many of our well-to-do classes know—thrown out as useless, followed by bones, capable of making a tasty and nourishing soup, if kept and carefully cooked; and so on throughout the whole course of household economics. Lads are allowed to wear out shoes—by no means often or easily ob-

tained—by sliding on pavements, and the seat of honour of their nether garments is worn out by sliding down hillsides, or riding post-haste on gates or fences; and all this without a chiding or a warning given of the folly of the waste. The whole of the doings of many a poor man's household put one so in mind of what a baby's or a boy's house would be, that in one point of view they seem laughably ridiculous, if they were not in another point painfully provocative of indignation. I do not say that this wastefulness is to be met with everywhere—there are many noble exceptions, but I fear that it is too much the rule. One of the most prudent women I ever met with was herself a poor woman, and, “canny of the poor,” as the phrase goes, knew well the habits of her class. She repeatedly avowed, where opportunity served, her want of sympathy with their sufferings on many occasions when they were sorely tried, alleging as her reason for so doing that it arose from her knowledge that much of their want arose from their waste. My experience of them makes me fear that this is too often true: I confess to having met with numerous exemplifications of it. And the misfortune of the thing is, that a knowledge of the existence of such habits amongst the poor hardens the hearts, and shuts up the bowels of mercy of many of those who might otherwise assist in getting rid of the evils which undoubtedly press upon them as a class.

While many of those evils must be removed by classes other than their own, the truth is undoubted that the removal of other evils not necessarily attendant upon their condition must be the work of the poor themselves, and them only. I fear that we philanthropists, along with much good, have done no little evil to the poor. We have been so gently and so long leading them in nursing strings, so impressing them with the notion that everything was to be done *for* them, that we have imperceptibly, yet abidingly, taught them that nothing could be done *by* them. Now, the real truth is (and the sooner they are taught it the better for both them and us) that an immense deal can be done by themselves to raise their social condition, and in nothing perhaps more so than in the reform of this habit of wastefulness and carelessness. And this lesson should at once be taught them by those who have influence over them; and it should be plainly pointed out to them that saving is not stinginess or meanness, as too many of them firmly believe; that it is prudence that brings plenty, that care increases comforts, and that waste brings but wretchedness and want.

I thus trouble you, in the hope that some of your readers who are—as many are likely to be—employers of farm labour, should look carefully and soon to this important matter. I know of no hamlet so happy as to possess cottages in which this waste and carelessness do not exist. Their existence is only but too easily observed amongst us. Let, then, all those who are in authority look to this matter. We are entering, so far as human judgment can predicate, upon a very trying period—when to scarcity of food may be added scarcity of labour. At any time it is foolish to be wasteful; at a time such as we are looking forward to, its exercise will be simply suicidal. Let the lessons of prudence be inculcated, and the habits of carefulness cultivated now. Plenty dwells in the home of the prudent, want in the habitation of the waster.

My remarks may by some be looked upon as too severe; but in truth it is almost impossible to treat such a habit as I have now written about with too much severity. I have so long advocated the interests of the labouring population with what has been thought by some to be over-sympathy and enthusiasm, that I may well be allowed to find fault with them now, even if I have to do it with some apparent harshness. I should be but too proud if the existence of the fault could be denied. Apologizing for thus taking up your valuable space,

I am, &c., ROBERT SCOTT BURN.
Castle Farm, Cheshire, Aug. 22.

THE NEW GAME ACT.

An Act to repeal the Duties on Game Certificates and Certificates to deal in Game, and to impose in lieu thereof Duties on Excise Licences and Certificates for the like Purposes.— [13th August, 1860.]

Be it enacted by the Queen's most Excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the authority of the same, as follows:

I. From and after the passing of this Act the respective duties of assessed taxes now payable under the several Acts of Parliament in that behalf in respect of certificates to kill game in Great Britain, and to deal in game in England, and all the provisions, rules, and directions for assessing, charging, and collecting any of the said duties contained in Schedule (L) of the Act passed in the Fifty-second Year of King George the Third, chapter ninety-three, and also the duties now payable in Ireland under the Act passed in the Fifty-sixth Year of King George the Third, chapter fifty-six, in respect of every certificate of having registered a deputation as a gamekeeper, and in respect of every certificate to authorize any person, not being a gamekeeper, to kill game in Ireland, and also the nineteenth and twentieth sections of the Act passed in the First and Second Years of King William the Fourth, chapter thirty-two, shall respectively cease and determine, and the same are hereby repealed, except as to any arrears of the said duties respectively, and as to any penalties incurred before the commencement of this Act.

II. In lieu of the duties hereby repealed there shall be granted, charged, and paid for and upon the several licences and certificates to take or kill game, and licences to deal in game herein-after mentioned, the respective duties or sums of money herein-after expressed or denoted; (that is to say),

£ s. d.

For a licence in Great Britain or a certificate in Ireland to be taken out by every person who shall use any dog, gun, net, or other engine for the purpose of taking or killing any game whatever, or any woodcock, snipe, quail, or landrail, or any conies, or any deer, or shall take or kill by any means whatever or shall assist in any manner in the taking or killing by any means whatever of any game, or any woodcock, snipe, quail, or landrail, or any coney, or any deer:			
If such licence or certificate shall be taken out after the fifth day of April and before the first day of November,			
To expire on the fifth day of April in the following year	3	0	0
To expire on the thirty-first day of October in the same year in which the licence or certificate shall be taken out	2	0	0
If such licence or certificate shall be taken out on or after the first day of November,			
To expire on the fifth day of April following	2	0	0
Provided always, that any person having the right to kill game on any lands in England or Scotland shall be entitled to take out a licence to authorize any servant for whom he shall be chargeable to the duty of assessed taxes as a gamekeeper, to kill game upon the same lands, upon payment of the duty of	2	0	0
And for every licence to deal in game in England, Scotland, or Ireland, to be granted under this Act	2	0	0

III. The duties by this act granted shall be under the management of the Commissioners of Inland Revenue, and shall be deemed to be excise duties, and all the powers, provisions, clauses, regulations, and directions contained in any act relating to excise duties or to penalties under excise acts, and now or hereafter in force, shall respectively be of full force and effect with respect to the duties by this act

granted, and to the penalties hereby imposed, so far as the same are or may be applicable, and shall be observed, applied, and enforced for and in the collecting, securing, and recovering of the said duties and penalties hereby granted and imposed respectively, and otherwise in relation thereto, so far as the same shall be consistent with and not superseded by the express provisions of this act, as fully and effectually as if the same had been herein repeated and specially enacted in this act with reference to the said last-mentioned duties and penalties respectively.

IV. Every person before he shall in Great Britain take, kill, or pursue, or aid or assist in any manner in the taking, killing, or pursuing by any means whatever, or use any dog, gun, net, or other engine for the purpose of taking, killing, or pursuing any game, or any woodcock, snipe, quail, or landrail, or any coney, or any deer, shall take out a proper licence to kill game under this act, and pay the duty hereby made payable thereon; and if any person shall do any such act as hereinbefore mentioned in Great Britain without having duly taken out and having in force such licence as aforesaid, he shall forfeit the sum of twenty pounds.

V. The following exceptions and exemptions from the duties and provisions of this act are hereby made and granted; (that is to say),

EXCEPTIONS.

1. The taking of woodcocks and snipes with nets or springs in Great Britain.
2. The taking or destroying of conies in Great Britain by the proprietor of any warren or of any inclosed ground whatever, or by the tenant of lands, either by himself or by his direction or permission.
3. The pursuing and killing of hares respectively by coursing with greyhounds, or by hunting with beagles or other hounds.
4. The pursuing and killing of deer by hunting with hounds.
5. The taking and killing of deer in any inclosed lands by the owner or occupier of such lands, or by his direction or permission.

EXEMPTIONS.

1. Any of the Royal Family.
2. Any person appointed a gamekeeper on behalf of her Majesty by the Commissioners of her Majesty's Woods, Forests, and Land Revenues, under the authority of any act of Parliament relating to the land revenues of the Crown.
3. Any person aiding or assisting in the taking or killing of any game, or any woodcock, snipe, quail, landrail, or coney, or any deer, in the company or presence, and for the use of another person who shall have duly obtained, according to the directions of this Act, and in his own right, a licence to kill game, and who shall by virtue of such licence then and there use his own dog, gun, net, or other engine for the taking or killing of such game, woodcock, snipe, quail, landrail, coney, or deer, and who shall not act therein by virtue of any deputation or appointment.
4. And, as regards the killing of hares only, all persons who, under the provisions of the two several Acts, 11th and 12th Victoria, chapter 29 and chapter 30 respectively, are authorized to kill hares in England and Scotland respectively, without obtaining an annual game certificate.

VI. Provided always, That nothing herein contained shall extend to repeal, alter, or affect any of the provisions of the said two several Acts of the Eleventh and Twelfth Years of her Majesty, chapter 29 and chapter 30, further than that the term "Game Certificate" in the said Acts respectively used shall be construed to mean a licence to kill game under the provisions of this Act, and shall be so read accordingly; and that the term "Game Certificate" used in the Act of the First and Second Years of King

William the Fourth, chapter 32, shall be construed and read in like manner; and that wherever in the said last-mentioned Act the duty of three pounds thirteen shillings and sixpence on a game certificate is mentioned the duty of three pounds on a licence to kill game shall be read in lieu.

VII. Any person having the right to kill game on any lands in England or Scotland, and being charged or liable to be charged to the Assessed Tax on Servants in respect of any gamekeeper, by whomsoever deputed or appointed, and whether deputed or appointed or not, and any person granting a deputation or appointment in Great Britain to the servant of any other person who shall be duly charged to the Assessed Tax on Servants in respect of such servant, whether as gamekeeper or in any other capacity, with power and authority to take or kill any game, shall respectively be at liberty to take out a licence to kill game on behalf of any such servant, on payment of the duty of two pounds for the year ending on the Fifth day of April, and such licence shall exempt the servant named therein during his continuance in the same capacity and service, and on his quitting such service shall also exempt any servant who shall succeed him in the same service and capacity, or who shall succeed to the deputation of the same manor or royalty or lands within the year for which the licence is granted, during the remainder of such year; and no such servant on whose behalf a licence shall have been duly obtained as aforesaid shall be required to obtain a licence for himself, or be liable to any penalty by reason of not obtaining a licence in his own name.

VIII. Every such licence to kill game taken out on behalf of any such servant as aforesaid shall, upon the revocation of any such deputation or appointment, or on his quitting the service of the master by whom such licence shall have been taken out, be from thenceforth of no further effect as to the person named therein as such servant, or so deputed or appointed as aforesaid; but if within the year for which such licence was granted the said master, on the quitting of such servant, shall employ another servant as gamekeeper in his stead, or the person by whom such deputation or appointment was made shall on the revocation thereof make a new deputation or appointment to any person in his service, or in the service of the same master by whom such licence shall have been taken out, and who shall have been charged or be chargeable to the said assessed tax on servants as aforesaid, the officer by whom such licence was granted, or the proper officer appointed by the Commissioners in that behalf, shall renew such licence for the remainder of that year, on behalf of the fresh servant or the person so newly appointed, as the case may be, without payment of any further duty, by indorsing on such licence the name and place of abode of the said last-mentioned servant, or the person to whom such last-mentioned deputation or appointment shall have been granted, and declaring the same to be a renewed licence free of duty.

IX. Provided always, That no such licence taken out for or on behalf of any person, being such servant or acting under a deputation or appointment as aforesaid, shall be available for such person in any suit or prosecution where proof shall be given of his doing or having done any act for which a licence is required under this act on land on which his master had not a right to kill game.

X. If any person shall be discovered doing any act whatever in Great Britain in respect whereof a licence to kill game is required under this act, by any officer of Inland Revenue, or by any lord or gamekeeper of the manor, royalty, or lands wherein such person shall then be, or by any person having duly taken out a proper licence to kill game under this act or by the owner, landlord, lessee, or occupier of the land on which such person shall then be, it shall be lawful for such officer or other person aforesaid to demand and require from the person so acting the production of a licence to kill game issued to him; and the person so acting is hereby required to produce such licence to the person so demanding the production thereof, and to permit him to read the same, and (if he shall think fit) to take a copy thereof or of any part thereof; or in case no such licence shall be produced to the person demanding the same as aforesaid, then it shall be lawful for the person having made such demand to require the person so acting forthwith to declare to him his Christian and surname and place of residence, and the place at which he shall have taken out such licence; and if such person shall, after such

demand made, wilfully refuse to produce and show a licence to kill game issued to him, or in default thereof as aforesaid to give to the person so demanding the same his Christian and surname and place of residence, and the place at which he shall have taken out such licence, or if he shall produce any false or fictitious licence, or give any false or fictitious name or place, or if he shall refuse to permit any licence which he may produce to be read, or a copy thereof or of any part thereof to be taken, he shall forfeit the sum of twenty pounds.

XI. If any person, having obtained a licence to kill game under this act, shall be convicted of any offence under Section Thirty of the said Act of the First and Second Years of King William the Fourth, Chapter Thirty-two, or under the Act of the Second and Third Years of King William the Fourth, Chapter Sixty-eight, the said licence shall thenceforth be null and void.

XII. The Commissioners of Inland Revenue shall, when and as they shall see fit, cause lists of the names and residences of the several persons to or for whom licences to kill game have been granted under this act to be inserted in such newspapers or published in such other manner as to them shall seem proper, distinguishing in such lists the persons acting under any deputation, appointment, or authority from others, and the manors, royalties, or lands for which deputations, appointments, or authorities have been granted, and also distinguishing the rate of duty paid for such licences.

XIII. All the clauses and provisions of the two acts passed respectively in the first and second years of King William IV., chapter 32, and the second and third years of her present Majesty, chapter 35, relating to the granting of licences by justices of the peace to deal in game, and to the holding of special sessions by such justices in their respective divisions or districts for the purpose of granting such licences, and also all the clauses, provisions, and penalties contained in the said acts or either of them relating to dealers in game, and to the selling of game, either by or to such dealers or others, shall, so far as the same are consistent with the express provisions of this act, and as the same are altered or amended by this act, extend to and be of full force and effect in and throughout the whole of the United Kingdom, and shall be observed, applied, and enforced as if the same, so altered or amended and made consistent with the express provisions of this act, had been herein repeated and specially enacted: provided always, that no person shall be authorized to sell game to any licensed dealer unless he shall have taken out a three pounds' licence under this act.

XIV. Every person who shall have obtained any licence to deal in game from the justices of the peace, under the provisions of the said two several acts in the preceding clause mentioned, shall annually, and during the continuance of such licence, and before he shall be empowered to deal in game under such licence, obtain a further licence to deal in game under this act, on payment of the duty hereby charged thereon; and if any person obtaining a licence from the said justices as aforesaid shall purchase or sell or otherwise deal in game before he shall obtain a licence to deal in game under the provisions of this act, he shall forfeit the sum of twenty pounds.

XV. Provided always, That no licence to deal in game shall be granted under the provisions of this act to any person, except upon the production of a licence for the like purpose duly granted to him by the justices of the peace, as aforesaid, and then in force; and every officer appointed or authorized to grant licences to deal in game under this act shall in each year make out a list, to be kept in his possession, containing the name and place of abode of every person to whom he shall have granted or issued a licence to deal in game under this act, and such officer shall at all reasonable hours produce such list to any person making application to inspect the same, and shall be entitled to demand and receive for such inspection the sum of one shilling.

XVI. All licences and certificates to kill game and to deal in game respectively, under the provisions of this act, shall be in such form as the Commissioners of Inland Revenue shall from time to time provide in that behalf, and shall denote the amount of duty charged thereon respectively, and shall be granted, signed, and issued at the chief office of Inland Revenue in London, Edinburgh, and Dublin respectively, and by the several supervisors of Excise in their respective districts, or by such other officers of Inland Revenue and at such places

as the said Commissioners shall think fit to employ and appoint respectively in that behalf; and every such licence shall contain the proper Christian and surname and place of residence of the person to whom the same shall be granted, with any other particulars which the Commissioners of Inland Revenue may direct to be inserted therein, and shall be dated on the day when the same was actually issued, and shall have effect and be in force upon the day of the issuing thereof, and shall expire on the day therein mentioned for the termination thereof.

XVII. All the clauses, powers, provisions, and regulations, pains and penalties, contained in or imposed by the act passed in the fifth and sixth years of her Majesty's reign, chapter 81, relating to certificates to kill game in Ireland, shall be of full force and effect, and shall be applied in Ireland to the certificates to be granted under this act and the duties hereby imposed thereon, as fully and effectually as if the same were herein repeated and specially enacted in reference to such last-mentioned certificates and duties.

XVIII. Every licence and certificate to kill game taken out respectively in Great Britain and Ireland under this act, by or on behalf of any person in his own right, and not as a game-keeper or servant, shall be available for the killing of game in any part of the United Kingdom.

XIX. The act passed in the seventh and eighth years of King George IV., chapter 49, intitled, An act to exempt persons who have procured game certificates in Great Britain from the duty on game certificates in Ireland, and to authorize the persons who have paid duty on game certificates in Ireland to kill game in Great Britain, upon paying the additional duty, shall be and the same is hereby repealed.

DESTRUCTION OF WEEDS.

A bill has been brought into the House of Commons by Sir William Somerville and Mr. Bellew, to provide for the destruction of certain weeds in Ireland.

The preamble states: Whereas it is expedient to provide for the destruction of certain weeds in Ireland growing in places whence their seeds might otherwise be carried by the wind upon the adjoining lands, thereby causing great injury to such lands, and serious loss to the occupiers of the same. And it enacts that it shall be lawful for the occupier of any cultivated lands, whether arable or pasture, who shall have reason to apprehend injury to the same by reason that the seeds of certain weeds commonly known as thistles, docks, or rag weeds, growing in any adjoining field, or in any adjoining cemetery, or upon the sides of any adjoining railway or canal, might be carried by the wind upon such lands, to serve a notice upon the owner in occupation of any such field, or upon the clerk of the board, or secretary of the company to which any such cemetery, railway, or canal shall belong, requiring him to cause such weeds to be cut down and destroyed.

The notice shall describe clearly the particular kind of weeds required to be cut down; the particular places in which such weeds shall be growing; and it shall be served by such occupier, or by some fit person on his behalf, upon such owner or secretary.

And in case the said owner, board, or company shall neglect to cause such weeds to be cut down and destroyed within the period of *fourteen* days from the day of the service of the said notice, they shall be liable to a penalty not exceeding *five* pounds; and if not then cut down he may serve a second notice, and recover a second penalty not exceeding double the amount of such first penalty, and in addition to the same.

There are other clauses by which parties may enter the land where weeds are growing, and cut them down.

REAP EARLY!—Farmers will profit greatly by cutting their grain crops early. As soon as the blade is ripe at the root, that is the time for reaping. The blade of the corn will do more good lying on the ground than standing up. The atmosphere finds its way into the tube, and carries the sap into the berry to much greater advantage than being exposed to the air and the sun while it remains standing upon its root, besides not being liable to grow or sprout in the ear. This is a practice pursued by the most eminent agriculturists on the East Riding wolds of Yorkshire, and where the system is once adopted it is never abandoned.

AGRICULTURAL STATISTICS, IRELAND, 1860.

RETURN, showing, in Statute Acres, the Extent under Flax in Ireland in 1859 and 1860, compiled from Returns obtained by the Constabulary:—

COUNTIES AND PROVINCES.	Extent of Land under Flax.		Difference between 1859 and 1860.	
	1859.	1860.	Increase.	Decrease
ULSTER.				
	Acres.	Acres.	Acres.	Acres.
Antrim	7637	8643	1006	—
Armagh	15087	13684	—	1403
Cavan	5688	1477	—	1211
Donegal	22283	21409	—	874
Down	21265	19956	—	1309
Fermanagh	3218	2394	—	824
Londonderry	17537	16977	—	560
Monaghan	14612	13156	—	1456
Tyrone	23012	22385	—	627
Total of Ulster ..	130339	123081	Decrease, 7258 Acres.	
MUNSTER.				
Clare	521	501	—	20
Cork	430	416	—	14
Kerry	522	464	—	58
Limerick	124	136	12	—
Tipperary	99	134	35	—
Waterford	38	26	—	12
Total of Munster .	1734	1677	Decrease, 57 Acres.	
LEINSTER.				
Carlow	8	7	—	1
Dublin	1	—	—	1
Kildare	2	4	2	—
Kilkenny	29	14	—	15
King's	262	217	—	45
Longford	360	292	—	68
Louth	523	382	—	141
Meath	232	149	—	83
Queen's	25	32	7	—
Westmeath	146	130	—	16
Wexford	74	40	—	34
Wicklow	3	—	—	3
Total of Leinster .	1665	1267	Decrease, 398 Acres.	
CONNAUGHT.				
Galway	322	261	—	61
Leitrim	847	658	—	189
Mayo	726	634	—	92
Roscommon	402	380	—	22
Sligo	247	282	35	—
Total of Connaught	2544	2215	Decrease, 329 Acres.	

1859. 1860.
 Acres. Acres.
 Total Acreage under Flax in Ireland, 136,282 .. 128,240
 Decrease in 1860 8,042 Acres.
 Extent of Flax grown in Ireland in each of the following years:—

	Acres.	Acres.	
1854	151,403	1858	91,646
1855	97,075	1859	136,282
1856	106,311	1860	128,240
1857	97,721		

The foregoing Returns of the area under Flax is published, as in previous years, in anticipation of the General Abstracts, now in course of preparation, showing the acreage under each crop, and the number of live stock, by counties

and provinces—which will, I trust, be ready for the press early in the ensuing month.

I do not apprehend that any difference of importance will be found between the acreage under flax here given, and the extent of that crop which will appear in the more detailed tables now in course of compilation.

WILLIAM DONNELLY,
Registrar-General.

Agricultural and Emigration Statistics Office,
5, Henrietta-street, Dublin, 10th August,
1860.

THE TIME OF HARVEST.

The following tables will show the period of commencing harvest in England and Scotland for the last 30 years:—

ENGLAND.

Wheat Cutting.		Barley Mowing.		Wheat Cutting.		Barley Mowing.	
1831..	July 27 ..	August 7	1846..	July 16 ..	August 1		
1832..	" 23 ..	" 4	1847..	" 28 ..	July 31		
1833..	" 25 ..	" 8	1848..	" 30 ..	August 21		
1834..	" 15 ..	July 24	1849..	" 27 ..	" 1		
1835..	" 25 ..	August 30	1850..	August 6 ..	" 5		
1836..	" 28 ..	August 9	1851..	" 31 ..	" 6		
1837..	" 31 ..	" 7	1852..	July 31 ..	" 16		
1838..	August 7 ..	" 7	1853..	August 11 ..	" 22		
1839..	" 7 ..	" 8	1854..	" 5 ..	" 8		
1840..	July 27 ..	July 27	1855..	" 11 ..	" 14		
1841..	August 9 ..	August 16	1856..	" 2 ..	" 5		
1842..	August 28 ..	" 6	1857..	July 25 ..	July 30		
1843..	August 8 ..	" 22	1858..	" 17 ..	August 27		
1844..	July 23 ..	" 9	1859..	" 18 ..	July 25		
1845..	August 11 ..	" 7	1860..	August 15 ..	August 20		

SCOTLAND.

Began.		Ended.		Began.		Ended.	
1831..	August 8 ..	Sept. 25	1846..	August 9 ..	Sept. 8		
1832..	" 14 ..	" 7	1847..	" 11 ..	" 1		
1833..	" 17 ..	" 13	1848..	" 21 ..	" 14		
1834..	" 17 ..	August 26	1849..	" 25 ..	" 15		
1835..	" 17 ..	Sept. 9	1850..	" 14 ..	August 31		
1836..	" 26 ..	" 29	1851..	" 15 ..	Sept. 11		
1837..	" 25 ..	" 22	1852..	" 7 ..	August 26		
1838..	Sept. 3 ..	Oct. 13	1853..	" 17 ..	Sept. 16		
1839..	" 3 ..	" 3	1854..	" 19 ..	" 11		
1840..	August 31 ..	Sept. 22	1855..	" 16 ..	" 4		
1841..	" 26 ..	" 18	1856..	" 28 ..	Oct. 1		
1842..	" 13 ..	" 9	1857..	" 19 ..	Sept. 9		
1843..	" 30 ..	" 19	1858..	" 6 ..	August 27		
1844..	" 29 ..	" 10	1859..	" 5 ..	Sept. 5		
1845..	" 30 ..	" 25	1860..	" ..	" ..		

ANTI-MALT-TAX ASSOCIATION.

The Suffolk Society has issued the following prospectus:—

Object: To seek, by all constitutional means, to obtain the total repeal of the malt tax.

GROUPS OF OBJECTION TO THE MALT TAX.

1. It is unjust in principle, being utterly opposed to the free trade policy of the times. It unnaturally curtails the demand for an important part of the produce of the British farmer, and practically forbids his fattening his stock with his own corn in its most approved state. (From *Hansard*, 1839, page 685) Sir James Graham said, "He was convinced that if they repealed the corn laws, the malt tax would not survive a single year;" Sir R. Peel (page 774) urged, "as a farmer, to the free traders I would say, let me manufacture and consume my own malt untaxed. Can you deny the justice of this appeal?" Mr. Villiers (page 357), "Of this he was sure, that all those who were now injured by the existence of the corn laws, would be ready, nay be anxious, to get rid of the malt tax."

2. It inflicts great injury upon the working classes; it enhances the price of the people's beverage at least fifty per cent.; it thus diminishes their comfort—many thousands of our toiling fellow-countrymen, through this tax, are literally debared from the use of the Englishman's natural and favourite beverage. One of his greatest comforts is thus snatched from his lips. It encourages the public house. Unable to buy malt, and so keep beer at home (as was the custom of their forefathers), but feeling the want of it, they are tempted to seek it in the public house, which is the fruitful source of many evils. It substitutes an unwholesome for a

wholesome beverage. In consequence of the high price of malt, much of the beer that is sold is adulterated with cocculus indicus and other noxious drugs. Englishmen will have beer, it lies always been the national drink, and if (through this tax) they cannot get it genuine, they are driven to take that which is not beer, but poison.

3. It inflicts great injury upon the cultivator of the soil. It unnaturally curtails the demand for a very important part of his produce (barley) by adding 21s. 8d. to the price of every quarter. On every acre of British barley grown to be malted is thus charged the enormous tax of £5 10s. Since 1730, when the duty was only 6d. per bushel, the average consumption per head of the whole population has fallen from five bushels to less than two. "If the malt tax were repealed we might fairly expect the consumption to be trebled"—Mr. Caley. It greatly depreciates the value of inferior barley. Excise restrictions fetter the maltster at every step, preventing the profitable malting of any but the best kinds of barley. Were it not for this tax inferior barley would be malted for grazing purposes. It forbids the farmer using his own corn in its most approved state for fattening stock. The feeding value of barley is greatly increased by the process of malting—this has been demonstrated by experiment. The heavy duty prevents its application to barley used for feeding purposes, and thus has a tendency to increase the price of meat. "I believe," said Sir R. Peel, in 1857, "it is impossible to over-estimate the importance of promoting the fattening of cattle, because it tends to advance an improved system of agriculture."

4. It injures the public generally, for it contributes to make both beer and meat dear.

NECESSITY FOR SUCH AN ASSOCIATION.

The malt tax is a very old tax; it is one from which a large revenue is derived; there is therefore no chance of its removal without a strong expression of feeling against it in the country. Experience has shown that to obtain such an expression on any question, however strong the feeling that exists, organization is required. There are, and have been many years, thousands in every county in England who feel most strongly on this question, but from want of combination nothing has been done. This association affords an opportunity for all to unite.

WORKING PRINCIPLES.

It will be absolutely necessary that in this movement we know no party. The operations of this association will probably need to extend over several years, and they cannot be efficiently conducted without expense; it will therefore require a steadily-maintained income in the shape of annual subscriptions. It is believed that the friends of this movement are so numerous that a low scale of subscription will suffice. It will be the aim of the executive of the society to put its friends to as little trouble as possible. Our first efforts will be directed to the obtaining of a large body of subscribers in as many counties as possible. In a few months we hope to be able to call a meeting in London, and appoint there a central committee under whose direction such measures will be adopted as shall be judged most likely to secure our object.

ADDRESS OF THE COMMITTEE.

GENTLEMEN,—We have the strongest conviction that the cause in which we are engaged is the cause of mercy, of morality, and of justice; a cause claiming the support of every honest Englishman. We therefore solicit you to lend a helping hand. There are two objections with which we expect to be met: first, some people will say, "This is a good movement, one with which we sympathise, but the present is not a favourable time to urge it when the Government are needing so much money."—Answer: We freely admit the force of this objection, but then it must be remembered that an association like this is not formed in a day—many months will probably pass before we are in a position to act vigorously. If we wait for a fitting moment before we start, it will be passed before we are ready to strike a blow. What we aim at now is, to band ourselves together, quietly and firmly, ready for a favourable opportunity. We have recently had an illustration of the truth of our reasoning. When Mr. Gladstone introduced his budget there was an admirable opportunity for a vigorous movement, for he proposed to benefit the French producer of grapes at the expense of the British producer of barley—to cheapen wine, the rich man's drink, leaving beer, the poor man's drink, enormously taxed. But we had no

organization of this sort, and, consequently, though multitudes felt indignant, no united movement was made. Let us then learn wisdom by experience. Others will say, "Yours is a good cause, the continuance of the malt tax is a great shame, but I don't believe you'll succeed."—Answer: If we all said so, certainly nothing would be done; and if others had said the same there would have been no Reform Bill in 1832, no free trade in 1846. Would it not be a course more manly and more worthy of respect to say, Is the cause good?

if it is, it shall not suffer for want of my help. Gentlemen, we entreat you to remember that if we would succeed we must not only wish the cause well, but each one must help a little. According to the old saying, it must be "a long pull, a strong pull, and a pull all together." If each one of you is willing to do his part, success is certain.

P.S.—The secretary, Mr. R. L. EVERETT, of Rushmere, Ipswich, will be glad to answer any inquiry, or to receive any communication relative to the subject.

AGRICULTURAL REPORTS.

GENERAL AGRICULTURAL REPORT FOR AUGUST.

At no period since 1816 has so much excitement prevailed in agricultural, as well as commercial circles, as regards the ultimate fate of the crops, as since we last wrote. The long continuance of unfavourable weather and the extensive backward state of the wheats, added to prospects of a deficient yield, have, as might be expected, been the all-absorbing topic of serious consideration. The agricultural body have looked forward to results of a most grave character; the monetary classes have been daily preparing for a higher range in the value of money, and, in not a few instances, for a grand crash from an enormous export of gold to pay for foreign corn to meet our necessities. In all parts of the country, as well as through the Continent, there has been a considerable advance in the value of all kinds of produce, and the movement in foreign food has been unusually large. Fortunately for the consumers, the importations have been on a large scale; and those importations will, no doubt, continue so during the remainder of the year. Not that we labour under the impression that we shall have famine prices, or that the whole of our crop will be lost, owing to the unseasonable weather, but it becomes necessary to regard with some degree of anxiety what is passing elsewhere. The crop of wheat produced in the United States this year is generally admitted to be a large one, and of very superior quality; hence, shipments to England have been commenced on a very large scale, so large, indeed, that it is now a matter of difficulty to find freight room for the present outflow. In the southern parts of Europe the crops are turning out well, but in the northern a reverse state of things prevails. So backward are the crops, that the French Government have found it necessary to suspend the sliding scale upon imports, and relieve from tonnage dues all vessels bringing produce into the various ports, until September, 1861. This change in the system, however, refers to imports only, so that exports are only permitted under the sliding scale. It follows, therefore, that France is likely to become a powerful competitor for food in the large grain markets of the world, and that prices, consequently, are likely to rule high during the remainder of the year, even though our own harvest may, after all, turn out moderately abundant. This however is the highest estimate we can place upon it; but there are one or two features which require special remark. Had the wheats ripened as early as in 1859, nearly the whole of them must have sprouted ere this; but, happily, we have a very backward harvest, and its extreme backwardness has, to some extent, prevented a more serious state of things than would otherwise have been the case. Sprouted and diseased wheats are, it is true, to be met with in most localities; but we are of opinion that the damage thus sustained by the crop is not general. This is certainly a redeeming feature; but who will say that even now fully one-third of the entire growth may not be sacrificed, from the want of fine weather to secure it? The last few days of the month were indicative of a return of a more seasonable temperature, but the numerous changes in it have sadly perplexed all connected with the soil. Admitting that the aggregate yield of wheat will be about one-fifth less than in 1859—assuming that it is stacked in moderate condition, although as yet very little has reached the stackyards—it is evident that for some time we shall have strong prices, even with a heavy importation from abroad. Another feature considerably against the crop being stacked in anything like

moderate condition, with numerous changes in the weather, is the enormous growth of weeds even on the best lands. This growth must necessitate the shocks being kept longer in the fields than usual; hence, we apprehend that, with very few exceptions, the wheats will be carted in a damp state, and that consequently we shall have wretchedly poor samples on offer in the various markets for a considerable period. In reference to spring corn, we may observe that a great difference of opinion prevails on the subject of yield and condition. Even in some of our best districts barley is still wholly unfit for the sickle, and the same remark may be applied to oats: whilst it is pretty generally admitted that the prospects of those crops are very poor ones. It follows, therefore, that prices are likely to rule very high, especially for fine parcels, and that consumption must be chiefly met by importations from abroad. Beans and peas, however, are the largest crop ever known; but their quality must of necessity turn out inferior, from long exposure in the fields. In some counties peas have now remained on the ground for nearly five weeks.

The stocks of wheat in the hands of the growers are now greatly reduced; but on the Continent they appear to be seasonably good. Whilst, therefore, we are in a position to draw upon foreign resources, we are not likely to suffer from famine prices; nevertheless, a further continuance of wet must have the effect of advancing the quotations considerably beyond their present level.

In Ireland, the same state of weather has prevailed as in England; consequently, very little grain has, as yet, been saved. Our Scotch letters, however, state that much less rain has fallen there; that wheat, barley, and oats have been carried; but that, of course, large quantities of grain are still in the fields—the bulk, in fact, of the entire crop. Apparently, Scotland is suffering less severely from an unseasonable temperature than the farmers of England.

We regret to state that most unfavourable accounts have come to hand respecting the potato crop. Some persons contend that fully two-thirds of the entire growth have been lost by disease; but we have every reason to believe that many of the accounts are overcharged; nevertheless, there is no doubt whatever but that we shall be able to secure smaller quantities than in 1859. This loss of food must, of necessity operate upon the value of wheat, both here and on the Continent.

At one period, both hay and straw were selling at very high prices. They have since become more moderate; but we never recollect a season during which hay has remained so long in the fields as during the present, or during which the crop was stacked in such poor condition. There is a great abundance of it; but the bulk of the supply must remain some time in stack ere it can become a saleable commodity.

The great abundance of pasture herbage has added considerably to the weight and condition of fat stock, the supplies of which on offer in the various markets have increased to some extent. Prices have had a drooping tendency; nevertheless, they still rule high, and, consequently, in favour of large importations from abroad.

The Colonial wool sales have been brought to a close under favourable auspices. During their progress nearly 90,000 bales were disposed of, at prices fully equal to those current in the previous series. English wool, though in good supply, still commands full quotations.

The fruit crop has turned out very abundant, and, on the whole, of good quality. The importations have been com-

paratively trifling, and prices have ruled lower than in many previous years.

The growth of hops this year is a complete failure. Prices, therefore, have rapidly advanced, and the estimated duty has declined to £50,000. In some plantations scarcely any burr is to be seen, and the growth will not pay the expense of picking.

The turnip crop is likely to be a very large one. Swedes and mangolds have done well; but warm weather is much required to develop the qualities of those roots. We may observe that there is now an unusually large supply of cattle food for winter use.

In Ireland and Scotland the grain trade has been active at generally advanced rates. The shipments to England have been on a very limited scale, owing to the reduced stocks of produce on hand; and very few sellers have come forward except at high prices.

REVIEW OF THE CATTLE TRADE DURING THE PAST MONTH.

The large supplies of pastures and other food, the rapid improvement in the condition of beasts and sheep, both in the United Kingdom and on the Continent, and the increase of arrivals from most sources of supply, have had their accustomed influence on value. The decrease in the consumption has no doubt had some effect upon the trade, which, compared with several previous months, has ruled somewhat heavy, on easier terms. The price of beef has now become moderate, and that of mutton, lamb, veal, and pork are not extravagantly high, considering the unfavourable season during the early part of the year, and the scarcity of what may be termed "really prime" animals. The Irish and Scotch demand in London having wholly fallen off, metropolitan consumption has been more readily met. That demand, which at one time threatened famine prices in the Metropolis, seems to have resulted in heavy losses to those engaged in it; hence, from Ireland we are now receiving full average supplies; but from Scotland, with the exception of a few sheep, next to nothing has reached us during the whole of the month. We have, however, reason to believe that the numbers of beasts now in progress of fattening in that country for England are larger than in most previous seasons; but the graziers, true to their own interests, wisely decline to forward them otherwise than in a fat state. Had the English graziers adopted the same line of policy during the last ten years the advantage to the whole country would have been enormous. We should not have had to deplore a wholesale slaughter of young animals in a half-fat state, the want of adequate supplies of food, or rapid fluctuations in the quotations. However well the system may have paid, it is obvious that from time to time we shall be suffering from an unnatural state of things, and that we shall be compelled to import largely to meet the necessities of the people.

In all quarters stock has been tolerably free from disease; but we are apprehensive that the prevailing wet weather will lead to numerous cases of foot-rot in sheep.

The imports of foreign stock have been on a very liberal scale, as will be seen by the annexed figures:

IMPORTS INTO LONDON IN AUGUST.

	HEAD.
Beasts	6,647
Sheep	38,249
Lambs	1,856
Calves	2,520
Pigs	4,075

Total 53,347

COMPARISON OF IMPORTS.

	Beasts.	Sheep.	Lambs.	Calves.	Pigs.
1855.....	5,941	22,605	984	2,484	3,476
1856.....	5,677	17,801	1,271	2,301	1,901
1857.....	4,692	23,215	1,760	2,661	2,322
1858.....	3,293	19,500	2,764	3,512	2,935
1859.....	6,502	2,9175	3,308	3,254	1,805

The above comparison shows that last month we imported an unusually large number of sheep; but we may observe that they have added very little to the consumption, as they have been principally composed of merinoes from Germany, in

wretchedly poor condition. This must be obvious, when we state that the majority of them have been sold at from 1s. to 21s. each. Some of the Dutch sheep, however, have realized over 60s. each.

The total supplies exhibited in the Metropolitan Market have been as under:

	HEAD.
Beasts	22,290
Cows	490
Sheep and lambs	151,500
Calves	3,346
Pigs	2,070

The arrivals of beasts from Lincolnshire, Leicestershire and Northamptonshire have amounted to 10,800 shorthorns, &c.; from other parts of England, 4,500 of various breeds; from Scotland, 7 Scots; and from Ireland, 1,826 oxen and crosses.

COMPARISON OF SUPPLIES.

	Aug.	Beasts.	Sheep & Lambs.	Calves.	Pigs.
1855.....	20,816	151,870	3,356	4,272	
1856.....	21,271	147,250	3,354	2,875	
1857.....	20,695	143,758	3,173	2,450	
1858.....	26,915	151,530	2,127	3,510	
1859.....	23,170	165,090	3,322	2,330	

Beef has sold at from 3s. to 5s. 6d.; mutton, 3s. 8d. to 5s. 6d.; lamb, 5s. 4d. to 6s. 6d.; veal, 4s. 2d. to 5s. 6d.; and pork, 4s. to 5s. per 8lbs. to sink the offer.

COMPARISON OF PRICES.

	Aug. 1857.		Aug., 1858.		Aug., 1859.						
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.					
Beef, from 3	0	5	0	2	10	5	0	3	0	4	8
Mutton .. 2	10	5	4	3	0	5	0	3	2	5	0
Lamb 4	8	6	0	4	8	6	0	4	4	6	0
Veal 3	6	5	0	3	6	5	0	3	4	5	0
Pork..... 3	8	4	8	3	0	4	2	3	6	4	6

From Scotland and various parts of England increased supplies of dead meat have been received up to Newgate and Leadenhall markets, in which the trade generally has ruled heavy, on easier terms.

HEREFORDSHIRE.

Gloomy as have been all our former reports from this county, during the present year, we fear the worst is not past; such a succession of cold rains we never remember to have experienced; and it appears the end is not yet, inasmuch as at the time we write we have a falling barometer, a southerly wind, and after only a few hours of dry weather, another fall of rain. Hay-making has been a most tedious and expensive operation, for with the exception of the early part of July, there has been no possible chance of making any good, and a great portion of that put in the ricks was scarcely worth the labour of putting it there. We never remember seeing so much damaged and spoiled: this partly arises from the fact of farmers being too busy turnip-planting during the short period of fine weather we had, to enable them either to spare hands to mow, or properly attend to it after being cut, and strongly points to the great benefit they would have derived from the use of mowing-machines. In our own neighbourhood this part of our harvest has been commenced twelve weeks, and is not yet finished. Other harvest operations commenced with peas, winter oats, barley, and clover-seed, and much of it has shared the fate of the hay. Reaping has partially commenced, but the wheat is not ripe; therefore, we ourselves hesitate beginning during such a precarious season, trusting in that Almighty Being who has promised us that "seed time and harvest shall endure until the end of time," and may He of His infinite mercy grant a speedy fulfilment of His gracious promise. The wheat is generally very free from blight, and has continued green a long time since blossoming, which we consider a great blessing, inasmuch as had it been ripe during the late terrific gales and heavy rains, the loss would have been very serious. Where the crops are heavy, they are much laid, but we regret to say heavy crops of this corn is the exception and not the rule in the county this year, and we see no reason to alter our former prediction, viz., that the crop will be 10 per cent. below an average. Barley is

likely to prove a full average. Beans are a luxuriant crop, and we fear too much so to ensure a good yield. Peas, upon dry soils, were never better; we have seen some upon stiff land perfectly valueless. Our mangold, swede, and turnip crops will certainly be far below an average—much of the land originally intended for these crops was not planted, and from the lateness and peculiarity of the season those planted do not present a luxuriant appearance, even upon our best adapted soils for them. The potato crop has suffered more from disease than any year since 1847; the early sorts which heretofore escaped (or nearly so) are this year much diseased: even those planted on boarded floors for seed are going. Hops are a complete failure; not so our orchard fruit. There will be a large quantity of cider and perry made this year, but we fear the quality will be inferior from the want of sunshine. Fat stock continues scarce, although there has recently been an abundance of keep, but the grass and the animals have been continually wet, and unless where they were well supplied with artificial in addition to the green food, they have made little or no progress. In 1857, we commenced reaping on the 23th July; in 1858, on the 26th; and 1859, on the 25th of that month; this year, we hope to commence on the 27th August.—August 24th. T. D.

ISLE OF ELY.

At this time last year the reaping was completed in this neighbourhood, and nearly the whole of the white corn in stack; and here we are, 22nd August, and scarcely a sheaf cut, and nothing certainly in condition for cutting. Yesterday was a fine sunny day, and we had hopes of an improvement in the weather; to-day has been a wet, gloomy, miserable one. Several of our farmers are just ready to make a beginning, but the grain is still soft and green, and would well bear to stand another week. Hands seem to promise plenty, as several strangers are about. The continuance of wet, gloomy weather has since my last had a most prejudicial effect on the crops, and the white wheats especially are much injured, the straw is getting ripe, while the ear and grain remain soft and green, and must now, under the most favourable weather, prove a thin inferior sample, and the whole crop. Oats and wheat are daily being beaten closer to the ground; oats thorough-growing and discoloured. The peas are withered, and lying on the ground; they are well podded, but even before reaping were almost rotten, and very much sprouted. The mustard is mostly cut, but only partially stacked: the crop is not well spoken of. Beans are mostly badly podded, though a full crop. Potatoes every day get worse; the disease is general, the tubers few at a root, and very small. This is certainly a desponding report, but not more so than appearances justify.—Aug. 22.

NORTH HANTS.

Before harvest it has been our custom to report the state of the crops, and of agriculture generally, in this district. In the hope of amendment we have deferred this duty until to do so longer would be weakness on our part. This evening (Saturday) we are writing with the rain falling heavily, which has been the case without interruption for nearly forty-eight hours, during the greater part of which time the wind has been excessively boisterous. Come harvest when it may, the injury now done is irretrievable. Up to the middle of July we had hope of the wheat crop turning out favourable. The thin plant on the chalk soils—where sufficient remained to stand (much had been ploughed up)—was improved by the wet season; now this crop, on both chalk and clays, is laid and blown about in all directions, and where the crop is heavy it has grown up through the straw afresh. Old wheat is reduced to a narrow compass; stock in few hands. Barley on poor chalk not farmed highly may be yet pretty good in quality. High farming this year proves a great loss. The straw had attained an unusual length, and was consequently weak and easily laid by the rain and wind. Where the farmer had an expectation of seven or eight quarters of barley per acre may now be estimated at half the quantity; the quality most inferior. Oats have all along looked well, and where not too heavy may yet be a fair crop. The same remark applies to beans; they are very high and well podded. The crop of peas is variable. A

large quantity of sainfoin and clover hay was stacked in good condition; meadow hay nearly all spoiled. The season has not been suited to mangel; the bulbs are small; we have a larger breadth planted this than any previous year. Swedes are pretty good. Turnips too backward, and generally very full of weeds. No blame to the farmer; his outlay for hoeing will be heavy, and the labour is nearly thrown away. Potatoes worse for disease than in any year since 1847. Sheep scarce and very dear; we may safely predict mutton will be 1s. per lb. within a twelvemonth. Six-tooth and four-tooth sheep there are none, except ewes; they have been long swept off. This season the lambs have been sent to market in such numbers as to seriously diminish our flocks. Higher prices must be the result. The national calamity of a very late harvest appears now to be inevitable. We do not write in a complaining, murmuring spirit; we leave the matter in the hands of Him who "doeth all things well," and who has said, "Seed time and harvest shall never fail."—August 25.

SOMERSETSHIRE.

The wheat harvest has now become pretty general, but the weather has been so far most unfavourable, especially last week. A good deal of wheat has been cut, but very little yet saved. The crop is in general very good, and if we have a fine month for the harvest the yield is likely to be considerably above an average. Burgess and Key's excellent reapers are gradually overcoming the prejudices of the farmer and labourer, and are a good deal used. They answer well. Barley is a fair crop—not a heavy one, nor is it spoken nearly as highly of as the wheat: not much has yet been cut. Beans are a heavy crop, much above an average, but in many places very foul, never having been properly hoed. The mangel crop is decidedly good; not many swedes in, and what are look rather bad. Few stubble turnips are likely to be drilled this year, on account of the extreme lateness of the harvest. Stock are likely to be short off for winter fodder, as the grass crop was by no means a heavy one, though some excellent hay was made in the early part of July. Potatoes, owing to the very wet summer, are very bad, nearly all being rotten. If we can only get a month's fine harvest weather from this time, the farmer will, I think, have little cause to indulge in his favourite grumble, with the high price wheat and stock are likely to be during winter. The sportsman's prospects are much worse, birds being very scarce indeed, and the harvest so late. No good bags are expected on the first.—August 26.

SOUTH HERTFORDSHIRE.

The weather becomes more and more serious. If possible we have less sun, and we are now having much more rain. On the 23rd, about 9 p.m., the rain fell in torrents, and it continued to fall heavily until midnight. To-day (24th) a steady rain again set in at 11 a.m., and continues as we write. The effects of the bad weather on all kinds of corn are painfully evident, and the utter loss and waste of an enormous amount of food is certain. Heavy and laid crops of wheat are mil-dewing and rotting past redemption; barley in a similar state is sprouting before it is cut; oats in the sheaf are also growing, and peas shed whilst they are being cut. The under straw of peas is rotten, whilst the upper straw is green and in bloom. No great quantity of corn is yet cut, the weather being frequently too bad for the men to work out of doors. The terrible calamity of a bad harvest seems in store for us, which, added to one of the most lingering and expensive haymaking seasons ever known, must seriously reduce the capital of our small farmers, and affect the price and quality of food for many months, if not for years. The hay yet uncured is worthless, and the quantity in the fields is considerable. The watery state of the grass prevents cattle laying on flesh. The mortality in sheep, particularly lambs, is far beyond the average. The root crops are backward, and in many places smothered with weeds; or if tolerably clean, cannot grow as they should, for want of sun and warmth; therefore we see little hope of meat being cheaper or more plentiful. Our village clergymen offer special prayers on Sabbath-days for the safety of the harvest, in which every lover of his fellow-man and his country must humbly though heartily join.

CALENDAR OF AGRICULTURE.

In the northern counties, this month is the general period of harvest. Cut beans with hand-sickle, tie the crop into sheaves with straw ropes or of tarred twine, and carry the crop when dry, and build it into ricks, or lodge it in barns. Thatch all ricks quickly; beans and peas require immediate thatching, as leguminous straws imbibe and hold much moisture. Carry all straws from the rick-yard to the cattle yards for litter, and rake all clean. Employ plenty of hands in harvest, and reward them liberally.

Gather fruits, as pears and apples.

Finish the dunging of clay fallows. Cart stones and tiles to drains. Scour ditches. Repair, widen, and strengthen brooks and rivulets; and mix the earth excavations with lime for composts. Lay well-prepared composts on grass lands eaten bare, and on lucerne, the surface being first scarified, and then roll it heavily. This preparation raises the first spring crop.

Sow winter vetches on good lands, and fallowed and dunged on poorer soils. Mix the seed with beans or winter barley.

Plough the stubbles for next year's green crop fallows, and work the lands, and the dung may also be applied, which very much furthers the spring operations. Skim the surface from weeds of pea and bean grattens to be sown with wheat. The autumn cleaning of stubbles is a practice of much value in early climates and on dry lands.

Seed-furrow in the end of the month the clay fallows to be sown with wheat. Plough grass leys for the same purpose, and sow if circumstances permit. Collect and burn the weeds on scarified grounds, and lay on dung. Plough with one furrow, and sow the wheat.

Pick hops. The flowers are placed in bins, being first cut off by scissors, and are paid for at a fixed rate; then carried to the cart, and dried chiefly with coke. Some use sulphur, to give the hops a yellow tinge. The haulm of hop makes a good litter. Set the poles erect, and cover till next year.

Keep all live stock in good condition, especially the work-horses, as the wheat-sowing is at hand.

CALENDAR OF GARDENING.

Mushroom beds are now prepared, being the season for those produced naturally, if the month be showery.

Lettuces may be sown early for winter, and when fit for being transplanted, the young sets are placed in a roomy frame, where to stand for the winter. Some hardy sorts will endure the open frosts.

Plant cabbages for spring in an open situation, on rich lands and well prepared. Fresh earths are very suitable for this plant.

The plants of spinach are now thinned to regular distances of two or three inches, the plants will then become stocky; and may be thinned again, and the plants so removed for the table.

Thin out and hoe the spaces between the rows of turnips, which should always be sown in drills.

Sow salads again if required.

Exterminate every weed; and bring each plot to that state of neatness and order, which renders a

garden a sober, quiet picture during winter, more beautiful perhaps than that of the rampant luxuriance of summer.

Plant strawberry beds in rows, of plants that have been raised in pots, and now transplanted with balls of earth. But fresh young-rooted sets will rarely fail.

Place nets over wall fruit, to catch the falling fruit.

Suspend bottles half-filled with treacle-water among the branches, into which wasps will enter and are destroyed.

Remove greenhouse plants to their winter quarters, and clip box-edgings. Transplant pinks raised from pipings; and also some hardy herbaceous plants. Then rough dig and fork all the vacant parts of borders.

Weed and roll the walks of gravel when in a damp state.

REVIEW OF THE CORN TRADE

DURING THE PAST MONTH.

August has come and gone; and the many hopes that were entertained of its bringing with it a month of summer, have passed away in disappointment. It has, in truth, become a painful task to note the perpetual inclemency of the weather. Scarcely more than two days of sunshine have followed each other; while the quantity of rain that

has fallen has been prodigious, followed mostly by cold nights. The crops have, consequently, made little progress; and it is almost a wonder that any pieces have ripened; but they have at last, after a manner far from satisfactory; and many fields have fallen below the sickle during the last week. Let us hope that Providence, though threatening, will

yet be propitious, and prove more favourable than our fears!

One calamitous fact is, however, settled. The destruction among potatoes is as extensive as hitherto known, not being limited to the United Kingdom, but spreading over Northern Europe, and already influencing the price of rye, through large speculative purchases. This grain, too, in these countries, has been poor in its yield, and damaged in harvesting by the weather. So the cheaper sorts of food, which might have served as substitutes in case of a failure in wheat, have already risen in price, and are reduced in quantity. There are yet some favourable circumstances in the general depression with regard to wheat. Mildew, which was greatly feared, has been seldom complained of; and the weather seems to have deprived the growing crops of their usual susceptibility as to sprouting: so a more than ordinary amount of moisture may be borne without serious damage. But the forward pieces, and much Talavera wheat, have partially sprouted, as well as barley and peas.

Some place the time for the clearance of our fields as distant as November—a period that formerly was common in Scotland; but let us hope that a golden autumn will yet come to the relief of farmers.

The weather having been equally bad in the North of France, the Imperial Government has suspended the operation of the sliding scale to September, 1861, admitting wheat at the minimum scale of duty till then, in all vessels by sea as well as transit by land. This, being about 8d. per qr., is below our own slight impost.

It is unsatisfactory to the British farmer to be told that Canada and the United States have an unusual abundance, and that Southern Russia has a plentiful yield, of fine quality. We have yet to see what the Baltic can do, the weather there having also been bad, though no great fears have been yet entertained.

The London markets, for the first three weeks, were about balanced in their fluctuations; but the last week exhibited a rise of 4s. per qr. on wheat, and 6s. per sack on town flour. The general averages, however, slowly following the course of business, exhibit only a difference of 2s. 6d. per qr. in favour of prices, commencing at 57s., and closing at 59s. 6d. per qr.

Stocks in this country appear nearly exhausted; and had it not been for more liberal arrivals of foreign lately received, the rise must have exceeded 10s. per qr. For, be it remembered, last year's yield was seriously deficient; and, instead of its being made up by an equivalent foreign import, the long prevalence of low prices had so entirely dispirited importers and speculators, that very few orders went out; and the sum of last year's arrivals, for the cereal year ending 31st July last, shows a decrease, as compared with the three years preceding, of 1,205,333 qrs., wheat and flour included, being at the rate of 25 per cent. reduction, with a rapidly-rising population.

The future rests upon the weather; but as we have held, and do hold, that this unpropitious year as to the growth of the corn gave no promise of

a full average yield, so, should the gatherings be disastrous, our wants as a country are likely to reach to ten millions of qrs.; and to supply such a store, all the surplus both of America and Europe would be necessary, as well as all the spare Indian corn which the old and new world could send on.

Foreign markets at such a time of excitement are little to be relied on, but the following rates have recently obtained at the ports named. The Paris market quoted about 64s. 2d. for the best wheat, the price of red at Nantes being 54s. per qr. At Louvain, 62 to 63lbs. wheat was worth 63s. to 64s. per qr. Baltic wheat at Antwerp was quoted 61s. per qr., hard Syrian 63s. The highest price at Rotterdam was 67s. per qr. At Hambro' there had been a rise of 3s. per qr., Mecklenburg weighing 63lbs. per bushel being sold at 66s. per qr., and subsequently held at 1s. per qr. more. At Groningen 61 to 62lbs. had brought 57s. per qr. on the 21st instant. Prices at Odessa ranged from 38s. to 45s. At Galatz, sales of soft wheat had been making at 36s. 6d. per qr. free on board. Saide wheat at Alexandria had brought 34s. to 35s. per qr. Sales were made at Trieste at 54s. At Santander flour had been selling at 40s. per sack. Soft wheat at Algiers was worth 47s. 6d. per qr. The New York markets, in consequence of large supplies from the West, had lately been calm, notwithstanding a free export to England. Spring wheat at Montreal had been selling at about 40s. 10d. per 480lbs.; Winter at Toronto was worth 40s. per qr. of 480lbs.; Spring wheat at Chicago 28s. 4d. to 28s. 8d. per 480lbs. Advices from New York made white Michigan wheat worth 47s. 6d. to 50s. per qr. of 480lb., and winter red 47s. 6d. per qr., with freights 7s. 3d. to 7s. 9d. per qr.

The first Monday in London opened on a large foreign and moderate English supply of wheat. The quantity showing from Essex and Kent during the morning was but small, but as the previous week's supply had not been disposed of, in consequence of the heavy arrival of foreign and the indisposition of holders to take lower rates for home-grown samples, Essex factors found it necessary to give way 1s. to 2s. per qr. The large attendance from the country enabled holders of foreign to maintain the previous quotations, and there was a good demand for cargoes. The country markets this week were mostly unaltered, some, however, as Hull, Newcastle, Birmingham, Boston, and Newark, were 1s. per qr. dearer. Newbury and a few other places were as much down, Market-Harbro' and Newark noting a decline of 1s. to 2s. per qr. Liverpool was 1d. to 2d. per cent dearer on Tuesday, without subsequent change. The weather this week was fair in Scotland, but the principal markets remained firm.

On the second Monday, though the foreign supplies were good, they were much reduced, as were the English arrivals. Very little appearing from the near counties, there was a better sale on previous terms, and foreign factors found a fair enquiry from country buyers at full prices. Sales on the coast still proceeded freely. With indications of the weather taking up, some of the country wheat markets were dull; Birmingham, Sheffield, Spalding, and Bristol were firm; Newcastle, Hull,

and Norwich were 1s. per qr. higher; Lynn, St. Ives, and Market-Harbo' quoted 1s. to 2s. per qr. more money; Gloucester and Newark reporting a rise of 2s. to 3s. per qr. The Scotch markets were again moving upwards. Liverpool was dearer both on Tuesday and Friday, noting a rise on each market day of 3d. per cental.

The third Monday had a larger foreign supply, though that of home growth continued moderate. The show this morning from Kent and Essex was very small, and English factors held for an advance of 1s. to 2s. per qr., which was occasionally paid, though a heavy rain on Wednesday made it practicable. The country markets this week evinced more firmness than London. Hull, Birmingham, Leeds, and several other places realized only 1s. per qr. more; but Boston, Stockton-on-Tees, and Newbury were up 2s. per qr. Bristol and Gloucester quoted 1s. to 2s. advance. Oxford, Norwich, and York made the rise 2s. to 3s. per qr. London on Friday was 2s. per qr. dearer.

On the fourth Monday there was again a liberal arrival of foreign wheat, but not much English. The show from Kent and Essex on this occasion was insignificant. It having rained very heavily throughout the previous Saturday, and the cutting of wheat having commenced, and much injury done, there was a further improvement on Friday's rates, making the week's rise on English samples about 4s. per qr. A very numerous attendance from the country came as buyers, but as holders of foreign would not sell under 3s. to 4s. per qr. advance, business was checked.

The imports into London for the four weeks were 13,325 qrs. English, 151,324 qrs. foreign, against 18,324 qrs. English, and 55,074 qrs. foreign in 1859. The total imports for July into the kingdom were 509,355 qrs. wheat, 467,659 cwts. flour.

The flour trade for the first three weeks showed little change, gaining for Norfolk 1s. to 2s. per sack, with some firmness in foreign sorts, notwithstanding the large imports; but on the last Monday an advance on town-made qualities of 6s. per sack was announced, it being made by two successive rises of 3s. each, on the previous Friday and Wednesday. Norfolks, which opened at 41s., were then held at 45s. per sack, and American at 33s. to 34s. per brl., the advance on the latter being about 2s. to 3s. per brl. There is, however, but little of fine quality in the late imports. The receipts in London for the four weeks were 59,793 sks. English, 20,061 sks. 66,684 brls. foreign, against 42,939 sks. English, 1,898 sks. foreign for the same time last year.

The receipts of British barley during the past month have been very trifling, and those from the Continent only moderate. The market has been steadily advancing, partly from the exhaustion of stocks, and partly from the injury done to the growing crops. The first improvement noted was 6d. to 1s. on the third Monday, but on the fourth there was a further advance of 1s. to 2s., making the month's rise on grinding qualities 1s. 6d. per qr., and on sweet heavy qualities fully 2s. per qr.

The month's imports have been into London as follows: 526 qrs. British only, and 34,944 qrs. foreign, against 352 qrs. British, and 7,788 qrs.

foreign for four weeks in August 1859. The imports for July into the kingdom were 229,988 qrs.

The prospect of injury to the barley crop, as well as its generally unpromising appearance, has raised the price of malt 3s. to 4s. per qr., with much more disposition to buy on the part of brewers; but the rise has only taken place during the last fortnight.

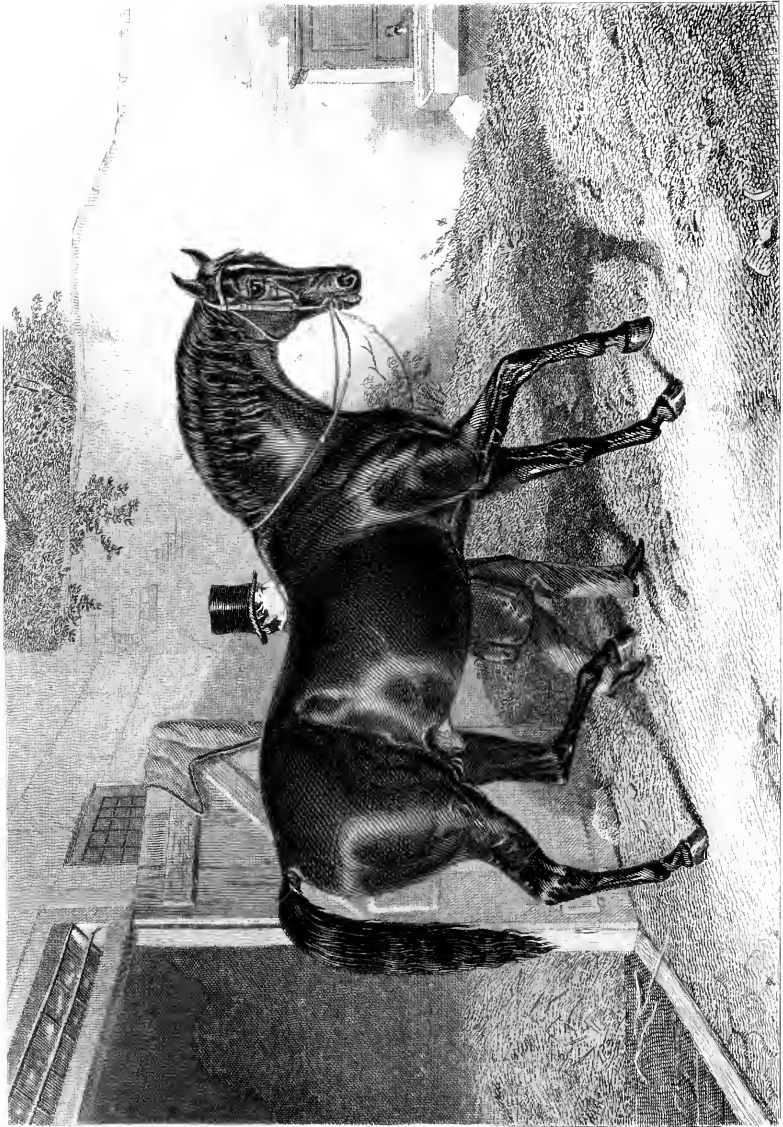
There having been five Mondays in July, we were compelled to leave out of the calculation for that month a most extraordinary arrival of Oats, which took place on the fifth week, viz., 187,875 qrs. of foreign, which then lowered prices 6d. to 1s. per qr. This month the arrivals, though heavy, have not prevented some reaction in favour of this grain. Much of the late glut has been landed, and the weekly arrivals lately being beyond consumption, have also partly added to the stores; but the time that must elapse before new corn can be available as good horse food is yet so distant that opinion in favour of oats has sent up this grain fully 6d. per qr. every successive Monday till the fourth, when the rise was about 1s. per qr., so that the gain for the month has been 2s. 6d. per qr. Nor does there seem any probability of a permanent reduction till the new crop appears in quantity. The imports into London during the four weeks were 1,579 qrs. English, only 53 qrs. Scotch, 447 qrs. Irish, and 177,917 qrs. foreign, showing our dependence on foreign supplies. For the four weeks in August, 1859, they were 1,398 qrs. English, 4,378 qrs. Scotch, 6,050 qrs. Irish, 184,931 qrs. foreign. The imports into the kingdom for July last were 501,341 qrs.

Beans during the month have only improved in value about 1s. per qr. The winter-sown crop has been nearly a failure; but generally this crop is well spoken of, the rain apparently having cleared off much blight that was feared. The imports into London for the four weeks have been 1,937 qrs. English and 5,425 qrs. foreign—against 1,544 qrs. English and 1,447 qrs. foreign in 1859. The imports into the United Kingdom last July were 27,298 qrs.

The supplies of peas during the month have been very small, scarcely any mapes or duns having come to market, and the imports, principally white, from Canada, being wanted to supply their place, as well as for the purpose of boiling, though the demand at the time of year is insignificant. The failure of the potato crop has had something to do with this advance, as well as the injury sustained by wet to the peas already cut. It would therefore seem likely that prices will be quite equal to those now ruling. The imports into London for the four weeks were 272 qrs. English and 951 qrs. foreign—against 1,529 qrs. English and 2,069 qrs. foreign in 1859. The total imports in July last were 60,585 qrs., of which 33,807 qrs. were from Canada.

The linseed market, too, has been advancing; for the first fortnight it was calm, for the last each week has recorded a rise of 2s. per qr., being 4s. for the month; with a good sale for cakes, at a proportionately increased value. The probability yet seems in favour of a rise.

The seed market has also felt under the influence





THE FARMER'S MAGAZINE.

OCTOBER, 1860.

THEON; A THOROUGH-BRED STALLION,

THE PROPERTY OF MR. PISHEY SNAITH, OF BOSTON.

Theon, bred by Mr. Thornhill in 1837, was by Emilius, out of Maria by Whisker, her dam Gibside Fairy by Hermes—Vicissitude by Pipator—Beatrice by Sir Peter—Pyrrha by Matchem.

Emilius, bred by Colonel Udny in 1820, was by Orville out of Emily by Stamford, her dam by Whiskey, out of Grey Dorimant by Dorimant. Emilius, who won the Derby of his year, is yet better known as the best stallion of his time. He was the sire of Priam, also a winner of the Derby; of Plenipotentiary, another winner of the Derby; of Mango, a winner of the St. Leger; of Euclid, who ran a dead heat for the St. Leger; and of Oxygen, who won the Oaks. There were upwards of a hundred and fifty other winners out by Emilius, when he died, full of years and honours, at Easby Abbey, in the autumn of 1847.

Maria, a full sister to Emma, the dam of Cothrestone, was bred by the trustees of Lord Strathmore in 1827. She came out, however, in the colours of the Marquis of Queensbury, but changed hands at three years old, and ran a very stout mare for the Duke of Cleveland—winning, among other things, the Tureen at York, when she beat Laurel and Medoro. Mr. Thornhill purchased her at the end of her third season on the turf, and she was put to the stud the next spring, throwing her first foal in 1834. This was Laura by Emilius, to which horse Maria threw no less than eleven foals. These included Euclid, Theon, Equation, Extempore, Example, Ellipsis, and others so readily identified with the Riddlesworth stud.

Theon stood just fifteen hands three inches high. He was a beautiful dark-brown, free from white, with the exception of a few grey patches over the eyes and forehead denoting age. He had a sweet head and good neck, but with the crest appearing little heavy from the loss of mane at his withers. He had the finest possible shoulders, a round bar-

rel, with an immensely powerful back, and hunting-looking quarters. He had great length in the thigh, capital hocks and arms, and wonderfully good legs and feet. His action was perfect, and in his temper he was as gentle as a lamb, although apt to get excited when out.

On the sale of the Duke of Cleveland, Theon was purchased by Mr. Blacker of Ripon, where the horse stood for his first four seasons—1842, '43, '44, and '45. He then went to Newmarket for two years, was at the Willesden Paddocks in 1849, and again for one season at Newmarket in 1850. He returned to Ripon for the next two seasons, and was then sold to Baron Rothschild, at whose seat—Mentmore in Buckinghamshire—Theon was located for 1853, '54, and '55. In the autumn of this year, Mr. Pishey Snaith bought him at Doncaster, and he went at once to Boston, where he died in July last.

Theon's stock first came out in 1845, when a winner turned up in Brunette, followed by Sagacity, Sophistry, Alcoran, Salopian, Theodine, Theory (2), Moulton Lass, Firebolt, Tonic, Theorem, Bobby B., and some others. Theon, however, never had any great chance with thorough-bred mares, despite his fine blood and good looks. But his value as a stud-horse does not rest on the Calendar. His hunters and half-bred stock have long been deservedly famous, still those who had once had a taste of his sort were sure to come again. Let us instance a few of his successes in this way. Going to the highest quarters, we find the longest price for a riding-horse ever given by her Majesty was to secure a son of Theon; while the Emperor of France paid nine hundred guineas for two chargers by him. The top price for a hunter at Horncastle in 1858 was given by Mr. Slater for a Theon horse; and Mr. Percival sold another of his get for four hundred, Mr. Maynard one for five hun-

bred, and so on. Two half-bred yearlings made more recently a hundred and twenty, and a brown mare entered at the last Yorkshire show a couple of hundred. Not only all the Lincolnshire men, but the Manchester people, were equally staunch to him. In the five years Mr. Snaith had him, the horse served 508 mares. He was a very sure stock-getter; but though his famous brother Euclid was a chesnut, Theon never got anything but dark bays or browns, excepting only to a grey mare, when the foals would come the same colour. The young ones were all natural jumpers, and as stout as they generally were handsome.

Theon's own performances by no means ended with what he did on the turf. He was long deservedly distinguished as a show horse; and we well remember the sensation he made at the Salisbury meeting of the Royal Agricultural Society in 1857. Hobbie Noble, however, was there preferred to him; but as a stallion for getting hunters, he took the first prize of the Yorkshire Society, the first prize of the North Lincolnshire, and another first at the Weatherby meeting. He was, indeed, a wonderful horse to display himself, and really appeared to enjoy the admiration he commanded. To see the old horse come out of his box, arching his neck, and "snaking" his beautiful wicked head—with his velvety coat, and his rich, dark colour—his light, springy action, and corky look—was such a sight as a sportsman seldom wit-

nesses, and never forgets. He would have walked on cobwebs without breaking them; and had Darius ever owned such a horse, they must have made him king at once, without even waiting for the cheerful neigh that proclaimed him. On market-day at Horncastle or Spalding, everybody turned to have another glance at "old Theon;" and when an excursion-train came into Boston, one continual levee was held round his box. As for Mr. Snaith himself, his affection for his horse was more like that of the Arab of the Desert for his steed, than anything the cold, phlegmatic Englishman could be supposed to feel, even for such an animal. He talked of him and dreamed of him, and did everything for him but physic him. Though Mr. Snaith be himself a chemist, "Theon never had any, in any shape. Oats, bran, and bread, made of the finest wheat-flour, with carrots when in season, were what he lived on; and no horse ever got so many foals as he did in five years." At two o'clock every morning during the season did his owner himself turn out, to give his horse a bread-loaf; and during the three days the poor old horse was dying, the veterinary surgeon was never allowed to leave him. Even now that he is gone, long will his prowess live in the Fens and Shires, and many a story will the sober citizens of Boston have to tell of his triumphs. He was a good horse, with a good master; and let this eulogy be his epitaph.

SHROPSHIRE DOWNS,

PRIZE SHEEP,

THE PROPERTY OF MR. HENRY SMITH, JUN., OF NEW HOUSE, SUTTON MADDOCK.

These sheep were bred and exhibited by Mr. Henry Smith, long known as a breeder of Shropshires. The ram took the first prize at the Liverpool Meeting of the Liverpool and Manchester Agricultural Society, in September, 1859; and the three ewes, as a pen, were first, both at Liverpool and Ludlow, last year. Again, during the present season, Mr. Smith has taken no less than five first prizes for his sheep at the Bolton Meeting of the Lancashire Association; while year after year, his fat wethers have now for some time received the silver medal at Birmingham. Mr. Smith of course exhibited on the establishment of the new "Royal" class at Canterbury, but in so strong an entry he reached no higher than a commendation. He has an annual sale of rams and ewes at Shrewsbury in August, and his flock is in deservedly high repute, both with his own friends and neighbours, as well as with customers from more distant quarters.

Mr. Spooner, in the Journal of the Royal Agricultural Society, and Mr. Charles Howard at the Farmers' Club, have very recently testified to the worth of the Shropshire Downs; while in our own reports of the different meetings, we have long upheld the useful excellence of the new class. Their points, however, have been thus summed up by one whose experience and success make him an authority:—Hardihood of constitution, and adaptation to variety of soil and climate; size, and weight-making properties; natural productiveness; early maturity; aptitude to fatten, and comparative lightness of offal; beauty of form; excellence of quality; and weight, staple, and value of wool.

The Shropshire Downs are now spreading not only in England and Ireland, where we saw some very good specimens this summer, but to Australia, America, and other lands.

CLOVER-SICKNESS.

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

The recently published researches of Messrs. Lawes and Gilbert on the growth and failure of the clover plant, are well worthy of the reader's attention. They were carried on for a series of years, with all the care and scientific accuracy which usually attend the agricultural labours of their authors (*Jour. R. A. S.*, vol. xxi., p. 178). If the results they obtained were vague and inconclusive, the agriculturist must not feel surprised. The difficulties which surround all investigations relating to the diseases of organic life, will be very readily acknowledged by all those who have suffered by their visitations. Such a reader will feel that when we have before us a diseased plant or diseased animal, we encounter a phenomenon of whose origin we know next to nothing, and that all we can hope to accomplish is to note the symptoms and mark the effect of certain modes of treatment upon ailments whose origin we are utterly unable to comprehend. We have, indeed, in cases like these, to consider the action of the disturbing cause upon what we denominate the principle of life, the living principle of organised beings, of which we know so very little, and of which there is no present symptom of our ever knowing more. It is such a consideration which should prompt us to be patient at the slow increase to our knowledge of the cause of land becoming "clover-sick," and of the disease with which the clover plant has of late years been affected. We should not indeed be only patient, but we might often be more grateful than we always are, for the valuable additions to our knowledge, which the observations of the farmer and the chemist ever and anon bestow upon us.

The failure of the clover plant, it is well to remark, is not peculiar to our country; in Flanders, the loss has been, in many very extensive districts, as general, and perhaps more complete (*Jour. R. A. S.*, vol. i. p. 13). The German clover-growers have also shared the same fate as the far more skilful farmers of our own country. This unpleasant truth was some time since thus described by Professor Schweizer (*ibid*, vol. iii., p. 223). We have abundant evidence in Saxony (he observes) that when the soil is neither too loose nor too close, is deep, so that the plough can go eight inches down, and is also rather moist, clover is the most certain, and may be repeated the most frequently, not only every six years, but, with high farming, even every four years; on an inferior soil, we may be quite certain that clover will not do well every four years, as is proved in the neighbourhood of Dresden, where the land is completely clover-sick.

One or two practical reasons for the failure of the clover crop in England, have been assigned. Mr. George Turner, of Barton, near Exeter, some time since told his brother-farmers, that he had experienced on his own farm, the loss of red clover

very often where there was the very best plant at harvest, and that too on the best soils in good condition. "The result of my experience," he adds, "is this, that in nineteen times out of twenty its failure is entirely owing to the stubble being fed bare after harvest, and the plant being thus so weakened, as to prevent its standing the wet and cold of the succeeding winter. I have so repeatedly proved this on various soils, that I have not a doubt on the subject." The reverend W. Thorp, of Womesley, in Yorkshire, also concluded from the result of a series of patient observations, that to the frost of winter must be attributed the loss of the clover plant, and this in proportion to the want of cohesiveness in the soil (*ibid*, vol. iii., p. 335). Other persons have concluded that the clover plant exhausts the soil of certain mineral substances essential to its growth, and it was partly in reference to this opinion that clover-sick soils have been analyzed. And again as to the mineral constituents of the clover plant: these have been carefully examined. It was hoped that the result of these valuable enquiries would have thrown some light upon the cause of the clover failure; why the plant thrives better on some soils than others; why gypsum (sulphate of lime) operates so well on some clover lands, and is useless on others; but these apparently reasonable expectations were not realized. In some examinations by Professor Way and Mr. Ogston (*ibid*, vol. ix., p. 136), the chemical composition of red and white clover grown upon two widely differing kinds of soil was ascertained. The specimens they examined were grown by Mr. J. C. Morton, of Whitfield. The soils, one a sandy and the other a clay, upon which they were grown, are upon one of the beds of the Silurian series. The specimens of clover grown on different soils contained per cent. after being dried in the air—

	Red Clover.		White Clover.	
	Siliceous Sand.	Clay.	Siliceous Sand.	Clay.
Water	13.97	12.20	12.60	12.0
Ash	6.77	7.12	7.70	7.61

The next table gives the composition of 100 parts of each of the several ashes:—

	Red Clover.		White Clover.	
	Siliceous Sand.	Clay.	Siliceous Sand.	Clay.
Silica.....	4.03	2.66	4.63	2.74
Phosphoric acid ..	5.82	6.88	10.93	12.12
Sulphuric acid ...	3.91	4.46	7.05	7.38
Carbonic acid ..	12.92	20.94	18.64	17.41
Lime.....	35.02	36.76	26.32	26.51
Magnesia	11.91	10.53	7.46	8.83
Peroxide of iron ..	0.98	0.95	1.17	2.76
Potash.....	18.44	11.30	15.17	13.50
Soda.....	2.79	—	3.03	4.41
Chloride of Sodium	4.13	0.58	5.56	4.32
Chloride of Po- tassium }	—	5.92	—	—

"It is impossible." very justly add these two able chemists, "in carefully examining this table, not to observe how very little difference really exists between the specimens of the same variety grown upon different soils: the numbers given for red clover on sand and clay are in most respects singularly alike, and the same of the two columns for the white clover. It would not be by any means safe to draw very decided conclusions from one or two analyses of this kind; but so far as an opinion may be formed, the evidence would tend to prove that the *mineral* constitution of the clover is but little affected by the character of the soil on which it grows; whilst, on the other hand, the different varieties of the plant are found to possess a mineral constitution in some respects essentially distinct." "Of course," they add in another place, "any observations that can be made here have reference only to the mineral matters of the plant, and are therefore in no way to be considered as comprehending the whole question. Taking *solely* in reference to its mineral composition, we should be induced to call clover an exhausting crop—that is, when the produce is removed in the state of hay. A fair crop of white or red clover would, indeed, with the exception of silica, carry off fully as much of the mineral wealth of the soil as an average crop of wheat or barley; but there is, it is conceived, nothing in the analysis of the clover here given, that would justify us in attributing the difficulty in its cultivation to any peculiarity in *mineral* constitution."

It was with a full knowledge of what had been ascertained by previous chemical investigations, that the Rothamsted examinations were commenced in 1849. Their authors remark at the commencement of their report: "Experiments on this farm have satisfactorily shown, that some of the crops which are generally grown in rotation, will yield a large amount of produce year after year on the same land, on the application of certain constituents as manure. Thus a part of the same field in which the experiments on clover were made, has grown barley for ten years in succession, and on some plots large crops have always been obtained. In like manner, in an adjoining field, wheat has been successively grown for sixteen years consecutively. Nor is there at present anything in the results to lead to the supposition that these crops might not be so grown continually for a century. The results of somewhat similar experiments with clover were very different."

The Rothamsted experiments, in fact, however they might fail in throwing any light upon the clover failure, or clover-sickness of our time, still were valuable for the various carefully noted results obtained by the employment of different manures, not only upon the clover crop to which they were applied, but on a succeeding wheat crop. The following table furnishes us with the weights per acre, of the green clover cut June 26 and 28, August 6, and October 19, 1849, and also the produce per acre of the wheat grown on the plots in the succeeding year, 1850, the clover being given in tons and cwts., the wheat in bushels and pecks, and the straw in pounds:—

WITH MINERAL MANURES.		Clover. 1849.	Wheat. 1850.	Straw 1850.	
Unmanured		14	1	29 2	3512
Superphosphate of lime (150 lbs. bone-ash, 112lbs.sulph. acid		15	5	32 2	3811
300 lbs. sulphate of potash . .		17	19	30 1	3906
300 lbs. sulphate of potash } Superphosphate of lime . . . }		16	19	33 3	4197
Mixed alkalies, viz., 300 lbs. sulphate of potash } 100 lbs. sulphate of soda . . }		18	1	31 1	4088
100 lbs. sulph. of magnesia } Mixed alkalies }		16	6	33 1	4176
Superphosphate of lime . . . }					
Ammonia salts alone, or with mineral manure					
100 lbs. sulphate ammonia } 100 lbs. muriate ammonia . . }		14	17	32 1	3917
100 lbs. sulphate ammonia } 100 lbs. muriate ammonia }		14	8	32 3	3720
Superphosphate of lime . . . }					
100 lbs. sulphate ammonia } 100 lbs. muriate ammonia . . }		13	10	32 3	3842
300 lbs. sulphate potash . . . }					
100 lbs. sulphate ammonia } 100 lbs. muriate ammonia }		17	12	35 1	4296
300 lbs. sulphate potash . . . }					
Superphosphate of lime . . . }					
100 lbs. sulphate ammonia . . }		17	10	33 2	4135
100 lbs. muriate ammonia . . }					
Mixed alkalies }					
100 lbs. sulphate ammonia } 100 lbs. muriate ammonia . . }		17	10		3967
Mixed alkalies }					
Superphosphate of lime . . . }					
1 } 2 } 3 } 4 } 5 } 6 }	1000 lbs. rape cake	12	17	27 0	3520
				30 1	3692
				25 2	3468
				29 2	3822
				31 3	3795
				30 0	3342

For seven or eight consecutive years, these valuable investigations were repeated on the farm of Mr. Laves, with a success but little adequate to the labour and skill bestowed. It was in the present year, after labouring for nine seasons, that their authors had to tell their readers, that after the clover had been subjected to a very great variety of manurial, and other conditions of growth, it is evident that no direct supply of manure, either in the form of ordinary farm-yard dung, or of the current artificial manures, is capable of restoring the soil, from which a heavy crop of clover has been taken, to a condition of immediate productiveness for the same crop. In their experiments indeed, not even the most complex conditions and the repeated supply of those constituents which are found most to increase the clover crop when it is grown in the usual manner after an interval of several years, have restored the clover-yielding capabilities, which the soil possessed at the commencement of the experiment in 1849.

While these experiments were going on in the open fields at Rothamsted, another set of trials

on a smaller scale in the kitchen garden, only a few hundred yards off, were conducted with widely different results. Here the soil was in ordinary garden cultivation, and had probably been so for two or three centuries. Early in 1854 (March 29) 9 $\frac{3}{4}$ square yards of soil were sown with red clover. From that time till the end of 1859, fourteen cuttings have been taken without any re-sowing of seed. In 1856, this little plot was divided into three equal portions: of these, No. 1, has been kept continuously without any manure; No. 2 was manured with gypsum; and No. 3, with sulphate of soda, potash, and magnesia, and superphosphate of lime. The following table shows the amount of produce obtained, cut green; but as the space allotted to each experiment was so very small, the results must not be taken as absolutely correct. The product on small isolated experimental plots is almost always very much larger than one large plot; they can, as their authors add, be only looked upon as rough approximations; but as such they may be trusted as indicating the large amount of clover that has been taken from this garden soil, and as affording some idea of the relative amount of produce under three conditions of manuring. In the following table, the quantities are estimated per acre in tons and cwts., on I. the unmanured plot; II. manured with gypsum applied May 22, 1856; III. manured with sulphate of soda, potash, and magnesia, applied May 22, 1856—

	I.	II.	III.
1854, two cuttings ...	10 18		
1855, three cuttings ...	39 10		
1856, two cuttings ...	23 5	25 8	29 5
1857, three cuttings ...	27 10	30 16	33 2
1858, two cuttings ...	14 1	19 18	24 5
1859, two cuttings ...	10 17	14 19	17 18
Total produce six years	125 13		
Average annual produce six years	20 19		
Total produce last four years	75 15	91 3	104 11
Average annual produce last four years	18 18	22 15	26 2
Total increase by manure last four years ..		15 8	28 16

From the above table we learn that the total amount of clover obtained in six years from the garden soil, without any manure being applied during that period, is nearly 126 tons per acre, equal to about 26 $\frac{1}{2}$ tons per acre of hay, or nearly 4 $\frac{1}{2}$ tons per annum. In four years, the application of gypsum increased the produce of green clover by about 15 $\frac{1}{2}$ tons, or about 3 $\frac{1}{2}$ tons of hay; nearly 1 ton per annum during the same period, the use of alkalis and phosphates increased the produce about 28 $\frac{3}{4}$ tons of green clover, or rather more than 6 $\frac{1}{2}$ tons of hay, equal to an annual increase of nearly 1 $\frac{3}{4}$ tons of hay. It is worthy of remark, add the reporters, that it was in some of the very same seasons in which these heavy crops of clover were obtained from the garden soil, even though grown year after year, and without fresh seed, that we entirely failed to get anything like a moderate crop of clover in the experimental field, only a few hundred yards distant. The

failure in the latter case would therefore appear to be connected with the conditions of the soil in relation to the plant, rather than to those of the atmosphere.

In reasoning upon the probable causes of the clover-sickness, the authors of these experiments evince a wise and cautious spirit, well worthy of searchers after truth in so interesting and so difficult a field. In alluding to the excrementitious matters which are emitted by the roots of plants, they remark that it is not probable that any mineral constituents which may be thus rejected during the growth of one clover crop, are prejudicial to the growth of a similar crop on the same land for a number of years to come. If the failure of the clover plant when repeated too soon upon the same land be due at all to the excrementitious matters left by the former crop, it is much more probable that the injury is in some way connected with the organic matters which have been rejected. Unfortunately, we are not yet able by the aid of chemistry to distinguish those organic compounds of the soil, which are convertible into the substance of the growing plant, and those which are not so. It would certainly appear that some organic matters of the soil are absorbed by the plant, without being assimilated. We all know how stock avoid the grass growing upon the site of a cow pat; how eagerly they devour the grass which has been dressed with salt or other saline substances. Then again, as Messrs. Lawes and Gilbert remark, experience teaches us that when a crop of clover is eaten by sheep folded upon the land, animals dislike the growth which immediately succeeds. It might be inferred therefore, that in such a case the plant had taken up from the soil certain matters which it had not finally elaborated. But how then are we to account for the fact, that whilst the clover plant would not grow healthily in the experimental field, we have been able to cut fourteen crops from seed sown six years ago, in a garden only a few hundred yards distant? Are we to suppose simply, that the ultimate constituents required by the clover were more abundantly available to the plant in the garden soil? or is it that they existed in different states of combination? According to Mulder, who has investigated the organic compounds of the soil, the vegetable decomposing matters of the soil go through a series of changes before they are converted into carbonic acid. He supposes the intermediate compounds to constitute a series of acids which combine with ammonia, and with fixed bases in soil, forming so many salts. Now if we were to suppose that some plants, clover for example, required for their healthy growth a certain proportion of their food to be presented to them in the form of carbon compounds, a form more complex than carbonic acid, and perhaps combined with ammonia, we should then more easily comprehend why it should be necessary for a certain time to intervene before again cultivating certain crops on the same land; for we could easily understand that this might be requisite for the gradual formation and accumulation of a certain amount of the compounds in question. It would very likely lead to useful results if those of my readers who have

noticed the successful and continued growth of red clover in certain situations, were to communicate the fact to this journal. For instance, in my own garden at Croydon, some seeds being accidentally spilt, about four years since, on the old turf under some oak trees of near a century's growth, produced a few clover plants which have since annually grown with great vigour; and again in the fields around Torquay, in South Devon, where I am writing this, the farmers tell me that their red sand and limestone soils have hitherto evinced no symptoms of the clover-sickness: they never hesitate to sow clover every fourth year. The same report is made to me by the farmers of North Devon—clover is sown every fourth year: they remark, that when they dress their soils with lime, that the cows and sheep prefer the herbage growing on the limed portion of a clover field to the undressed part.

In summing up the result of their experimental enquiries at Rothamsted, their authors observe, that they are of opinion that the many practical observations and experiments lead to the conclusion that our old axiom of the organic compounds of the soil being only valuable to plants as a source of carbonic acid, requires modification; and that it is probable that although some plants depend for their supply of carbon mainly, if not exclusively, upon carbonic acid, other plants derive a considerable amount of their substance from other carbon compounds.

The practical conclusions resulting from these lengthened and valuable experiments, need hardly be given in any other words than those with

which the essay on which I have been dwelling concludes, viz., I. "That when land is not what is called 'clover-sick,' the crop of clover may frequently be increased by top-dressings of manure containing potash and superphosphate of lime; but the high price of salts of potash, and the uncertainty of the action of manures upon the crops, render the application of artificial manures for clover a practice of doubtful economy; II. That when land is what is called clover-sick, none of the ordinary manures, whether artificial or natural, can be relied upon to secure a crop; III. That so far as our present knowledge goes, the only means of ensuring a good crop of red clover is to allow some years to elapse before repeating the crop upon the same land.

From these trials then, although no material discoveries have been made relating to the clover-sickness which so many soils exhibit, yet they are not without their considerable value to the farmer. They were conducted in the cautious, patient spirit, which regards truth before all things, their authors readily confessing the difficulties and acknowledging the failures they so continually met with. It is only by such careful and earnest researches, that any really valuable information on such mystic questions as the diseases of our cultivated plants can be expected: and the skilful farmers who read these pages are well aware that it is no objection to the institution of other experimental enquiries, that our progress in this track has been hitherto so slow, the phenomena on different soils so contradictory, our ignorance so very considerable.

THE MECHANICAL CONDITION OF THE SOIL FAVOURABLE FOR THE GROWTH OF SEED.

BY PROFESSOR TANNER.

[Prize Essay.]

The cultivator of the soil will find in the preparation of the land for the reception of seed his most laborious duties, and those which demand his greatest judgment and skill. When these are accomplished he has, comparatively speaking, little else to do but to commit the seed to the ground, leaving the work he has carried thus far, to be completed by the secret operations of nature, directed by His will who established the law that seed-time and harvest shall not fail.

Plants, having passed through several stages of growth and performing the earlier functions devolving upon them, have the last but most important duty of life reserved for the period of their greatest perfection and beauty. This duty is the formation of seed, endowed with powers capable of reproducing plants similar to those by which the seed has been formed. In the seed we have one of the most interesting examples possible of the wise provision made for the perpetuation of the various forms of vegetation. In it, the powers of vegetable life lie dormant until

aroused by the conditions favourable for their development, and when these are present the seed forthwith springs into action and growth. In speaking of vegetable life we naturally associate with it the co-operation of some mysterious power, by which the vital energies of the plant are stimulated into action; but although we cannot fully understand the primary principle of life, yet an examination into the changes which take place in the growth of seeds will remove much of the mystery which is often attached to it. To this end, we may take the seed of wheat as a familiar specimen for our examination. It is particularly worthy of notice that the seed consists of two distinct parts—the germ, which is the true seed; and the nourishment stored for the growth of the germ. The position of the germ is indicated by a suture or cicatrix upon the skin, but it is a minute body and forms but a small proportion of the entire seed. It is always placed adjacent to the bulky portion of the seed, consisting of starch mixed with gluten and albuminous matter,

and the whole is enclosed in a coat of dense vegetable matter.

The growth of the seed consists in the development of the germ into a perfect plant, and is known as *germination*. Supposing the conditions of growth to be favourable, the first preliminary is a softening of the coat of the seed, by which means water gains an entrance, and having pervaded the mass, causes it to swell freely. When the water reaches the germ of the seed, the gluten or albuminous matter near to it undergoes a chemical change, and we have a very important and powerful body formed which is known as diastase. Whether or not the germ in any way participates in this change, we have no proof; but, if not, it is certain that at least by its presence it exerts a controlling power. The same addition of moisture to any other portion of the seed would not produce the same effect, for this agent (diastase) is only found in close proximity to the germ, and its existence in the seed appears to be simultaneous with the first stage of germination. Upon the diastase thus formed devolves the important office of preparing food for the growth of the germ; for the bulk of the seed, although abundant in quantity and exactly suitable in its constituent elements, is not ready for use until it has become soluble in water, and thus been made capable of entering into the circulation of the germ. This is accomplished by means of the diastase, by the agency of which the necessary supplies are prepared, so long as the store of food in the seed is needed. An immediate extension of the cellular matter accompanies the entrance of the food into the circulation, and we have the external evidence of life by the sprouting of the seed. In whatever position the seed may be placed, the radicles at once strike perpendicularly down into the soil, and the tender rootlets fix themselves there with but little delay. As soon as this is effected, the gemmule grows in the opposite direction and becomes developed into the stem and leaves of the plant.

The conditions which control the growth of seeds are, the presence of air, moisture, and warmth; and to produce healthy germination, all are required in definite proportions. When seed is protected from these agencies it will retain its power of growth for long periods of time. Thus, wheat, preserved in Egyptian mummies between 3000 and 4000 years, has, after that lapse of time, germinated and produced a large increase. The preservation of the power of growth is entirely dependent upon the seed being kept from those agencies which would excite its vital energy; moisture is the first essential for germination, as it is in consequence of the chemical action excited in the seed by the entrance of water that the seed is aroused to action; and after this process of growth has been excited, if it become checked, it cannot be renewed. This shows the necessity of keeping seeds dry when they are not required to germinate. Moisture alone is not sufficient for this process of growth, as the seed requires a supply of atmospheric air to enable the necessary chemical changes to proceed. Stagnant water in the soil must of necessity be unfavourable to ger-

mination, because it renders the land cold and excludes the free access of air, both of which conditions are prejudicial.

The exceptions to this rule are very few: one, however, may be found amongst agricultural seeds in the floating sweet water-grass (*Glyceria fluitans*), grown in our water-meadows, in which instance immersion in water is absolutely necessary for the growth of seed. In this case we have a seed which has the power of extracting its supply of air from water—a power which but very few other seeds possess. The supply of air is as necessary for these aquatic seeds as for any others; for if we drive out the air from water by boiling, they can no longer germinate. For the same reason, seeds which are buried deeply in the earth, remain there for many years, not because they want moisture, but because it is unaccompanied by the presence of atmospheric air. The earth raised from wells, or brought from railway cuttings, or ploughed up by a furrow of extra depth, often becomes covered by a growth of vegetation, the produce of seeds which have long been dormant in the soil.

Warmth is another essential condition for germination, which, within moderate limits, is rendered more rapid by an increase of temperature; but it must be accompanied by a proportionate increase of moisture, otherwise it becomes destructive. The action of heat promotes chemical changes in the seed, but a free supply of water is necessary, not only that it may exert a like chemical influence, but also because it enters largely into the more delicate body into which the dry matter of the seed has to be transformed. Thus we see that healthy germination depends upon the combined action of the three agents—heat, water, and air.

The opinions which are entertained respecting the influence of light are conflicting. Some consider that light retards the process of germination, whilst others consider that it does not influence it prejudicially. The experiments which have been made, although far from conclusive, are calculated to favour the former opinion; for the growth, although equally perfect, has not been as rapid under the action of light as when the seed has been covered from it. We know that, as soon as the seed has made sufficient growth to throw out its leaves, the action of light is favourable, its presence enabling the plant to decompose carbonic acid and to retain the carbon for its own, whilst the oxygen is thrown off into the air. But at this earlier stage of existence, or, in other words, during the period of germination, growth is favoured by an action *just the reverse* of this. The seed and its sprouts want to absorb, not to throw off oxygen, and to emit instead of taking in carbonic acid. During germination, then, the action of light would tend to paralyse the vital powers of the seed, and limit its growth to the hours of darkness, instead of allowing the development to be continuous. Another great advantage gained by covering the seed is the more equable supply of moisture which is preserved beneath the surface, as well as the better opportunity afforded to the roots for firmly fixing themselves in the soil.

After this hasty glance at the general principles involved in the germination of seeds, we may proceed to notice the special requirements of the various crops which come under the care of the agriculturist, and to describe the preparation of the land which is most successfully adopted in each case. It may be as well for me to remark, that although the *composition* of the soil is an essential point in the preparation made for each crop, yet it does not come within the scope of this Essay to notice the means by which we regulate the presence of those fertilizers which are necessary for luxuriant growth.

WHEAT.—The mode of preparing land for being sown with wheat will be regulated by the previous cultivation it may have received and the natural character of the soil. The heaviest clay soils are generally prepared by bare fallow: this plan being found, in the majority of cases, productive of the best crops of corn from this description of land. When this plan is properly carried out, the tillage which the field receives brings it into a nice condition for the seed-wheat to make its growth. Close and adhesive as these soils naturally are, it has been found necessary to adopt a method of cultivation by which the character of the soil shall become thoroughly changed. Under the action of a properly-managed fallow the soil becomes broken up by the frosts, baked by the sun's rays, and crumbled again by the fall of rain; and these influences, combined with the inversion and intermixing effected by implements employed upon the land, change it from being close and adhesive in its character, into the condition of a well-broken soil fitted for the growth of seed.

There is much difference even amongst heavy clays as to the degree of fineness to which it is desirable to reduce the soil whilst under fallow; but the general feeling is that the soil should not be rolled, so as to bring it into a fine state, unless the land is foul and it is necessary to give the seeds of any weeds which may be in the soil a better opportunity of growth. Even then it is considered that we run a great risk of getting the soil pasty or muddy when rain falls upon it; and, unless under the circumstances named, it is better to keep the soil in a state of small lumps rather than reduce them into a dusty condition. The same care is necessary in preparing it for the seed-wheat. The last ploughing should leave the land in ridges, and the ploughed earth should not be broken down or crushed until the time of sowing.

An early preparation of these soils is advisable, so that the work may be accomplished whilst the soil can be thrown together in a dry state, after which it may remain untouched until the seed-time. Narrow lands will generally be found best for soils of this class, so that, in carrying out the sowing, the drill and harrows may cover the width between the two furrows, and the horses walk in the furrows, so as not to trample the land. If a fallow has been well managed, so that the land has been thoroughly cleaned from weeds, in case of a wet seed-time, I should have no hesitation in sowing the land broadcast, rather than wait to drill the seed with the risk of injuring the

condition of the land, and the certainty of delaying the time of sowing.

Clays of this strong character are exceedingly sensitive of moisture. They rapidly absorb it from the air, and when the rain falls, the interstices in the surface soon become closed so as to obstruct its passage. If, whilst the soil is in this soft state, it be pressed, a firm adhesion of the particles takes place. The cups thus formed in the soil by the horses' feet, continue to hold water long after the other ground has become dry. The clay soil, which expanded when it absorbed water, is disposed to contract again as it dries, whilst the adhesion formed by pressure still remains. If this adhesion is objectionable to the growth of the seed, as I shall show it to be, it ought to be avoided; and for this reason the sowing of such land should be carried out as early as the climate of the district will permit, and the greatest care should be taken to avoid the injurious influence of treading the soil or pressing it by the use of implements which may cause its adhesion. Few can at present estimate the full amount of injury occasioned on these soils by the treading of horses on their work—an injury which probably will only be rightly estimated when we supersede this portion of their labour by steam-cultivation.

After the seed is sown, the harrowing must only be carried out so far as to cover the seed, for the reduction of the surface to a fine tilth is very objectionable; rolling should certainly be avoided. The injurious effect of a fine surface arises from its disposition, in case of violent rain, to form a muddy coating, which, when dry, acts as a crust upon the surface. This covering interrupts the free entrance of the atmospheric air into the soil, and thereby checks the germination of the seed, and renders it irregular. In the same manner but in a greater degree, when, by compression, we get an adhesion of the soil, the seed thus enclosed is deprived of the access of air, and cannot make its growth. The stronger and more adhesive the natural character of the clay may be, the greater is the caution necessary to have it well prepared for the seed early in the season, so that it may be sown in good time, and the surface left in a tolerably rough state. These clods of soil will be a good shelter in the winter months, and, by the return of spring, will have mellowed down into a nice mould, valuable to the young plant when the important operation of spring-rolling is carried out; but care must be taken in doing this, not to get on to the land too quickly. Now, although I advise that the field be left rough after sowing for the winter months, I must not be supposed to suggest a negligent mode of finishing the work of preparation; for I admire a neatly-finished field of corn, and look upon it as an indication of general good management. The surface may be allowed to remain rough; but, as soon as the implements have finished their work, the labourers should proceed to make clean and sufficient furrows and water-gutters, so as to prevent any lodgment of water upon the surface. This should be done whether the land be underdrained or not. Fertilizing as the passage of the water undoubtedly is, I would very much rather not retain it

upon the land for this purpose during the winter months.

The next preparation for wheat we have to notice will be upon land which has produced a crop of autumn-feed or early roots—for instance, rape, vetches, cabbage, mangold, potatoes, &c. The soils upon which this system is adopted will be rather lighter than those we have noticed, so that we may describe them as medium clays. These terms are necessarily comparative and also much under the influence of climate; for a clay of medium character in a wet climate will require more careful management than a strong clay in a dry climate, and thus we often find an apparent discrepancy in evidence and opinion, when, in fact, persons are disputing upon circumstances which do not fairly admit of comparison. I have nothing to say here on the question whether for a strong clay a bare fallow is preferable to a crop of autumn-food, or otherwise; I will only observe that the majority of the occupiers of strong clay lands, who argue against bare fallows as unnecessary, live in the drier climates of England, where the difficulties arising in the management of such clay soils are much reduced. I prefer, however, to take the course of cropping as it may exist, and therefore, without further comment, proceed to notice the preparation of wheat upon clay soils after an autumn green-crop or beans.

As these crops admit of a system of hoeing being carried out, the land will not have much weed upon it when the crop has been removed, but may be supposed to be in good working condition; the early operations may differ according to the nature of the preceding crop, but they again meet when the surface has been cleaned. After beans the land may be better for being skimmed and having the weeds burnt; but, should the ground be too hard for this to be readily done, the use of the plough will be preferable, which should be preceded by forking and picking any couch-grass that may have established itself. The surface should be cleared of any weeds (except annuals) which may be there, and then the more immediate preparation for wheat sowing will commence.

A single ploughing is enough for getting the land into good order, if summer-tillage has been satisfactorily carried out. The vetches, rape, and part of the cabbage will be generally consumed upon the land, and thus it will often happen that the rain falling upon it will cause the surface to become hardened by the treading of the stock; but if, from this or any other cause, the land is too hard and incapable of being prepared by one ploughing, then a second ploughing must be given, and, if possible, ten or fourteen days should elapse between them, so as to let the soil regain the necessary degree of firmness for the seed.

Wheat, whilst it requires the necessary supplies of air and moisture for its germination, cannot flourish unless it can root firmly, and it is for this reason that, where one ploughing will do, it is always desirable to avoid a second immediately before the sowing.

It is seldom any matter of difficulty, when dealing with clay soils, to secure the necessary degree of

firmness, although after vetches the land is sometimes disposed to be puffy in its condition; this is, to a great extent, corrected by the treading of sheep, when the crop is consumed upon the land; but, when one ploughing is enough, the natural cohesion of the soils will generally secure a sufficient firmness in the land.

When wheat has to be sown after an autumn-crop of green food upon light land, the firmness of the soil requires to be carefully attended to. It is generally objectionable for wheat to be sown upon this plan in the southern districts, though in the north of England it is frequently practised, but then measures are adopted to consolidate the land. The crops of autumn-food, which generally precede wheat on light land—viz., rape, turnips and rape, and common turnips—are always consumed upon the land by sheep, and the great point, after ploughing the land, is to follow with a land-presser, and give it time to gain firmness before the wheat is sown; when this firmness cannot be gained naturally, sheep are often turned upon the field to tread it thoroughly. This, although answering the purpose exceedingly well, cannot be looked upon as a satisfactory plan; but it must be admitted that no rolling produces equal firmness. When this difficulty continues, notwithstanding that the press-roller has been used, and time given to the land to settle, so as to sow upon a stale furrow, the better remedy will often lie in a change of the course of cropping, so as to sow upon a clover-ley, which is decidedly the more frequent and desirable preparation for wheat on these light soils.

There appears to be a strong objection to ley-wheat in some of the northern counties, and, in such cases, the only remedy will be to sow the land whilst it is wet, as this can scarcely fail to give it all the firmness which is required.

The great advantages of clover-ley for wheat consists in the firm furrow which can be turned over when it is ploughed, to promote which object our best ploughs effect the inversion of the furrow, without materially breaking it. Upon clay soils, and even upon strong loamy soils, a careful ploughing of the clover-ley is found to produce a sufficiently firm seed-bed for the wheat, especially when it is allowed to lie some time to get settled, so that the seed may be sown upon a stale furrow. The use of a share or skimcoulter with the plough, as it assists in burying the turf more completely, is generally desirable; otherwise the clover is apt to spring up between the furrow-slices, which is very objectionable.

As the land gets lighter in its character, the well-known land-presser comes in as a valuable help. These implements are generally made with two pressers, which, following immediately after two ploughs, very completely compress the two furrow-slices turned over, and give the land the required solidity. I have frequently found it an excellent plan to use a small drill in connexion with one of these pressers for sowing clover-ley, when the land is disposed to be rather adhesive in its nature, especially in wet seasons. Such land can often be ploughed up quite dry enough for immediate sowing; but, before a sufficient breadth of it can be prepared for the day's work of a large drill, it gets

too wet to be worked, and often has to lie a considerable time before it is again ready for drilling; whereas the use of one of these press-drills admits of the ground being pressed, sown, and harrowed close after the plough, whereby an early and good seedtime is secured.

Another important condition at the time of sowing is the degree of moisture present in the land. Upon clay soils I consider the seed should be sown whilst the land is as dry as possible; it will be sure to receive moisture from the fall of rain, but wetness in the land causes the particles of the soil to bind together, to the prejudice of the crop. As the soils get lighter there is less objection to working them when wet; in some cases, indeed, this becomes necessary, in order to give them the required firmness. It is not often in the south of England that a wet time is selected for sowing; but, when rain comes on after the work has commenced, I have known it to be continued until the soil was quite muddy, and yet no disadvantage has resulted; on the contrary, the plant has proved firmer on the portion sown wet than upon any other part. This, which may be safe upon one soil, will often be very injurious upon another *apparently* of the same character. Soils which have a sufficient proportion of sand or grit intermixed with them are thus preserved from that adhesion of the particles of the soil which would take place in stronger land, so that, in their case, the germination of the seed is but little delayed, whilst the treading of the land when wet gives it a greater degree of firmness, and this is favourable to the stability of the plant. The line which appears to separate those soils which are injured from those which are benefited by being worked when moist, is the proportion of sand or grit which the soil contains, and also the condition of the clayey matter with which it is mixed; and this can at present only be safely decided by local experience.

The rules which regulate the quantity of seed-wheat to be sown to the acre are simply these:—the early sowings require less seed, whilst for the later sowings the quantity should be gradually increased; and, again, as the soil and climate become more favourable to the growth of wheat, less seed becomes necessary. The first sowings will take 5 or 6 pecks of seed to the acre, whereas the latest will reach up to 8 pecks, and upon poor land it will range from 7 to 10 pecks; local experience must here also be called in, to decide as to the time of sowing, for it is impossible to lay down any definite rule which can be taken as a safe guide. That comprehensive word climate seems to regulate this point; for neither the character of the soil, proximity to the sea, elevation, nor any other individual influence, decides the practice, but that peculiar knowledge which renders local experience alone worthy of confidence.*

* If all that really constitutes climate could be duly taken into account, including excess of dryness on dry soils, of wetness on heavy soils, prolonged exposure to keen winds, alternation of hot days and frosty nights, sudden burst of summer weather, &c., with due allowance for the mechanical defects of the soil, its susceptibility under

The months of October and November embrace the sowings of our principal wheat-districts, but we must extend our time from the middle of September to the end of the year to include all the sowings of autumn wheat. Exposed situations, which require a strong and well-rooted plant to withstand the winter storms, require an early sowing and a liberal seeding, and so also do soils upon which growth is slow from any other cause. The milder district of the West of England permits the sowing of autumn wheat to be carried on as late as the end of December, for the almost unchecked growth of the winter enables the plant even then to get quite forward enough for making a good start in the spring.

The influence of soil upon the quantity of seed is accounted for by the fact, that on rich land more stems will be thrown up from each root, than if the soil be poor; and to make up this deficiency, and also to enable the crop more thoroughly to search for nutriment in the land, more plants are necessary; and a larger allowance of seed is the consequence.

The depth most desirable for the germination of seed-wheat depends upon the closeness or adhesive character of the soil. The seed should be placed in that position which will secure to it such a supply of moisture, warmth, and air, as will most rapidly promote healthy germination. It is clear that these conditions cannot be secured in soils of a different texture at one uniform depth.

Upon loamy soils of medium character we find the depth of about 1 inch superior to any other, but as the soil becomes lighter and more sandy in its nature the depth may be advantageously increased to 1½ or 2 inches. In a dry season, a less depth than 1 inch can seldom be looked upon as sufficient to secure to the seed a necessary degree of moisture; and a greater depth than 2 inches is not desirable, because the plant has then generally to raise itself in the soil so that its roots may commence their duties within a moderate distance of the surface. The mode of ploughing in seed-wheat with a 3½ or 4-inch furrow is clearly wrong, for the wheat will not establish its roots in the soil at this depth, and the germination must necessarily be delayed in consequence of this increased depth. If I make any difference in the depth of seed upon soils of this character, I let the early sown wheat be deposited rather deeper than that which may be sown later, and my reason is, because the early sowings have plenty of time for making their growth, and, therefore, a full depth ensures a firmer root, whereas with late sowings this delay cannot be allowed, for the young wheat will then gain more by appearing more quickly above the ground; but even these variations in depth should not range more than half an inch either way. The lighter the soil becomes, the more important it is

changes of temperature, and its limited straw-producing power, as well as for possible injury from birds and insects, we might then base our practice on *knowledge* rather than *experience*, but the result would not be successful, if any one element had been overlooked in our calculation.—P. H. F.

to sow at a considerable depth, as this favours the stability of the plant, and the stronger the land, the greater the necessity for keeping near to the surface.

The three modes of sowing wheat, viz., dibbling, drilling, and sowing broadcast, have each their respective merits and advocates. Dibbling is the system which most perfectly fulfils our ideas of the requirements of vegetable growth; but there are many difficulties in the way of its general adoption, from the large amount of manual labour required, in consequence of the imperfect action of the implements made for this purpose. Drilling is the process which is most extensively adopted, and is decidedly the best and most economical mode of depositing seed-wheat. The great preventive to its more constant adoption is the fact that, as the implement is heavy, tender soils are injured by the traffic over the land in wet seasons, and these soils must have more time given them to become dry and ready for sowing; hence it often becomes desirable, in order that we may avoid a late seed-time, to sow the seed broadcast. The advantages of the drill are very great in the opportunity afforded for hoeing the land; but when the system of horse or hand-hoeing is not practised, much of the benefit of drilling is lost. After the seed has been sown it should be covered by the use of the harrow, but the less the land is worked the better, and especially upon strong soils. The roughness of the surface will be rather desirable than otherwise, for protecting the wheat-plant during the winter months.

For sowing spring wheat the soil need not be brought to as firm a condition as for the autumn sowing, but the difference is only one of degree, and such as enables us at once to see the cause which renders greater solidity essential for autumn sowing.

When wheat is sown upon land which is not sufficiently firm, the plant fails in the severe weather of winter; on the other hand, when the seed has a more solid seed-bed in which to establish itself, the roots are enabled to become more fibrous in form and vigorous in action, and in this manner they obtain a secure hold upon the soil from which the winter frosts cannot dislodge them. The great necessity then for a firm seed-bed for autumn wheat is to ensure the stability of the plant during the winter; consequently there need be no surprise that in spring we are less anxious about our land-pressers.

The preparation of the land in spring for wheat is therefore far less troublesome than in the autumn. After the roots have been removed from or consumed upon the ground, the land is once ploughed and a favourable opportunity taken for sowing it in due course, when the soil is in dry working order.

A second ploughing is seldom given, for the reasons I assigned when speaking of the autumn-sowing. Early sowing is important for this description of wheat, and as a rule none, excepting the April wheat, should be sown later than February in the eastern, and in March in the western districts of England.

BARLEY.—The soils in which barley flourishes

most luxuriantly are free-working loams, and it is by no means uncommon for such land to be distinguished as barley-land. This preference arises from the natural habit of growth in the barley, which requires a considerable freedom of action for the development of that bunch of fibres of which its root consists. In the preparation of land for its growth this has to be remembered; for, if the character of the soil is not naturally of the description required, we are compelled to adopt measures for rendering it as much so as possible. The firmness which was so necessary for wheat is objectionable here, and the more completely it is destroyed the better.* The course of procedure will depend upon the nature and the quality of the land. It is very seldom that barley is now cultivated except after a root-crop, and I shall presume, therefore, that a root-crop has been consumed upon the land.

Upon the *lightest* class of barley-soils there is great danger of the manure being washed through the soil; on such lands, therefore, the use of the plough is avoided at this time, as the inversion of the soil would favour the loss of manure, and the aid of a cultivator suffices to loosen the soil for the seed-bed. Other soils are brought into a sufficiently loose and free condition for sowing, by means of a single ploughing, but by far the larger breadth of our barley-soils requires further preparation. Soils which have only a moderately adhesive character become considerably hardened by the treading of sheep in feeding-off roots, and the hardness is often much increased by the drying action of the sun and air at the latter end of the season. As soon as the ground is clear of sheep it should be ploughed up, and if in any way disposed to bake, it should be either rolled or harrowed immediately afterwards, as the nature of the soil may render most desirable: it should remain in this state until the time for sowing approaches, and then be ploughed a second time. If this does not bring the soil into a sufficiently free working condition the use of the roller and drag will be required. If the second ploughing is preceded by the use of the drag, it will materially favour the work, and this should certainly be done if the soil promises to give trouble; for, in this way, we shall find after the succeeding ploughing that the bottom portion of the surface-soil will have lost much of its firmness.

In this or some similar manner the soil must be reduced to a free working condition ready for the seed, for it is the worst of policy to sow barley upon a badly-worked soil. In the busy time of spring-sowing a farmer is tempted to sow barley quickly and dispense with extra tillage when the soil appears to be in fair condition; but I have often seen that it is unwise to lessen the tillage by being in too much of a hurry, as the superior condition given by a second ploughing and additional tillage makes a very material difference in the crop. The time thus lost in the sowing of the land is

* That is to say, within four or five inches of the surface. According to my experience any loosening of the subsoil by double ploughing on light land, in a dry climate, is prejudicial to the barley crop.—P. H. F.

soon regained by the more rapid growth of the young plant, which is often observed to maintain the vigour of its early and prosperous career unabated up to the time of harvest.

When a strong loamy soil has to be prepared for barley, especially after it has been hardened by the treading of the sheep, we are often obliged to modify our course so as to secure (if possible) the assistance of frost. With this object the land is ploughed up as early as may be after the sheep are removed, and is laid up so as to catch the frost. If the soil gets thoroughly frozen, the after-working of the land becomes comparatively easy, provided reasonable care is taken in selecting the proper time for cross-ploughing and working the land for the seed. The most laborious and difficult preparation for barley is when land of this description is ploughed up in a close condition, so as to be smeared by the mould-board, and, instead of getting any frost upon it afterwards, becomes hardened by exposure. It then requires a vast amount of labour in the shape of rolling, dragging, and ploughing, before it can be reduced to a fair state of sowing, and after all does not afford a satisfactory seed-bed for the barley.

I do not know any kind of corn which suffers so much in its quality as barley, from being sown in an unfavourable seed-bed; this is, however, much more evident upon land of a strong and adhesive nature than elsewhere, probably because its mechanical condition is less under our control. The benefit derived from the action of frost enables us to grow, on such soils, barley of fair malting quality; but, if we do not plough in time for the frosts to act upon the land, the produce is rarely fit for the maltster, and can be only employed for feeding purposes.

The best qualities of barley, as well as the largest crops, are produced from soils very free and open in their character, and these indicate the condition to which we should endeavour to bring any soil upon which this crop is to be sown. To promote the same freedom in the soil, the seed should always be sown when the land is dry; for, as we have seen in the preparation for wheat, that a wet seed-time was conducive to that increased firmness of the soil which was then our object, so now, when we wish to avoid this effect upon the land, we should in every way avoid the cause.

The use of the drill is very generally preferred, for sowing barley, to every other mode, and for early sowings on light soil is particularly desirable, because it gives an opportunity for hoeing the ground before the clover-seeds are sown. Upon the stronger description of land, a very large proportion is sown broadcast, because thus there is

less compression of the soil, and a larger breadth can be quickly sown, just when the land is in the best condition to receive it. The usual quantity of seed sown is from 2½ to 3 bushels per acre; but upon soils of inferior quality as much as 4 bushels per acre are sometimes used. For late sowings the quantity is increased, because the plants have less time to establish themselves, so as to produce a sufficient plant.

The difference of seasons has a greater influence upon barley than upon any of our corn-crops; for sometimes the early-sown crops are the best, and at other times the last sowing excels all the others. This generally arises from the alterations produced in the mechanical condition of the land. If, for instance, a piece of land has been well prepared for barley, and brought to that degree of fineness which is so desirable for it, and after the sowing a long continuance of wet weather sets in, it is more than probable that the soil will run together and form a crust, alike unfavourable to the germination of the seed and the subsequent growth of the plant. On another piece of land of a similar character, sown perhaps a month later, but not thus prejudiced by the weather, the seed grows freely, the plant continues to flourish up to the time of the harvest, and produces a decidedly better crop. If this were a constant result, the difficulty would easily be overcome by a later sowing; but next season, possibly, the circumstances may be reversed—dry weather may favour the rapid growth of the early sowings, and delay the germination and general development of the late-sown barley. The time of sowing may be stated as including the month of April, in some cases commencing a little earlier, and in others being prolonged beyond that period.

The depth for sowing the seed is not subject to the same variations as in the case of wheat: one inch may be considered sufficient, in all soils, to secure its healthy germination. The condition in which the land is to be left after the sowing, in some measure depends upon the time of performing that operation. When the barley is put in early, the land may be well harrowed, and left without rolling; but as the latter sowings are generally accompanied by the clover-seed, these are harrowed and rolled to a fine surface. The object in leaving the one unrolled is to prevent the surface from running together after rain. In the latter case there is less risk on this account, as most of the stormy rains of April are by this time passed, and the more genial weather of May gives less cause for anxiety.—Journal of the Royal Agricultural Society.

(To be continued.)

BEEF AND BEER.

Mythology has dedicated no deity to the home-brewed, and so that stalwart knight, Sir John Barleycorn, escorted Ceres and her train into his stronghold at Burton-upon-the-Trent. The meeting was in every-way an auspicious one, and seldom

have two great Powers come together under more encouraging circumstances. As the guest of the occasion, Agriculture had of course to accommodate herself to local habit and association; and malt and hops gave a fine flavour to this anniversary of the Stafford-

shire Society. There was a wholesome "bitter" about the whole business. The show of stock was held in one of Mr. Bass' yards. The refreshments were laid out in a malt-room. A dinner for seven hundred was provided in the cooperage. The terms of the ticket distinctly specified that "malt liquor was included;" and the Rifle Volunteer Band discoursed sweet music, "by the kind permission of Captain Bass." The very taste of the prize cheese went to suggest a pint of pale ale with it, while the best class of the entry was that for dray-horses. Allsopp and Bass—Worthington and Robinson—Salt and the Brewery Company—encircled you on all sides. They had dairy cows—and high-bred heifers—and cart mares—and sows and pigs—and so on. But still everything went back to beer; and high authorities amongst cattle and sheep sunk into utter insignificance as you stood before them with a glass of bright amber-tinted nectar in your hand, and asked what they thought of *that*? A man to be a judge of anything here must be a judge of beer; and shorthorn Solons, and layers down of the law in "lands" and "furrows," had no rank whatever, save "by the kind permission of Captain Bass."

The meeting was, in fact, the joint exponent of the two great interests involved in those national watchwords—Beef and Beer. The Society itself very judiciously did all in its power to unite the two, and instituted a special prize with this object. It was one open to all England for the best entire dray-horses; and, as we have already intimated, the result was a long way the first-class of the occasion. There were no less than twenty-five entries, and these included famous stallions of all breeds and sizes. The Burton brewers, indeed, are taking to a new reading of what a dray-horse should be. They find that mere weight and height do not wear well; and now for some years the Messrs. Bass have been getting into a lighter and more active sort of horse; while Worthington and Robinson have been trying all kinds, either English or foreign, with the same aim in view. Already is there a marked difference between the London-porter and the Burton-ale horse. The latter comes in cheaper and lasts longer; and the wear and tear in this description of horse-flesh is a very serious item. Two or three years' work is, with the majority, all they are good for. Then, there are something like twenty brewery firms in Burton; and Besses have eighty horses, Allsopp's forty, and so on in proportion, either to the extent of the trade, or the amount of road work.

There should, thus, be ample opportunity for a prize stallion in such a district, and certainly there were plenty to pick from. Mr. Hemmant, of Thorney Fen, Peterborough, sent the Lincolnshire "Bay Emperor," the first prize agricultural horse at the Warwick meeting of the Royal Agricultural Society. Mr. Badham entered a namesake—the Suffolk "Chesnut Emperor"—similarly distinguished at Chester in the year previous. Mr. Robinson, of Manchester, brought "Young Napoleon," the Yorkshire prize horse at Pontefract, and a winner of seventy other premiums. Mr. Massey nominated the black Victor, the second best at

Chester; and Mr. John Manning the brown Shire horse Sampson, the winner of the special prize at Warwick. Mr. Hare found another Suffolk in Goliah, the Walden fancy, and Lord Anglesea a third of the same breed. Then there was a grey of some repute in Cheshire, and a black roan four-year-old from Alfreton, that well merited all the commendation the judges could give him. But the judges and the brewers scarcely went together, and the former took generally the grandest and heaviest horses they could find. Their choice lay between the well-known Napoleon—who, with his immense substance and good action only needs cleaner hocks—and the Northamptonshire Sampson, wonderfully improved since Warwick, and now grown into a very handsome and perfect animal. His forehand is really grand, his legs remarkably good, and he is altogether a big horse without lumber, standing an honest seventeen hands high. The judges ultimately allowed him the preference, placing Napoleon second, and the other Warwick horse, Emperor, third. They would not have the Suffolk Emperor, and never did we see him show so badly. He was overdone with soft flesh, and went poking along as if trying to hide his beautiful head, and heartily ashamed of the undignified position he occupied. Still the chesnut was in favour with the brewers, at whose especial request he was entered, and there is yet a chance of his travelling in the district. In the class of dray horses in work Worthington and Robinson showed a very clever Suffolk that has had a year of it over the London stones, and with him three or four Flemish horses. The first premium, however, went to an iron grey, reaching sixteen hands three inches high, the property of Messrs. Bass; the same firm sending a smaller one from their stable, to which it was said they themselves gave the call. It is rather to be regretted that three of the Burton brewers were not made judges of dray-horses. Not that we would quarrel with the dicta of the gentlemen selected, who acted well up to the long-accredited notion of what such a horse should be. As, however, we have said already, the brewers declare that they want something of a different stamp; and it would have been a lesson to breeders to have seen them choose for themselves.

Mr. Price, Mr. Perks, and Lord Hill contributed to a creditable, but by no means an extraordinary show of Shorthorns. Mr. Robinson, jun., exhibited a pair of Swiss cows, with immense bags, declared to give twelve gallons of milk a day, and fifteen pounds of butter a week. Mr. Faulkner sent the best Longhorn cow seen for many a day. Level and low, full in flesh, and kindly in touch, such a specimen would almost tend to rekindle the taste for this nearly obsolete breed. There were sheep of all varieties—Leicesters, Southdowns, and Shropshires; and Mr. Harrison made a show of itself with his large and small boars. There was a moderate class of hunters, and some promising young stock by "the Great Unknown," a stallion that Mr. Bainbrigge has just rescued, and may yet turn to good account. Fowler's plough was

put to work on the bye-day, and one division of the yard was well stocked with implements. But on any of these classes it is not our object to dwell. Let us rather follow Lord Shrewsbury and his fair friends into the cooerage, where, profiting by the admirable example of the Sparkenhoe Club, ladies are invited not merely to hear the speeches, but to taste the venison, and take a pull at the "malt liquor included." Never before has Burton known such a party. Never yet was there such an illustration of the old rhyming itinerary, that tells you

"There's Barton under Needwood,
And Dunstall in the dale,
And Taten Hill for pretty girls,
And Burton for good ale."

Whether Barton was represented we know not, and how Dunstall fared we care not. But Taten must have sent in every pretty girl within the range of its proud pre-eminence; while, as for the good ale! It drank even better than at breakfast—or at lunch—or when one went to look at the dray-horses—or to try the cheeses—or to see the works—or on any other occasion during the morning's business, when a glass of beer was so indispensable a part of the proceedings. Alas! that conventional misrule should have compelled so congenial a company to drink to their Queen, soldiers, sailors, or pretty girls in any other liquid. Let us, though be supposed to have done so; and, having duly cheered Captain Levitt's neat gallantry, and Mr. Adderley's audacious eloquence, hasten on to the only agricultural speech of the evening. Of course it is flavoured with "bitter," for Mr. Michael Bass, the member for Derby, delivers it:—"No town in England was more interested in the prosperity of agriculture than Burton, and the agriculturists of England ought to be somewhat interested in the prosperity of the town of Burton. Let him tell them what the townsmen of Burton did for agriculture. Every year they consumed 320,000 quarters of barley, paying duty upon this to the amount of £400,000. In the same period they used 40,000 ewt. of hops; and thus, if they took their share, they would consume more than half the crop grown in the United Kingdom. They paid every day in the year more than £1,000 to the revenue of the country. It was said, indeed, that the town would have to pay this year £600,000 more for hops than last, but he hoped that in this statement there was some little exaggeration. But it was certain that the amount would be much larger than usual. . . . It was a great pity that the brewers could not always buy the produce of their neighbours, not but that they had the kindest feelings towards them, but because the farmers could not produce that quality of barley which would suit the brewer's purposes. In his humble opinion the mode of growing barley in this country was not adapted to produce those fine qualities so requisite for his own business. When they grew barley immediately after turnips, with a large quantity of seeds—in a year like this, especially when the seeds were high—it would be impossible to produce barley of the quality and colour so indispensable to the brewer. In hazarding

these remarks, he hoped those who knew so much better than he did would forgive him, although he had himself been a practical farmer since his childhood. To grow fine barley they must not limit themselves to a single white crop. They must rather grow two of these in succession; taking wheat after turnips, and then their second crop would be the finest quality of barley. A very eminent farmer, a friend of his he had just been passing a few days with, said, 'Bass, I tell you what: I try and grow a crop of barley for quantity, and I do grow a quantity, but you never buy it.' The fact was, he should have grown another crop for quality."

There was some "laughter" at this endeavour to break through the rule of established rotation; but Mr. Bass has some of our best farmers with him. Only two or three years since, at the London Farmers' Club, Mr. Thomas of Liddington, in a paper on the four-course system, said:—"Let us now suppose that we change the rotation from a four to a five-course; and that it be turnips, wheat, barley, clover, and wheat. Its advantages would be these: in the course of twenty years it would be found that the four crops of swedes, each at five years' distance from each other, would have produced a greater aggregate amount of food than five crops would have done, each four years distant from the other, and that the bulbs would be much freer from either disease or failure. I then propose to take a crop of wheat as our Scotch brethren almost invariably do; we know by practice that our ordinary wheats succeed remarkably well when sown after turnips up to the middle of February. We have, then, the Talavera, and other more prolific Spanish wheats, to fall back on; and, lastly, the April wheat, which may be sown with security up to the 1st of May. Next in order to the wheat comes the barley—the prescribed act—two white straw crops together. The experience of every one who has tried this tells him that *this is the very mode to obtain a fine sample of malt-ing barley*; and, as there appears to be no prospect of a remission of the malt tax, this, to those who cultivate the grain, is a great object indeed. But I do not propose to sow this second white straw crop without bestowing upon the land some nitrogenous manure. I should do it in the form of guano. The idea of growing barley after wheat, or two crops of barley consecutively, is not new. In Bachelor's report of Bedfordshire, 1807, he says, 'Barley is a favourite crop towards Biggleswade, and is frequently sown after wheat;' and speaking of another part of the county, he says, 'The large quantity of London and other manure, which is here used, causes the barley to grow too luxuriantly to make it prudent to venture the clover to be sown in the first season. The barley is therefore repeated for that purpose, and with better success.'" But in much more recent times we find the same course much recommended. In the report for Dorsetshire, published in the *Journal of the Royal Agricultural Society*, it is mentioned as becoming universal. In Mr. Caird's report, too, of the farming of Lancashire, he is loud in the praise of a Mr. Longton, of Rain Hill, and adds: 'Mr. Longton

is decidedly of opinion that barley after wheat is the best management with which he is acquainted.' With such antecedents, there would be no doubt about the success of the clover crop, and after a luxuriant crop of clover but little of that of the wheat."

It may be profitable to follow Mr. Bass a little further. The following in fact is the conclusion of his straightforward and very suggestive address; while the length to which this article runs alone prevents that comment we may have hereafter to offer: "He wished to speak to another important branch of their business. The brewers of Burton were large buyers of hay and straw. He cut up for his dray horses alone eight tons every week; and it was of

course of great importance that he should be able to buy it at moderate prices. At this time he had to pay £6 or £7 per ton for hay, and he must tell them he could not go on at this rate—they must lower their prices. Instead of using their hay and clover to feed sheep, cattle, and oxen, which only produced £3 per ton, he would be very glad to give them £5 for it. He had the authority of the Journal of the Royal Agricultural Society for this. In the number just published there was a paper by Mr. Evershead, who said that a ton of hay would only produce beef worth 50 shillings, and a ton of straw beef or mutton worth 25 shillings—so that they were throwing away 35 shillings a ton, when they might sell it him for £3."

REVIEW.

THE JOURNAL OF THE ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

PART I FOR 1860.—MURRAY, ALBERMARLE STREET.

The appearance of a new number of the Royal Agricultural Society's Journal, under the auspices of a new editor, may be very naturally looked to with something more than customary interest. So much has been recently said about the man and the work, that a certain curiosity has been excited as to how they really would go together. Any such a feeling may be very soon satisfied. Without being previously advised, it would be almost impossible to notice any change in the conduct of the Journal as it was of late and as it now is. The publication of the Midsummer number as usual takes place in September, while, as heretofore, there is no ostensible reason why it should not have been out a month earlier. There is no report whatever of the proceedings at Canterbury—beyond a mere list of prizes, which might of course have been drawn out in two or three hours after the award was announced. And even these lists are still as imperfect and as ill-arranged as ever they have been. In the days of Stock Registers and pedigree prices, not the name of a single animal is given. You only know that Colonel Towneley stood first with a bull of the Shorthorn breed, Mr. Marjoribanks with a thorough-bred stallion, and so on. Then all the commendations are huddled together at the end of the whole thing, without even a separating — to mark that Mr. Ambler was distinguished in the old class for one bull, and in the younger section for another. The implement return reads yet worse, with no division whatever, but the whole range of machinery running on without even a head-line to help one. Fowler, Robey, and Wallis and Haslam, are far more easy to find than what the judges have made them famous for. Again, the General Meeting in May is curiously disposed of in the Report of the Council and the Balance Sheet of the Finance Committee. Not one word is given of the important proceedings which marked the last anniversary assemblage. The very suggestions formally handed in for the consideration of the Council are actually not recorded. In a word, it

would almost appear as though the new Editor had taken the old routine—the plan of not giving information on the affairs of the Society, or of delaying it as long as possible—as his own standard of excellence. He sees nothing to improve upon where the *Journal* has so long and so lamentably required amendment. Just where, above all places, the work wanted revising or re-editing, there has been no editing at all. And so the weighty papers seem, as usual, to be pushed in any-how or any-where; after no doubt having been carefully read over, as they were during the time of the triumvirate, by Mr. Thompson, Mr. Acland, or Mr. Hoskyns. In their stead a useful note is appended by P. H. F., and this is about all the apparent difference in the conduct and arrangement of the new number. There are people, no doubt, who do know all about "the goings on" of the Society through the press or other channels, but those who may happen not to do so will learn very little from the Society itself. The only available intelligence is embodied in the Council Report; and it has long been proverbial what curious care has been taken that there should not be too much in that. In the name of the general body of members we again protest against the continuance of such a system.

So far, we fear that the Editor has somewhat mistaken the object of his office. He would seem more desirous to be recognized as a contributor than an editor; and, above all, his evident ambition is to rank himself as a practical man. He has two papers of his own in the number just out—one, "On the Feeding of Stock," and the other "On the Moveable Steam-Engine." Both these articles depend chiefly on the details of his own experience; and the one on the feeding of stock opens thus: "This paper may be considered as the first portion of a retrospect of the management of a light-land arable farm, in a dry part of England, better suited for the growth of corn than for pasture or even roots; consequently, the conclu-

sions drawn and the estimates of cost involved will at best admit of exact application only under similar circumstances, not only in the soil and climate, but also in the cost of labour both of men and horses, varying as these do both in the weekly wages paid or expense incurred for keep, and in the amount of work executed at that cost. The farm in question consists of 460 acres, running in a long strip from the high grounds in Cambridgeshire which border upon Essex and Suffolk to the old limits of Newmarket Heath. It is all arable, with the exception of about eight acres of indifferent meadow. About 80 acres on the higher ground are slightly capped with clay; 210 acres on the slope are a light chalky loam, and 160 are heathland, varying from a brown sandy loam to a black heath sand, resting on a chalk rubble. My chief encouragement in taking the farm into my own hands in 1851 was derived from Lord Portman's account of his management of Shepherd's Corner Farm." The shorter contribution "On the Steam-Engine" is almost entirely confined to the cost and product in working an engine on Mr. Frere's own farm. The more lengthy essay, so far as we have yet had time to look into it, seems to be very well considered and clearly put. There are, too, a number of tables on expenses and effects, and some straightforward opinions on the value and quality of artificial food. Indeed, as a correspondent simply, Mr. Frere gives every promise for his further connection with the Society. But the country looks to him for something more; and we have only to hope that with further experience we shall find this promise gradually realized. A want of attention to certain minutiae, or a too ready acquiescence with things as they are, should not be suffered to spoil the effect of labours, that so far seem to be at least very earnestly directed.

As times go, and taken on their individual merits, there are some very excellent papers in this first part. Mr. Spearing opens with an able and evidently industrious Report on the Agriculture of Berkshire. The several sections of his subject are nicely observed, while the composition of the whole paper needs nothing of that apology the author so modestly sets out and concludes with. Messrs. Harding and Fulton furnish two welcome essays on dairy practice, a subject hitherto strangely neglected. Professor Voelcker has three papers—"On the Composition of Kohl-rabi," "The Properties of Mangold-pulp," and *the* article of the number, "On the Chemical Properties of Soils." Professor Simonds writes at some length on the blood of diseased animals; and a third professor, Mr. Tanner, on the condition of the soil as favourable for the growth of seed. The statistics of live stock and dead meat are again associated with the name of Mr. Herbert, who furnishes some well-timed information on the breeds and crosses that pay; and Mr. Wells details the drainage of Whittlesea Mere, to which the Editor adds his own account of a day on the Mere. Mr. Evershed has his prize essay on the proper office or use of straw on a farm; and Mr. P. D. Tuckett gives the finishing touch to the number, in a letter on the

modifications of the four-course rotation, which modern improvements have rendered advisable. In all there are fifteen articles, the only one we have yet to enumerate being another of those joint productions for which Messrs. Lawes and Gilbert have become so deservedly distinguished. They have here an elaborate report, embodying a series of experiments on the growth of red clover by different manures—a history "on authority" that is sure to make some sensation.

There would seem to be scarcely one of these papers but is worthy of that mature consideration it may hereafter receive from us. How far the credit of so many good articles may be due to the new editor does not appear, but there is no doubt but that in this respect the number reads well with its predecessors. What the public or the members generally will have to regret is that the work has not made a fresh start in his hands. There are almost endless opportunities for making it more attractive, and relieving it of that "dead weight" character the *Journal* has so long had to contend against. It would have been a great point to have had the reports of the judges and stewards of the Canterbury Meeting now that it is still fresh in men's memories; or the editor might have most becomingly introduced himself with a history of the week. But what will all this sort of *intelligence* be worth in February? People turn naturally to such subjects, though perhaps not nine months after date. Here then, in its Lists, its Reports, its chronicles of the status and success of the Society itself the *Journal* is as much behind-hand, and below the standard of what it should be as ever.

PRINCE NAPOLEON AND ENGLISH FARMING.—

But little heed appears to have been paid to the arduous with which Prince Jerome Napoleon (familarly styled "Plon-plou") seems to have applied himself to the study of English agriculture. Not content with witnessing the wonders of Tiptree Hall, the Prince passed on to West Norfolk, where he put himself under the friendly tuition of Mr. R. Leeds, of Lexham, Mr. T. Hudson, Mr. Keary (Lord Leicester's well-known agent), and other gentlemen. His Highness afterwards passed on to Lincolnshire, where he became the guest for a brief space of Mr. Torr, of Aylesby, who is to North Lincolnshire what the Overmans and Hudsons are to West Norfolk. The Prince, who had with him M. Bella from the Imperial School at Grignon, and several other French gentlemen, must have viewed with admiration the thirty or forty-acre fields, or "brecks," of West Norfolk, and no doubt detected therein the secret of the superiority of English over French farming. But the Bonapartes can never go much beyond theorizing. Probably not even Napoleon III. could, with all his supposed power, destroy the one great remnant of the Revolution of 1789—the equal division of landed property; and until large estates can be formed likely to justify or induce the application of considerable capitals, the productive powers of the land of France will remain only partially developed, and the characteristics of the stock comparatively unimportant. At Aylesby the Prince was surprised to hear that such extensive operations were engaged upon with nothing more binding than a goodwill agreement.

THE HERDS OF GREAT BRITAIN.

CHAPTER XX.

MR. SANDAY'S HERD.

The jealous loyalty with which the early breeders of Leicesters guarded their Bakewell banner, comes out no where in such strong relief, as in the rules of their Ram Club, which bear date Jan. 5, 1790, and pledged the 12 members (who paid 10 gs. each) to keep the "transactions secret upon their honour." It first saw the light at the George Inn, Leicester; but it was perfectly untrammelled in its hotel patronage. The Three Crowns, The Three Cranes, and the Lion and Lamb, were all honoured in turn, at the county town, and its councils were duly "tiled in" at the Bull's Head, and the Anchor, at Loughboro'. The rules were made, and kept with a sternness worthy of Draco. No member might sell ewes or lambs to breed from, unless he sold his whole flock, or dealt with members alone. Only 40 ewes could be taken in to tup, and those the property of one person. Not more than two dozen rams could be shown to any person or company at one time; and members could only show their rams to each other between the 1st and 8th of June, when the general show commenced, and were bound to hermetically seal their pens on July 8th, for the space of two months. Moreover, so necessary did it become to keep the wise men of the East in check, that it was enacted that no ram should be let to members of the Lincolnshire Society in classes (of four), at less than 200 gs. each. Mr. Bakewell, of Dishley, which was then the Mecca of their aspirations, had a bye-law, all to himself, forbidding him to let a ram within a hundred miles of his fold, for less than 50 gs. Having thus guarded the outworks, as they thought, against all invaders, they were most rigid disciplinarians among themselves. If a member left the room at a meeting, without full permission from the President, he had to forfeit a shilling for every quarter of an hour he was absent; and latterly they allowed a guinea to each member present, and mulcted absentees to the same amount. All recusants were at once denied a ram share or part of a ram, from any of the members, and we find that Mr. Sneape of Kirkby was solemnly admonished, and ordered, in the committee minutes, "to make concession," because he had allowed Mr. Nixon, a butcher, to let rams in his name in the Leicester market place.

Mr. Paget was the president of this primitive brotherhood, and Wm. Walker, J. P. Stone, John Bennett, John Manning, Josh. Robinson, Nathaniel Stubbins, Nicholas Buckley, R. Bakewell, F. White, John Breedon, and Samuel Knowles, formed the rank and file. The whole of them were eminent flock masters, but all traces of six of their flocks have departed. The Bakewell flock went first into Mr. Smith of Dishley's hands, and then into Mr. Honeybourne's, and was finally dispersed among Messrs. Stubbins, Stone, Bar-

ford, Paget, Baker, of Elemore, and Philip Skipworth the elder, whose purchase of ewes laid the foundation of the present Aylesby blood. A descendant of Mr. J. P. Stone (whose brothers Thomas and Samuel were also first-rate breeders) has a small flock of ewes at Barrow; and Nathaniel Stubbins's have merged into Mr. Sanday's, who holds, along with Sir Tatton Sykes and Mr. Torr, the choicest portion of the Buckley blood. The afternoon of June 19, 1798, just five years after the president had held his successful sale, first made Holmepierrepoint and Stubbins names of mutton renown. The sum total of the lettings was £2,176 18s. for 31 rams; and Philip Skipworth, who could not brook being in the background when a Lincolnshire quartet had dared to give a thousand for "a Buckley," would not be denied at 600 gs. Three years after, Messrs. St. George and Astley did not scruple to close for a ram at 400 gs., and would have gone on; and in 1802, Messrs. Astley and Reynall gave 600 gs. for two. In 1803, the ball was kept merrily rolling. One ram let for 420 gs., and Mr. Stubbins's ewe-serving charge was raised to 300 gs. for 70, and 200 gs. for 40; and in 1805, a bid of 500 gs. brought up the average for 31 to nearly 100 gs. About 1814 the Holmepierrepoint flock was divided between Mr. Stubbins's nephews; part going to Mr. Joseph Burgess, who had been for some years at Holmepierrepoint, and the rest to Mr. Robert Burgess, who made a modest beginning at Cotgrave Place. About four years after, the brothers joined flocks, and put 400 ewes to the ram annually, but Mr. Joseph's bad health destroyed his interest in the business, and he was heartily glad to see his share of it produce some £4,772 18s. at the hammer. This was in 1834, and as the Society's edict of only letting forty rams had quite died out, the Cotgrave Place lettings prospered right gaily.

Wonderful assemblies drew up there, in those three June days, two of which were devoted to showing, and the last to letting. Yorkshire sent Sir Tatton Sykes, Wiley, and Sunley; Walker, Skipworth, Dawson, and Torr represented Lincolnshire; the BUCKLEYS came to look on from Leicestershire, and Stone, Hurlstone, Parr of Wanlip, and B. Simpkins, as well; Inskip, Pawlett, and Sam Bennett did duty for Beds; Beesley and Hewitt for Northamptonshire; Bullmore and Doble for Cornwall; and Robert Smith for Rutlandshire; while Holmes and Going were the "Irish division." The pick of rams was large, but hardly what it might have been, as owing to his not keeping the ewes well enough, when they were put to, the crops of lambs often fell short. The first letting in 1834 made £935 16s. for 74, or about £12 12s. a-piece. They were always let privately, and in 1836 the highest price was about 50 guineas. Three years after, the 106 rams made £1,767, and in 1839, when Mr. Bennett gave £115 10s. for a shearing, the sum crept up to £2,386 for 116, and in 1841 it reached its modern

culminating point of £2,568 for 117! From that time, prices began to decline; and after Mr. Robert Burgess's death in the November of 1846, the Leicester glories of Cotgrave Place were bodily transferred, along with George Newton, a mile across the fields to Holmepierrepoint.

Mr. Sanday, who was born in 1816, and succeeded to his present farm on the death of his father in 1834, brought a strong hereditary love of Leicesters to his task. His grandfather had been a ram breeder, and his father had ewe dealings with Sir Tatton Sykes and Mr. Tomlin so far back as '99. It was quite a favourite tale how the then Mr. Tatton Sykes bought 20 prime ewes at 20 gs. each from him, which went in the waggon to Barton Ferry, and how their new owner met them there, and drove them home himself. In regard to tups, he was faithful year after year to Stubbins, and when the flock was dispersed, he followed the blood and was a regular customer to the Burgesses. Although the present Mr. Sanday did not become a ram breeder during the Burgesses' day, he kept up the flock to the 200 ewes, which he found on the farm at his father's death. His public efforts during the next thirteen years were confined to local and Smithfield shows. A pen of fat wethers at Oakham in 1838 won him his maiden prize, and they confirmed their success the same year, at Nottingham. A commendation in the Smithfield lists was first affixed to his name in 1840, and gathering strength as he went on, he stood second there in 1841, and won the gold medal in 1842. The breaking up of the Cotgrave Place flock determined him to make a bold bid for the Leicester premiership, and he accordingly offered £3,500 for the whole flock of about 450, which made nearly £1,000 more by auction after ten months' keep. Hence he did not remodel his flock till the September of 1847, when he selected the flower of his own 200 ewes, and bought sixty of the best at the Cotgrave Place sale, and twenty more in the spring of 1848, when the young sheep were sold off. "Old H" had been the especial ram idol of his boyish days, and accordingly he fixed his fancy on N by D R, as the nearest to his type, and determined not to leave him at any price. Sir Tatton, who had hired him the year before, was equally alive to his merits, and the two came away by themselves, bid for bid, till Mr. Sanday's 105 guineas won the day. Major Bower got the second best ram for 50 gs., and Mr. Torr went in for a score of choice ewes. N did not belie his promise, and in fact he has proved to Holmepierrepoint very much what Buckingham has done to Warlaby. The flock numbered some 180 ewes when its second era began, and earned its royal diploma the very next year at York, with the first and second pens of ewes, the latter of which were bought by Mr. Douglas. The rams were not so good; and Mr. Borton kept up the honour of his county against all comers. Since then, Mr. Sanday has only been absent from the sheep-classes at two Royal meetings—Chester and Chelmsford; and at present, his winnings at them amount to 23 first and 22 second prizes. At the great Paris show, in 1856, he made a clean sweep of all the firsts; and at the Yorkshire show, last year, his

tups won first prizes in Mr. Torr's and Mr. Borton's hands. Mr. Thunder has also shown his tups with no small success in Ireland; but he never shows on his own account, except at the Royal.

The flock is by no means confined merely to the Burgess blood. He was not so stedfastly wedded to an admiration of their grander outline, as to forget the sterling qualities of the smaller Buckleys—with their wonderful fleeces, hardy constitutions, light bone, and peculiarly-shaped feet—which Sir Tatton has always sworn by, for their compactness and width, as the most suited to his Wold farmers. It was not, however, until 1853 that he bought five ewes and five theaves of the flock. Two blue crosses on the hip mark the lambs of that ilk; red on the near hip indicates Cotgrave Place descent; "one blue" is the credential of the descendants of fifteen ewes from Mr. Hewitt's; and two reds, of ten from Mr. Mann, of Spaldwick, whose gig and top-boots, year after year, seemed part and parcel of the Burgess gala-day.

Mr. Sanday's farm consists of about 500 acres, 170 of which are held under Earl Manvers, at Holmepierrepoint, and the rest under the same nobleman, at Stragglethorpe, about a mile and a half distant. Part of it is on nice loam, and the other on much stronger land. Four-fifths are under tillage; and of this, 50 acres are devoted to yellow globe, mangels, swedes, and cabbage, which, with chopped hay, straw, peas, and oats, and oilcake twice a day to the young sheep, and once a day to the old, are the great elements of the training. George Newton, the shepherd, is quite as great a feature of the place as the sheep, and well worthy of the regard which his master and every one of the ram customers feel for him. He is still in the prime of life, and was born at Cotgrave Place, where his father was head shepherd. Ever since his babyhood he has lived in a sort of earthly Valhalla of Leicester rams, and when he does pass away it will be to some happy pastures, to which no Cotswolds and Shropshires dare approach, and where even the bleat of Southdowns is unheard. No senior wrangler enters the senate-house, with his *Calculus formulæ* more firmly fixed in his brain, than George does the sale hovel on the letting day, with all his letter genealogies. As each tup comes up to the rostrum, Mr. Strafford invokes him to tell its family history. If there is a defeat or a little mishap, he gives it all in the same delightful spirit of quiet simple faith. Failing points or good points with their ram or ewe source are indicated alike, without the remotest attempts at a gloss, and thus he unconsciously publishes and dedicates to his master and the public an annual edition of *Leicesters Made Easy*. Mr. Sanday's principle is to breed close for points; but, as a general thing, he has not found a cross between a son and dam answer, and very seldom practises it. W. H. and L. X. achieved, like Old D. A., much for the legs of mutton, and D. N., who was descended from the latter, had forequarters which told their infallible tale. Mr. Sanday always considered this sheep the best he ever bred, although the judges at Exeter only placed him second. With that meeting

his show chances were out, as he got fast in a hovel next autumn, and injured his shoulder severely. The ewes are only sold to be killed or to go abroad, and the flock now numbers about 160 of them. The crop of lambs this year has been unusually good, and made up about 204 from 130. Last year was especially unlucky, as at least 80 lambs died at lambing time, from inflammation of the navel, which gradually spread to the bowels, and was thought to be caused in some measure by the mangel. In this year's crop there were 80 doublets and three triplets; but, like every good flock-master, Mr. Sanday prefers singles. The ewe lambs usually predominate, and every year two or three "negroes" arrive. Strange to say, it is 1,000 to 1 against their getting a black lamb, although the colour comes out very often in the grandchildren. The rams generally muster about 100, and of these about 80 to 90 are let every year, while others take their departure to New Zealand, Australia, America, the West Indies, and, in short, to almost every clime where mutton and wool are in the market. Four or five of the choicest, which this year include a Warwick first, and a Canterbury first and second, are kept for home service, and serve a limited number of ewes at from 1½ to 2 guineas. The letting average of £30 12s. for forty, in 1859, was the highest Mr. Sanday has yet had; but the top price was 111 gs., given by Mr. Thunder, in 1860. The private letting goes on from July to September; and the rams, whose expenses of transit are borne one way by Mr. Sanday, return from their quarters in November. About 400 sheep are annually brought to the shearing stools, and the average weight of the fleece is about 7lbs.

Amid all these Leicester calculations, Mr. Sanday has, like Mr. Jonas Webb, a very warm corner in his heart for Shorthorns. His essays in this line had a dash of Booth in them from the first, as they were opened in 1849 by the purchase of four cows and heifers in calf to Pestalozzi (by Buckingham from Cassia by Leonard), at the Wakeringham sale. Foggatherpe 4th then fell to his nod at Kirklevington, and then Vellum, the first Royal prize cow at Gloucester, Lydia Languish and her daughter Lavender by Daniel O'Connell, and Lady Valentine, were among nine which he purchased in a lot from Mr. H. Smith's of the Grove, Cropwell. Three of them were sold at good prices, to America, where Lavender's Duke of Glo'ster daughter was a great winner. The Nunwick Hall sale furnished its useful quota in the supposed barren Fanchette, a pure Booth with the exception of the Petrarch cross, for 30 gs., who proved to be in-calf with Faith to Sir Charles; and Crystal, bred by Mr. Parkinson of Ley Fields, and Sugar-plum, from Mr. Scott's of Tortworth, have been equally useful purchases. Tortworth also found him a royal winner in Vatican by Usurer, who beat all the aged bulls, with Windsor second, at the Lincoln Meeting in 1854. Mr. H. Smith owned half of him, but they were not sorry to get rid of him to America for 100 gs.; and he only left two representatives at Holmepierrepoint. Since then Mr. Sanday has used nothing but Booth bulls. He began with Harbinger, and kept him for two years, when he passed him over to Sir Charles

Tempest, and got The Corsair, by Crown Prince, dam by Crown Prince, in his place. Harbinger left nineteen of his stock behind him, but some of them were purchases from Mr. Henry Smith of Cropwell. His principal get during that period was Nottingham, from Princess, who attracted the fancy of Mr. Stratton, when six months old, and became in after-years the celebrated steer-getter of Broadhinton. General Havelock, another son of Crown Prince, succeeded The Corsair from Warlab; and Highthorn, by Baron Warlab, brings the link down to Sir James, the son of Sir Samuel and Nectarine Blossom, who is now in his second season. Second Duke of Bolton, by Bates's Grand Duke from Florence, was scarcely used at all. Mr. Sanday bought him originally as a calf at the sale of Mr. Samuel Bolden, in whose hands he proved the sire of Third Grand Duke; but he was slaughtered early, on account of becoming so heavy. The herd consists of about seventy in all, but they are only in store condition; and all Royal show energies are expended entirely upon the sheep. In fact, good blood and plenty of milk and calves is the great and sole end Mr. Sanday has in view.

The house is situated nearly four miles from Nottingham, on the Melton Mowbray road; and is about half-a-mile from Earl Manvers's residence. The farm-buildings are grouped closely behind it; and those who prefer flowers, or golden pencils and golden spangles, to Shorthorns and Leicesters, have full scope for contemplation. Our business was, however, with the latter, and we sallied out after an early breakfast, rendered all the sweeter by a long walk through The Vale, to break ground in the long calf hovel.

Ten out of eleven calves there owned Sir James as their sire. Two-thirds of his stock are heifers, but there are rather too many whites among them. The first in the row was a clever white heifer from Chrysalis, and next to him a roan bull, Waverley III., from Welcome, by Harbinger. Mr. Rowland Campion bid Mr. Sanday 200 gs. in vain for this cow, which the latter especially values for the blood of Water Witch, who was among the first lot of females he purchased from Mr. Henry Watson. Waverley has four crosses of Booth in his escutcheon, and his head at once tells of his sire, while his long quarters, good back, and hind legs well under him, all indicate that he will ripen into a very promising fellow; still he is somewhat short of hair, and certainly not the best handler of the lot. The red heifer from Laundrymaid, who goes back through Lavender to Lily by Brutus, has great depth of body, and a peculiarly rich flank, and in her case, as in Waverley's, the tendency to dewlap gives her a very robust character. The first of the white bulls, Lord Lovell, from a 2nd Duke of Bolton, is very promising; and so is his white neighbour, Figaro (from Faith by Sir Charles), who has only one cross which is not Booth. The roan heifer, from a Duke of Glo'ster cow, was rather amiss, and, among the others, we were struck with the good middle piece and well let down quarters of Lucy Long from Lucy Lockit, whose head somewhat reminded us of the Maid of Athelstane's. A nice coloured roan bull of Jan. 27 from Sugar Plum

had gained his promotion from the hovel to the bull boxes. He is remarkably lengthy, but keeps his form along with it, and is level and full of good hair to boot. Welcome 2nd's last year's produce then came out in the shape of Waverley 2nd by The Corsair, whose picturesque forehead would remind us of the good old style, which flourished in the era of "the quiet days at Wiseton." By some he would perhaps be called plain on this very account; but he has great substance, though perhaps not so good a coat as we should like to see.

From him we proceeded round to the yard, where the specimens were very diversified in their character. First, there was Lady Adeliza, a daughter of Pestalozzi (who was sold to the French Government at Mr. Henry Watson's sale), with a most remarkable outshoulder, and more than the usual average of "fool's-fat." A white cow by Harbinger from Lalage kept her somewhat in countenance, but her fore-quarters and neck vein were much more striking, and she is duly destined for Baker-street. For a Harbinger, she had plenty of size, and although she was grazed last summer on the worst land they had, she resolutely refused to breed. Two heifers, which did not tend to make us in love with Highborn, and a white heavy-fleshed heifer by Sir James from Symphony of the Sibyl tribe, were in another loose place, and anon we found Sir James, the second son of Nectarine Blossom, waiting for us on his field parade. This celebrated cow left no females behind her, and hence Fitz-Clarence by Clarence, and Sir James, and Sir Robert by Sir Samuel, have her line entirely in their keeping. Sir James was two years old last December, and, although both about the head and the tail he is not just so nice as he might be, his neat forehead, combined with his thick flesh and great depth, make him a good class animal to look at, while his stock can speak for themselves quite as decisively.

Lady Lavender, with one of his bull calves at her side, was grazing in the homestead with which the sheep paddocks communicate. The latter consist of three fields, two of which are divided into three with hurdles, and each furnished with a small thatched shed. The pen of prize Canterbury shearling ewes was the chief group in the first. Originally Mr. Sanday intended to have sent two pens, and drew 22 for selection, but turnips became so scarce that he altered his mind, and drafted them down to seven. Two of them were by W X, the first prize shearling ram at Canterbury, and of these an own sister to L X, the Warwick prize shearling, was quite the *prima donna* of the quintet. In fact, Mr. Sanday doubts if he ever had a better ewe, and her back, which is just like a table land for flatness, placed the other four rather at a disadvantage.

George then conducted us to eleven rams, busy with grass and tares, in the next paddock, nearly every one of which seemed to kindle up some old show memory in his breast. The only remnant of "Merrie Carlisle" was kneeling near a shed, and now seldom adopts any other posture. So far, he has never been put to one of the Holmepierrepoint ewes, but they fully intend to use him this year. No ram can render a better ac-

count of his five years of public life. Mr. Torr bore him off in 1855 for 78 guineas, Mr. Dixon, of Brandsburton, the next year for 71 gs.; Mr. Brown, of Norfolk, for 40 gs.; Mr. Torr, again, for 28 gs.; and last year Mr. George Turner, of Barton, took the last public dip into him at 17 gs. His neighbour was a little grey on the hocks, and rigidly carried out the idea of four fore-legs. There, too, awaiting his 70 guinea transfer, early in October, to Mr. Clark, of Scopwick, was the first-prize winner in the old class at the Royal this year, a sheep of very fine character. He weighed about 24 stone at Canterbury, and was let to Mr. Longfield, of Castle Martyr, Ireland, last year for 50 gs. He is from a Y H ewe, and by M U, who also went to Ireland in his day for 80 gs. and won some head prizes and a silver medal.

L X, the first-prize shearling at Warwick, was not enjoying the August sun along with his brother heroes, but lay in the lambing-house, partially paralyzed, with cushions on each side to keep him off his back, but still eating rape with no small zest. He is by W X by W H, from an L N ewe; and, although they used him pretty freely last year, Mr. Sanday's hopes of him are quite at zero. In this state they will often serve a few ewes, but not get a lamb; and when they are slaughtered, a little matter in the elbow joint seems to explain the seat of the complaint, which arose from his feeding so well and so fast.

The lambing-house adjoins the show hovel, and a room for George is attached to the end of it. Hard by it, is his sanctum, whose walls are nearly obscured by the card certificates of first and second prizes, and high commendations, which he has borne back with him from the shows. Seven of the former and one of the latter formed his Kentish spoils; but perhaps his most mournful recollection of this room, is when he had to sling up the sadly wasted carcass of his favourite G, by G N. This "departed mutton" had never been shown before Warwick, and George fondly believed that nothing would beat him, till he saw the first and second cards on Mr. Pawlett's rams; but, like his master, he never murmurs at judges. Such was the value that Mr. Sanday put upon him that he used him for four years, and found him especially successful as a ram getter. Inflammation of the liver killed him at last, and a tumour formed on his breast, which was found, on dissection, to be full of sand, which had gradually worked its way in.

But from mutton we adjourned to beef once more, and wound our way across the Melton road to Conduit's close, whose water was wont to supply the hall. It was full of cows; but George had taken a fancy to the look of the pasture, and got some ewe lambs put in along with them. In fact, he regards the Shorthorns with very qualified admiration, and by hook or by crook, gets the best innings for his charges, wherever the field may be. Ada was there to speak for the 2nd Duke of Bolton blood, with her Bates head, and those black tips to the horns, which are peculiar to many of the Waterloo tribe. She has a remarkably high back, but this freak of nature is not reflected in her nice roan heifer calf by Sir James. The large white Lalage by Uaurer was there too, and, like her fat daughter, somewhat patchy. Welcome was

of a good style, and so was her sister Water Melon, the last Harbinger Mr. Sanday bred, though with perhaps not the best of shoulders. Chrysalis, by the Earl of Dublin, is a very good cow, and still retains a deal of grandeur. Mr. Torr has "two legs of her," and she has bred the partnership five calves since the Fawsley sale, gaining a month in each of the last two years. She began at two years and a quarter, and a month after she had completed her seventh year she produced the sixth of her calves, which have been equally balanced in point of sex. The breeding knack is hereditary, as her dam Garland, who has had seven in the last seven years, will be down to calve very shortly; and hence the joint Aylesby and Holmeperrepoint ledger looks unusually promising. Side by side stood a mother and daughter, to wit, Laundry Maid and the Duchess of Gloster, blessed with more size than beauty, and near them was the red and compact Crusey, from Crystal, who is Harbinger-fashion, rather small, and hence the strong-headed, fine-middled Faith, by Sir Charles, from Fanchette (whose colour she has assumed), quite overpowered her. Faith goes back to Booth's Fame, and is a good-looking cow, but her sire was hardly worthy of her dam. Sugar Plum is also of the compact and small order, and one of the four females, which are all Mr. Sanday has left of the Second Duke of Bolton. She is quite among the most spicy of the herd, and excels in her fore-quarters.

The High Field was shared between some ram lambs, and another cow and calf company, first and foremost among which was the crack of the close, the sweet, thick-fleshed, and fine-haired Lucy Lockit by Usurer, and own sister to Laundry Maid and Lalage. She is full of character, and with an especially fine bosom and head; although she is showing a rumpy tendency rather early on, and seems just the sort to make up for Smithfield at some future day. At present, that fate is not imminent, as she has two good-looking daughters, and is likely to perpetuate her name still more. Rosabel by 2nd Duke of Bolton, and with a nice Booth head, rather disappointed Mr. Sanday, by breaking last year; but it afterwards turned out that it was a mere freak of Nature, and that she was some months gone in calf at the time. Lady of the Lake, from Lady Foggathorpe, with her close-sprung rib, completed the Second Duke of Bolton lot; and of the four Sir James calves in the same field, we were especially struck with the deep square roan heifer from Agatha. But we must not forget Foggathorpe by Harbinger, from the old Foggathorpe tribe, "bringing back," as a friend once enthusiastically wrote us, "the palmy days of Market Weighton, when Edwards so often came to the fore with his cows, and his famous sheep, and his harvest waggons almost kept pace with the old York Mail."

This inspection over, we took once more to the road, and drove off to Stragglethorpe. There was little to look at as we went, beyond the dam of Lady Adeliza, with some ram-lambs and common cows in Brummoor, a reclaimed pasture, which, when Mr. Sanday first took the farm, would have been dear at 5s. per acre; and the dusty procession of shearing ewes and teasers, which George, armed with one spur, on his white-faced chestnut, was shifting to a distant field. Ahead of us, on the hill, was Colgrave Gorse, from which so many straight-necked ones broke in Sir Richard's and Jack Morgan's Leicestershire day, and there were few covers that they liked better to draw. The Stragglethorpe farm lies a very little to the left; and a white cart-mare, the dam of Mr. Sanday's stallion, was quite the queen of the strawyard. There was nothing particular to linger for here, save and except her bay son by England's Glory, who was highly commended at Canterbury. On one side he has a good deal of Suffolk, and his beautiful

back and quarter go far to atone for the smallness and rather peculiar placing of his eye. Then we adjourned to a white clover field, from which the lambs are rigidly excluded as soon as it is in full flower. A few blackfaced nurses—or, rather, Holmeperrepoint Ayahs—were the occupants, along with some Leicester ewes, headed by the ten-year old dam of "Carlisle," which flourishes in immortal youth, with another ram-lamb at her side. Seven heifers by General Havelock, who only left one bull behind him here, were just over the hedge; and one of them, from an own sister to Nottingham, exactly resembled that mighty Strattonite in her colour. There too was the neat and red Crinolite, from Chrysalis, and a red-and-white calf from Frolic; but the sheep had been quite banished from one field, from a fear of the heels of a remarkably fine bay three-year-old hunter of Rataplan and Belzoni descent. A good Fairy, by Corsair, from Fanchette, grazed fearlessly along with him, as well as a white Sister to Nottingham, and a thick-backed heifer by Vatican, from Water Nymph, the dam of Welcome. From this point, we gradually wound our way towards Holmeperrepoint once more; noticing *en route*, a daughter of Chrysalis, and her daughter Emma, the result of a stolen cross with a common-bred bull, which tells its own tale through the head. There was also a robust-looking, meritorious heifer, Fawsley Garland 3rd, by Hopewell, from Old Garland, and bred at Aylesby; a white heifer by General Havelock, from Faith, one of the Water Nymphs, and Loyalty, by The Corsair, from Lucy Lockit, whose otherwise fine points are a little detracted from by a little plainness behind and a tendency to be slack-backed. Still she and four or five others made up a very goodly lot for The Corsair, who cost Mr. M'Dougal, a spirited Australian, 300 gs. last year, and became food for fishes on his passage out. Mr. Sanday used him pretty freely, and the cross with Welcome, Ada, and Sugar Plum did not disappoint him. His daughter Fairy is also full of style and character, although not quite so truthful in form.

Skirting the pastures, we again came across George in the midst of some red clover and fifty-three rams. It was beautiful to see how his "Scotchman" fraternized with them, licking their faces and then lying down beside them, as the departed Fly and Dutchman (of which he speaks so tenderly) were wont to do in the days of their pride. Being in the sheep vein once more, we strolled down to the Holmeperrepoint church. We could not find Will Eato, the old shepherd of the Stubbins's, at his toll-bar, so we had to be content with very different links with the past in the shape of the hovels, where the mighty C and D G, and K, and D R were reared. The fields in which they stand are in the occupation of Mr. Stubbins's great nephew, and a solitary oak tree marks the whereabouts of the old show-hovel. Times may change and men may change, but the spirit which animated the veterans who fought and "bled" for rams on that battle-ground, has not died; and we might well feel, as we passed through Ratcliffe (the home of George Parr), and so on through The Vale to Grantham, and looked out for the fleecy or cricketing groups which occupied nearly every other field, how firmly an English county can cling to its own traditions, and refuse to be severed from its earliest love of prime Leicester mutton and square hits to leg.

H. H. D.

THE ROT IN SHEEP.

It is an acknowledged fact that rot in sheep is generally preceded by a continuously wet season. For the many past weeks we have had little else than rainy days and damp nights. The herbage is never dry, and the weather never warm, the lairage always cold, and the sheep constantly soaked. These circumstances would indicate the greatest danger to our flocks from colds and inflammatory attacks; but to me they appear the too certain precursors of that dire pest and fatal disease, the rot in sheep.

It is with great diffidence I take up this subject, as it more properly belongs to the professional veterinarian, rather than the practical farmer. But, however imperfect this short paper may be (and it will consist chiefly of extracts from authentic sources), it cannot fail to do great good by calling the attention of flock-masters to the subject through your valuable columns, and at a time so early that I trust preventives and remedies may be adopted to ward off or mitigate its evils.

The most fatal years for rot, recently known in its destructive effects, were those of 1809, 1824, and 1830. It is asserted that annually about one million of sheep and lambs are destroyed by its direful effects; but in the year or winter of 1830-31 the annual estimate was far more than doubled, so that in the year 1833 the supplies of sheep fell off, and Smithfield Market averaged about 5,000 per head less than usual each market day; and the same falling off was manifest in all the country fairs and markets—a fact sufficiently alarming in itself, without multiplying instances, to cause the most earnest attention to be given to it, and the adoption of every approved course of management to prevent it.

The rot in sheep is generally classed as a disease of the liver, and very properly so, because the chief seat of the disease is in the liver; and which, in confirmed cases of rot, abound with those well-known parasites called flukes. In Morton's Cyclopædia it is said: "These insects, which vary in size from an eighth to a quarter of an inch in diameter, are found floating about the biliary duct, apparently feeding on the bile, and preventing it from fulfilling its destined functions in the animal economy."

Youatt says: "The principal alterations of structure are in the liver: it is pale, livid, and broken down with the slightest pressure; and, on being boiled, it will almost dissolve away. In some cases it is spotted like the back of a toad. Nevertheless, some parts are hard and schirrous; others are ulcerated, and the biliary ducts are filled with flukes. Here is the decided seat of disease, and it is here that the nature of the malady is to be learned. *It is inflammation of the liver.* In consequence of this the secretion of the liver is increased—at first scarcely vitiated, and the digestive powers are rendered more energetic; but soon the bile flows so abundantly that it is taken into the system, and the eye,

the brisket, the mouth become yellow. As the disease proceeds the liver becomes disorganised and its secretion more vitiated and even poisonous; and then follows a total derangement of the digestive powers. The whole system sympathizes; every viscus of the chest and the abdomen is gradually involved, and the animal exhibits at its death a state of general disorganization which accompanies scarcely any other malady."

Most graziers know that when sheep are first taken with rot they do increase in condition very fast, but if not sold in their best state they as rapidly decline, and in a few months are worthless. Hence experience proves Mr. Youatt's statement above, that "the digestive powers are rendered more energetic." This, of course, ought to induce graziers to great watchfulness. They must, indeed, look with suspicion upon their flocks when they appear to thrive most satisfactorily, and carefully examine them. It is only practised individuals who can truly discover the disease in its early stages. The yellow tinges described above are the chief evidences, *i. e.*, yellow in the eye, the brisket, the mouth, &c.

There have been as many as 870 flukes taken out of one liver, and in some cases only ten or twelve, both having died of rot. "Then," Mr. Youatt further observes, "is the fluke-worm the cause or effect of the rot? To a certain extent both." He then describes, fully, their destructive fatal action, &c., but proceeds—"Notwithstanding all this however, if the fluke follows the analogy of other entozoa and parasites, it is the effect, and not the cause, of the rot. The ova is continually swallowed by the sound animals and the diseased; but it is only when the fluids are altered, and sometimes essentially changed, and the condition of the digestive organs is materially impaired, that their appearance is favoured or their multiplication encouraged." He further says: "He has never seen the liver of a rotted sheep, in which the fluke-worm, or traces of his previous existence in the liver, were not sufficiently plain." What, then, is the cause of rot in sheep? Instances innumerable might be cited of great peculiarities in the way by which this pest has been imbedded by different flocks, and that fatally. Parkinson says; "Twenty sheep were taken to Wragby fair, six being left behind, marked differently. The twenty died, the six lived free from disease. The supposition was that the twenty caught the infection on some rotting ground. In another case he states twenty were sent to Burgh fair: one had a broken leg, it lived free from disease; the nineteen died rotten. The nineteen were suffered only to range a common while a cart was procured for the lame sheep. A Dorset breeder's sheep were taken to drink at a small pond, not being more than 15 minutes there; 200 of them died from rot." These few facts must, for this time, suffice; they could be extended indefinitely. It

is plain that the ova of these flukes is imbibed by the animals, and in the Cyclopaedia it is stated that "the most reasonable theory as to their production is, that they are taken into the system in the form of minute eggs, which are deposited on the grass on those spots exposed to the joint influence of sun and water, and, reaching their proper nidus, are there hatched into animal life."

As to remedial measures, they are seldom effective; the best thing is to adopt those of a preventive kind: a total change of food, and, if possible, of a dry nutritive kind, such as hay, cut chaff, meal of any kind, but particularly of wheat, beans, peas, barley, oats, and Indian corn, and, if the disease is established, the best feeding stuffs that can be obtained; and as soon as symptoms of decline are shown, send them to market. Salt is, in all cases, highly spoken of, and is the best purifier. Nothing can be easier than to give a plentiful supply of this condiment. A covered trough should be placed in each field, without fail, to be constantly supplied; so that each animal can help himself. Diuretics are highly spoken of; but who can give constant doses to a large flock of sheep? Decoctions of elder, broom, burnet, melilot, willow, bark, &c., &c., are highly spoken of; but I fear none of these would long avail, even if they were regularly administered. Nothing

will equal a change of keeping and dry lairage as preventives. I should recommend early mowing and speedy stocking of the meadows as one desirable course. To graze exclusively with cattle every suspected pasture, would be right; and to take the sheep to the cattle pastures might prove well; at all events sheep must be taken from all low and wet undrained pasturage, and put on higher and sounder land. Swampy, rushy, and springy soils are almost certain to produce rot in a season like the present. Every pasture known as rotting pastures should be wholly discarded; undrained commons and the like. All sheep are alike subject to it, there is no distinction; and all other animals are subject to its effects in some degree. It is often fatal to hares and rabbits, but horses, cattle, and pigs are seldom destroyed by it. The great and substantial remedy, after all, is in high keeping: give plenty of corn and cake, so that the predisposition to encourage and propagate the ova shall even be wanting in the animal economy. It may be a struggle with the thriving animal to withstand the attacks of these little imbibed pests, but he is unquestionably well prepared for the attack, and the great probability, from what is stated above, is that he will ultimately conquer, and thus prove this keeping a profitable investment to his owner. Keep all stock in good condition!!!

NORTH LONSDALE AGRICULTURAL SOCIETY.

MEETING AT ULVERSTONE.

The tact and spirit, with which this meeting is conducted, is fast placing it among one of the most important agricultural gatherings in the North of England. Nine or ten smaller challenge cups of from 20 guineas to 10 guineas value are annually competed for at it by horses, cattle, and sheep, in addition to the one hundred guinea one, which has twice in succession been adjudged to Duchess 77th, and certainly bids fair to pass away in 1861, to Captain Gunter and his heirs for ever. The show was held in a park adjacent to the town of Ulverston, and Messrs. Douglas and Thompson undertook the judging of the stock, while the horses were submitted to Messrs. Bartholomew and Cotterill. Neither Royal Butterfly nor Young Ben put in an appearance in the first class for Shorthorn bulls; and hence Fairy King, the property of Mr. Boulton, of Park-house, Low Furness, and a very useful thick-fleshed animal, had no difficulty in winning this prize, and carrying off both the general and local bull challenge cups to boot. The Duke of Devonshire, who sent his beasts direct from the pasture to the show yard, gained the yearling bull prize with his Knightley, of the Fawsley and Bolden blood, Captain Spencer coming second with his Skyrocket, a son of Marmaduke and Leila, which was in-calf at the time he purchased her for 170 guineas at Mr. Harvey Combe's sale. The Holker Herd was first, with its well-haired and promising Statesman's Daughter, in the heifer-calf class, and second to Lady Pigot's 2nd Duchess of Glos'ter in the cow class, with the sweet-looking Coral, a very cheap purchase at Mr. Adkins's sale. Dr. Dickenson's Polyxena was beaten by Captain Spencer's Miss Kitty of his own Young Ben blood, for the first yearling heifer premium, and Comfort from the Holker Herd, and of Mr. Wetherell's breeding, was highly commended. The

three Gunter Duchesses were, however, the great feature of the day, as they stood side by side, and confronted Stanley Rose and Empress of Hindostan. Duchess 77th gallantly held her own against them both as well as her half-sister, and for the third time out of four this season, the white twin was preferred to the roan. Twenty-four Shorthorns were entered for the Great Challenge Cup, but Oxford 15th did not come to the ground, and the judges had merely to confirm the first in her class, by handing over the cup to Duchess 77th. The trio were raffled off forthwith to Alnwick, while John Ward and her Ladyship's "lot" parted company with them at Carnforth, *en route* for Middlesboro'.

Schuloff did not oppose the event for either the thorough-bred stallion prize or the challenge cup, and the same honours in the cart and coaching stallion departments fell upon young Blythe, the property of Mr. Anthony Dalzell, the celebrated coursing judge, and Young Merrylegs a dark chesnut from the Craven district. Mr. George Drewry, land steward to his Grace the Duke of Devonshire, received the honours of the Hunter Challenge Cup for his very neat bay mare Fanny, whose ideas of jumping, although limited at first, improved most marvellously after one or two essays. This gentleman also won the prize for the best Leicester ram, against a somewhat weak field. In fact, the Leicesters were not to compare with the South-downs, of which the Duke of Devonshire showed some very good specimens, and carried off the challenge cup with them for the best pen of four shearling ewes and one ram of any breed. The pig entries were small, but the meeting altogether was a remarkable success, and will add another right worthy chapter to the "Pleasures of Memory," among the staunch breeders in this quiet district.

NOTES ON MEADOWS AND PASTURES.

BY JAMES BUCKMAN, F.G.S., F.L.S.,

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The subject for our present consideration is that of the weeds of pasture, a matter which has never received half the attention which it deserves; for, while everybody will admit that a field of wheat or of turnips choked with weeds is not only an evidence of bad farming, because weeds and wheat and charlock and turnips cannot occupy the same spot at the same time, but also because an enemy lives upon the food that had been prepared for a friend; yet few persons so reason about pasture.

Now, in the meadow the object is to grow fodder; and as there are a number of plants which, either separately or unitedly, act in this capacity, so the farmer too often errs in considering that there cannot be such things as weeds in pasture, or, rather, that pasture consists wholly of weeds; but when we examine the botanical characters of the different plants which enter here and there into the composition of meadow herbage, we shall be bound to conclude that much of it can only be considered in the light of weeds; and inasmuch as in laying down permanent pasture we should exercise care and thought as to the peculiar kinds of fodder plants which we should employ to meet the circumstances of our soil and position, so, having chosen these as the best kinds we could select, we should be careful only to sow what we require without paying for a mixture therewith of the seeds of weeds; and when they were sown we should be equally solicitous to discourage the growth of weeds which may spring up spontaneously with our required crop.

How the first of these conditions, namely, the choice of grass seeds for permanent pasture, are often met, may be gathered from the following analysis which we were called upon to make of two parcels of seeds—one of mixed grasses, and another of clover, both of which were destined to be sown for laying down in a meadow:—

1.—Grasses.

Weed grasses.	{	<i>Triticum repens</i> .—Couch, a well-known perennial weed.	} Good meadow species.
		<i>Bromus mollis</i> .—Soft brome or "Lop," an annual weed grass.	
		<i>Holcus lanatus</i> .—Soft grass, "Fog," a grass devoid of feeding qualities, but with capabilities for smothering everything better.	
		<i>Festuca duriuscula</i> .—Hard fescue.	
		<i>Dactylis glomerata</i> .—Cocksfoot.	
		<i>Alopecurus pratensis</i> .—Foxtail.	
		<i>Lolium perenne</i> .—Rye-grass.	

2. Clovers.—Contained 35,200 weed seeds in an imperial pint, consisting principally of plantain, which was estimated to make up about one-fifth of the weight.

Take, again, another example of the kind of stuff which is sent out as "permanent" pasture seed:

Analysis of Mixed Pasture Seeds.

a. Weeds.

	Seeds in sample.	
Bromus mollis	12	} Equal to 553,960 per bushel.
" sterilis	6	
Arrhenatherum avenaceum	20	
Holcus lanatus	10	
Triticum repens	2	
Stellaria media	2	
Undetermined	2	

b. Herbage Plants.

<i>Festuca duriuscula</i> .	} Good kinds of grasses, &c., but bad and old, and much mixed with micedung.
<i>Poa pratensis</i> .	
<i>Dactylis glomerata</i> .	
<i>Phleum pratense</i> .	
<i>Lolium perenne</i> .	
<i>Trifolium pratense</i> .	
" repens.	

Estimated weight per bushel, even with the clover seed, 14lbs.!

Now these are the sorts of analyses which we have lately been much occupied with, and they show the great importance of analyzing seeds with a view to test their genuineness; for surely if it be right as a matter of economy to obtain an analysis of the manure by which a crop is to be supported, it is no less so to ascertain whether we are paying for dirt instead of seed, as this is not a matter merely of an impoverished crop, but one of the introduction of weeds on our farm, the seeds of which we have had to pay for, and which will entail years of expense and toil to eradicate; for just in proportion as these are encouraged, so even the scanty produce of the lessened amount of good seed will gradually but surely decline; for where "ill weeds grow apace"—and proverbial philosophy and observation shows that this is ever so—the crop must proportionately decline.

Seeing, then, that the permanent pasture-mixtures are so often such rubbish, it behoves all who may be therein interested to enquire more carefully into the matter than has hitherto been the case, or there could be no market for the trash which is so frequently sown; and we would shortly indicate the direction such enquiries should take.

1st. The mixture is too often empirical.

2nd. The mixture is mostly impure.

1. *The mixture of seeds*, though usually so much paraded as being the result of a critical examination of the sorts suitable for varied situations, is too often a quack prescription made by men who could not distinguish one grass from another, either in the growing or the dried state; and even this will seldom be the same for two consecutive seasons: in fact, our experience goes far to prove that a grass formula depends more

upon the nature of the old stock which may be on hand from the previous year, and the price per acre which a purchaser is willing to stand; for no rubbish would seem too bad for many of the samples which we have examined, both as to kinds and quality; indeed, with most of the grass *formule* it is a mercy that only a tithe of the seed should possess the power of germination.

We must here caution our readers against the free admixture of Italian ryegrass that is sometimes resorted to in preparations for permanent pasture. This of course must be by design, either to get rid of some old stuff that will fill up the bushel, or with a view to show something for the money. A friend of ours once took us over his quickly-formed pasture, for which he had gone to great trouble and expense in due preparation, as it was meant to augment the meadow in the front of his house, when the following conversation occurred:—

Our Friend.—There! see the rich herbage for the second year after sowing!

Ourself.—But it is principally Italian ryegrass, which is not perennial.

Our Friend.—That is botanical theory, and this seed was sent me by a practical man and a respectable seedsman.

Ourself.—We shall see.

We did see; for in three years after, our friend wrote to say that his promising pasture was all bare, and solicited *botanical* advice as to what kinds had better be sown for a new trial.

As an evidence of the truth of the positions we have here advanced, both as regards unscientific mixtures—if it be no worse—and impure seeds, we cannot resist giving the following analysis of a sample of a “permanent pasture” mixture:—

Lolium perenne.	} About equal parts formed the basis of the mixture.
„ Italicum (annual).	
Bromus mollis.—Another annual grass.	
Dactylis glomerata.	
Alopecurus pratensis.—A moist meadow grass.	
Phleum pratense.	
Festuca pratensis.—A moist meadow grass.	
„ duriuscula.—A dry meadow grass.	
„ bromoidea.—A common weed grass in seeds on sandy soils.	

Poa pratensis.

Arrhenatherum avenaceum.—Really a weed as far as value is concerned.

Cynosurus cristatus.—The same.

Holcus laevis.—Quite a weed.

Weeds in a bushel, 25,600; and here the *Lolium italicum* should properly be added.

We have here, it is true, a collection with some good grasses, but still quite improper for any meadow, as the soil and circumstances of the one are not those of another, and the lop and Italian rye-grass are so prolific of seeds that the former would ultimately get possession of the soil, as it is a wild grass perfectly natural to our climate, whilst the latter, though growing readily as a crop, is still only an induced variety, which soon wears out in consequence.

Such then is the nature of the weeds which are *absolutely sown* in laying down permanent pastures; but we must not forget that there are in England lots of old pastures which have borne weeds for ages, and yet that these have grown together with the true crop for the hay har-

vest, or are allowed to disfigure the depastured meadow, diluting the hay on the one hand, and taking the place of pasture plants on the other: such for instance are thistles, nettles, docks, and even worthless grasses themselves.

Now, if we look carefully into the natural history of such interlopers in meadows as we should deem weeds, we shall find that they may readily be referred to under the following heads:

1st. Plants which are weeds by reason of taking up space without adding to the crop either of grass or hay.

2nd. Plants innocuous in themselves, but which yet take up space in the pasture without yielding food, and also dilute the quality and quantity of the hay.

3rd. Plants which by reason of their mechanical structures are inconvenient to cattle both for pasture and hay.

4th. Plants of poisonous properties.

5th. Plants which, though not poisonous, impart a disagreeable flavour to milk, butter, and cheese.

But besides those comprehended under the above heads, and which will be hereafter more minutely described, are others, which though scarcely recognized as weeds, are yet interlopers in pasture, not only from being in themselves useless, but from taking up the room which should be occupied by nutritious herbage: such are the useless grasses, sedges, and rushes.

Among the useless grasses besides the annual species, which, of course, are mischievous on permanent meadow, are perennial species which usually grow in clusters or “tussacs” or “hassocks.” Such are the following:

Aira cœpitosa tussac—Hair grass.

Brachipodium perunatum—False brome grass.

These are recognised by the farmer as “sour grasses,” for as cattle usually refuse to eat them, it is natural to conclude that they have a disagreeable flavour; some, however, assert that they are produced by “sour land,” and true it is that well-drained and well-cultivated meadow soil in “good heart or condition” will seldom or never show the slightest sign of these innutritious species.

Again, the appellation of “sour grasses” is very commonly given to the *carex* or sedge tribe, which, though near allies of grasses, yet belong to the natural order of *cyperaceæ*, whilst the true grasses are arranged under that of *gramminaceæ*. Now, the sedges are admitted on all hands to be sapless and innutritious; they delight in poor sands and what are called “hungry” clays, and though it is true that cattle will occasionally eat off the tender shoots (as indeed what will they not eat, when starved on a poor common or miry *suag*?) yet the disfavour in which they are held is soon manifested when anything better is to be had in their vicinity. Just so is it with the poorer grasses: they are wonderfully like the sedges in habit: the presence of both equally mark poverty and want of condition in the soil where they occur, because they elect to grow under such circumstances, and indeed cannot otherwise flourish, for the moment better rule is commenced in the proper action of the drain, in the amelioration of the soil by the fertilizer, and in the general attention to civilization, even in the so-called natural meadow, which cultivation supposes, then away go the wilder denizens, not only from being driven out by a better race, which will

dominate under these more refined conditions, but from these alterations being positively unsuitable for them.

From these remarks then we may conclude that not only are sedges, as well as a host of other plants still more differing from grasses, weeds in pasture, the which we should bend our energies to discountenance, but even *coarse* grasses themselves are also weeds, so that in fact a pasture should not be considered as perfect

until we know it to contain none but the best pasturage, plants and though as yet neither the vegetable physiologist nor the chemist can tell with certainty all the qualifications of the plants that may be found in the meadow, yet this law is pretty well established, in as far as the grasses are concerned, namely, that the best species grow in the best soil, and in proportion as the meadow is good and well cultivated, so the coarse or sour grasses will be absent.

THE BEER AND CIDER CONSUMPTION OF FRANCE.

We have not yet done with the French Treaty, which, surreptitiously arranged and presented to the nation by surprise, has by no means met with general approval, as its details have been analyzed and its scope and objects discussed and comprehended. Are the French likely to take our malt liquors in return for their light wines and beet-root brandy? Whether any extended demand will arise there for our ale and porter, or our hops, is, we think, exceedingly questionable. An investigation and inquiry into the proportionate consumption of malt liquors across the channel cannot, however, but be interesting in a social point of view. And we may connect with this the manufacture and use of cider, which is much more general than with us. The cultivation of apples for cider in England is exceedingly limited, and we have no data as to the quantity produced or consumed here. That cider is a wholesome beverage for those who use much bodily exercise is generally conceded; and where apples are abundant and not readily saleable, their conversion into cider is no doubt beneficial to the cultivator.

The departments of France where beer is chiefly drunk, are the Pas de Calais, Nord, Moselle, Bas Rhin, and Ardennes, comprising a total population of 3,064,029. The cider departments comprise 9,185,067 inhabitants. The population of the wine-drinking districts amounts to nearly double these two, namely 23,151,930 souls. The imports and exports of beer have both increased in France since 1830. In 1847 910,817 litres (each nearly a quart) were imported, and 970,356 exported. In the statistical tables of returns of the Trade of Foreign countries issued by the Board of Trade, beer is not mentioned in the beverages imported and exported. We, however, know that there is shipped from this country about 4,300 barrels annually, but whether for French or English consumption we cannot state. Strong beer pays a duty of 2 francs 40 centimes per hectolitre (about 2s. per 22 gallons); the weaker sort, called "*petite biere*," pays only 60 centimes (6d.).

The average yield of a hectare (nearly 2½ acres) of hop-land is 1,947 lbs. The production of hops for the whole of France is not exactly stated, but, as the average consumption is admitted to be 3,440,000 hectolitres of strong beer per annum (the only sort worth taking into account, since small-beer is but a second or third infusion made from the same hops),

and as the quantity of hops per hectolitre of 22 gallons varies between ¾ lb. to 1 lb., the average quantity of hops used in France may be safely stated at about 7,500,000 lbs. Although our shipments of hops are large to Belgium, we do not send much to France. In 1858 the exports to France were 55,776 lbs. The crops of hops in France, as here, are exceedingly uncertain, varying between 150 and 2,000 kilogrammes (2 1-5th lbs.) per hectare. In the neighbourhood of Mulhouse and Strasbourg are found the principal hop-grounds.

In Paris about two-thirds more beer used to be manufactured forty years ago than at present; but the use of beer is again becoming general in France, especially among the working-classes. Between the years 1853 and 1857 the consumption in Paris rose from 150,470 hectolitres to 346,979. An official statement furnished by the administration of the Contributions Indirectes informs us that the quantity of beer which paid duty in 1849 was 3,788,168 hectolitres; in 1854, 4,957,347 hectolitres; in 1857, 7,088,121 hectolitres. According to M. Husson, the annual consumption of beer in Paris is 14,000,000 litres (1¼ pints), being 13 and one-third litres per head. These quantities bear a very small proportion to the other duties, which are, wine 113¼ litres, and spirits 12 litres per head, being in the proportion together of 0.348 litres per day. The quantity of beer charged with duty has risen from about 4,000,000 hectolitres in 1840 to upwards of 7,500,000 in 1858, or from 88,000,000 gallons to 165,000,000 gallons. If we compare the population and consumption of beer in the principal towns of France for 1857, we arrive at the following results:

	POPULATION.	BEER, HECT.
Paris	.... 1,174,346	.... 346,979
Lyons	.... 292,711	.... 54,343
Marseilles	.... 233,817	.... 20,991
Bordeaux	.... 149,928	.... 14,264
Nantes	.... 108,530	.... 6,118
Rouen	.... 103,223	.... 22,714
Toulouse	.... 103,144	.... 12,155
Lille	.... 78,641	.... 147,307
Havre	.... 64,137	.... 24,471
Strasbourg	.... 77,656	.... 85,899
Metz	.... 64,727	.... 30,908

We have here some curious features in the small consumption of beer by the town populations of Bor-

deaux, Nantes, and Toulouse; and the much larger proportionate quantity drank in Lille, Strasbourg, and Metz.

The following figures will serve, by way of comparison, to show what has been the progress of beer consumption in this country, calculating the beer in barrels of 36 gallons:

1836	....	16,330,016
1840	....	15,883,311
1845	....	14,624,854
1850	...	15,243,681
1855	....	16,581,985

So much for beer; and now let us look at cider, which finds much more favour in France, although it scarcely holds its extended progress, and competes but slowly with wine, which is more abundant, and generally cheaper.

Thirty years ago as many as forty of the departments of France, comprising nearly half of the territory of the State, grew apples specially for the manufacture of cider. Of these districts one-half were situated in the north of France, one-tenth in the western regions, or rather to the north-west, a fifth part in the centre of the country, three only in the east, and the same number in the south. The production then in the twelve departments of the east, the south, and the centre, which manufactured cider, was only about 15,000 hectolitres; those of the north and north-east produced 7,000,000 to 8,000,000 hectolitres; and of this quantity the five departments of Normandy made fully one-half (4,000,000 hectolitres), valued at about £1,500,000 sterling. The five departments of ancient Brittany produced annually 2,000,000 hectolitres. The most productive department was that of the Seine Inférieure, which made annually about 1,700,000 hectolitres; then followed in importance the departments of Calvados, Ille-et-Vilaine, L' Eure, La Manche, Morbihan, L'Orme, Sarthe, Somme, Eure-et-Loire, and Aisne.

The ciders of Normandy are divided into three classes, 1. That of Ange, or *gros* cider, which when kept several years, is excellent, deep-coloured, rough-

flavoured, and containing a large portion of spirit, sixteen litres yielding one litre of alcohol. The most esteemed ciders of the valley of Ange are those of Amebault, Dogue, and Pont-Levergne. 2. The cider made in the neighbourhood of Bayeux and Contentin, which contains less alcohol, is of a mild flavour, and has the double advantage of being pleasant alike to the eye and the palate, being of a bright amber colour. 3. The cider of Bocage, which has much of the character of Brittany ciders, is weak and thin, soon turns sour, and will not keep long. The ports of Granville and St. Malo take a considerable quantity of the ciders of La Manche for the use of vessels engaged in the whale and cod fisheries. Cider pays a uniform tax of fifteen centimes at each removal of the article. Beer is only subjected to a single duty called "droit de fabrication," of two francs forty centimes per hectolitre for strong beer, and sixty centimes for small beer, levied at the brewery.

The production of cider now would scarcely seem to be so extensive as it was formerly, for the quantity both of cider and perry which paid duty in the last ten years did not average 5,000,000 hectolitres. Cider in France is subject to great fluctuations, according to season and circumstances. The average production now is stated at 9,500,000 hectolitres (209,000,000 gals.) per annum, viz., 2,000,000 hectolitres in the Seine Inférieure; 1,000,000 in Manche, Calvados, Eure, and Ille-et-Vilaine; from 300,000 to 700,000 in the Orne, Oise, Morbihan, Cotes du Nord, Aisne, Sarthe, Somme, and Mayenne; from 50,000 to 150,000 in the Eure-et-Loire, Seine-et-Oise, Finisterre, Ardennes, Loire Inférieure, Marne-et-Loire, Pas du Calais, Seine-et-Marne, and Nord; and from 10,000 to 20,000 hectolitres in Loiret, Marne, Bas Rhin, Aube, Haute Vienne, Yonne, and Loire-et-Cher.

In 1829 the total production reached 14,000,000, in 1847 22,000,000 hectolitres, in 1849 16,000,000, and in 1851 18,500,000 hectolitres. In 1858 the largest producing departments were Orne, 1,307,000 hectolitres, Calvados, Cotes du Nord, Ille-et-Vilaine, and Oise 700,000 to 800,000 each.

CUMBERLAND AND WESTMORELAND AGRICULTURAL SOCIETY.

MEETING AT PENRITH, AUGUST 17.

The continued wet, which drove away the spectators the very moment the jumping was over, a full hour before the usual breaking-up time, spoilt what otherwise would have been a very nice meeting. The horse-entries were numerous, but the animals themselves were not of very remarkable quality. Three hunters were entered for Mr. Howard's prize, and did their fences in very good style. The winner, a bay of Mr. A. Falder's, of Frenchfield, was steered by that gentleman's young son, who has won several prizes of this kind in the district. His quiet mode of handling his horse was a perfect study, and he bids fair to be "a top sawyer" across country. A new feature was introduced into the pro-

gramme by Mr. Howard's prize for ponies under thirteen hands. Five were entered; but they had no chance with the winner, a very beautiful little three-year-old bay, the property of Captain Spencer, of Distington, which was bought by that gentleman at the time of the Chester Show. In height he is barely twelve hands, and looks as if he would turn round sixpence, or go up a step-ladder. The ladies might well pronounce him "a perfect love," and stand round and caress him, quite regardless of the rain.

The prize in the first-class of shorthorn bulls was adjudged to this gentleman's Young Ben, a first-prize winner at Dublin Spring. This Son of Benedict has fine

character and substance; but the judges (Messrs. Crofton, Culshaw, and Drewry) pondered not a little before they gave him the preference over Mr. Saunders's Nunwick (by Prince of Glo'ster, from Sir Charles Knightley's Fleda), who was such a clever winner at the Penrith meeting last year. Mr. Ambler's Frederick's Lad was shown in this class; but Mr. Unthank's Prince Imperial did not appear in his place; and Pugnator, who separated General Haynau and Young Ben at Cocker-mouth last autumn, was only commended. Very little can be said for Duke or Solomon's Seal in the two-year-old bull class; but the yearling one was composed of very different metal. Here, Great Eastern, who has got his hair again, and seems to have improved with his constant travels during the last six weeks, after scoring two fourths, a second, and a third, in high company, was registered as an A 1 yearling at last. British Prince, a straight, gay-looking gentleman, and purchased by his present owner from Mr. Dudding of Panton, was a good second, and Captain Spencer's Skyrocket, who was a little short of condition, earned a commendation. There were four prizes for cows, and the "locals" had all the fun to themselves, with no Crinoline or Woodbine to mar their joy. The well-known Pansy, of local fame, wore the first ribbons for Mr. Wilson, of Ellonby, and seems a cow with many nice points, but in a purely milking condition and guiltless of all forcing.

Mr. Ambler went in again for the three-year-old heifer prize with the massive white Necklace, a union of Booth's War Eagle and the Captain Shaftoe blood, who made her first appearance this season in any show-yard. The same herd followed up their success in the next class with Wood Rose, who is due to calve on October 1st to Prince Talleyrand. She is still under two years and a-quarter old, and in point of substance a marvel

for her age, albeit she has been so unlucky since Canterbury. This class was a very creditable one; and Red Rose and Moss Rose and Dahlia held the next places to their royal rival. There were only three entries for four prizes in the yearling heifer class, which Captain Spencer's Miss Kitty, a daughter of Young Ben and Lizzy, added to her Ulverston score. She is a clever heifer, but a rather bad colour; and was second to Nunwick for the Society's challenge cup for worthorns bred in the district. Cent.-per-cent. was worth of a good deal more than the fifteen shillings, which he placed to Mr. J. M. Richardson's account in the bull-calf sweepstakes; and Mr. Ambler's sideboard still retains that general challenge cup with Wood Rose, which he has had in keeping for twelve months past with Prince Talleyrand. The donor of this cup seems to be blest with a highly developed bump of caution, as by the conditions there is no chance of winning it, and it is to be returned year after year to the Society, and *so on in perpetuity!* Great Eastern was understood to be second to his herdmate.

The pigs were only of a store kind, and not such representatives of the county as we have been accustomed to see in the shape of "WE," "SHALL," "WIN," &c., at the Royal Shows; in fact, Mr. Brown, of The Height, had not one entry. The Leicesters were remarkably good, and Messrs. Jefferson and Burton won the first prize for aged tups with a three-shear purchased at Mr. Pawlett's sale. Mr. Thomas Bell was second, but he turned the tables on to Mr. Jefferson for the best shearling tup; while Mr. Bell, of Scalehill, had to play second in this class, and the pens of Leicester ewes and gimmers, in both of which Mr. Jefferson was successful. The attendance was only poor, and the mode of numbering adopted in the catalogue is most absurdly complicated.

THE AGRICULTURE OF DENMARK.

Two or three years ago the nation voted upwards of a million to Denmark for the liberation of our commerce from the passing toll of the Sound Dues. This payment, and the fact that we draw a large quantity of our live stock imported from the little kingdom distant only a day or two's run from our northern ports, gives us an immediate interest in its position and prospects. A glance, therefore, at its agricultural position cannot but be interesting just now. The commerce of Denmark consists, besides a considerable carrying trade, in the exchange of the raw produce of the country for manufactured goods and transatlantic productions. The foundation for the trade is the produce of agriculture, which, together with the breeding of cattle, forms the chief source of revenue of the country. Although the progress of agriculture and commerce has been much impeded by the losses and temporary stoppages of trade caused by the late monetary crisis, and the political embarrassments, it has, notwithstanding, been considerable. This in a great measure has been produced by the large sums

granted by the Diet for the promotion of professional knowledge, and by the foundation of institutions for acquiring agricultural and other sciences; and when the restraints which still impede industry are removed, there is but little doubt that still further progress will be made.

According to the recent report of Mr. Manley, the British Secretary of Legation, there are at present several agricultural schools for peasants and stewards, besides a large institution in the neighbourhood of Copenhagen, where the higher branches of agriculture are taught, and where a sound instruction with reference to all the sciences relative to agriculture can be acquired in eighteen months for the moderate sum of about five pounds. The result of these institutions has been that old customs have been set aside, and a more rational mode of agriculture adopted throughout the country. There still, however, remains much room for improvement. The art of draining, marling, and manuring has made much progress. The improvements in the science of agriculture have not only caused a

great increase in the produce, but also much improvement in the quality of the grain.

Ten years ago the annual crop of various kinds of grain in Denmark and the Duchies was less than ten million quarters: it is now fully one-fourth more. Denmark Proper produces the largest proportion of grain, which is accounted for by the inhabitants of the Duchies applying themselves more especially to the breeding of cattle. According to the most recent returns, Denmark seems to own now the following quantities of live stock:—Horses, 600,000; horned cattle, 1,500,000 to 2,000,000; sheep, 2,000,000; pigs, 500,000. Cattle are exported principally in English steamers *via* Tønning. In 1857 the number exported from that port was 14,534, and in 1858 11,071 head. It has been calculated that about one-half of the country, or about 300 square miles, are annually sown with corn. The usual average production per acre is—of wheat five quarters, barley or rye six, and oats seven; the quantity of seed sown being, wheat four bushels, barley and rye about the same, and oats six bushels. Seed is often obtained from foreign countries—barley and wheat from England. White English wheat is much cultivated. The parts of the country most adapted to the cultivation of wheat are the islands of Lolland and Langeland, part of Zealand, the Marsh and part of Schleswig, and the eastern part of Holstein. Flax is only produced in small quantities near the farmers' houses, but not sufficient to meet the wants of the country. Clover is the chief article used for feeding cattle. Turnips are cultivated in some parts of the kingdom, but not in any quantity; they are not much used for feeding cattle, and do not enter into the system of agriculture as with us. Potatoes are cultivated all over the country, and the production is considerable. The growth of flax is diminishing, as the proprietors no longer think it worth their while to cultivate a plant which exhausts the soil even more than rapeseed, and requires very expensive and difficult treatment. The cultivation of hemp and hops has also slightly diminished of late years.

The rotation of crops usually practised is as follows: First year, fallow; second, winter seed, wheat, rye, or rapeseed; third, barley; fourth, peas or beans; fifth, oats; sixth, clover for mowing; seventh and eighth, pasture. The arable land is generally divided into two parts; one moiety of which is employed in corn, and the other in grass and fallow. Barley is the principal article of export; next comes wheat. The export of this latter grain has considerably increased during the last few years. Although the average price of corn was considerably lower in 1858 than in 1857, the value of the exports of grain from Denmark in the former year was £848,000, against £800,873 in 1857. The average rent of land appears to be about 9s. per English acre. The usual term of lease for a large farm is nine years; and on some large estates, as at Count Reventlow's, on the island of Lolland, only seven. Besides the large farms there are many small holdings, for which in some cases rent is paid in labour, and in others in money: some of these holdings are heredi-

tary, some life-rents, and others interminable leases. The average rate of wages for a farm-labourer is from £4 to £4 10s. a-year, besides his food, a cottage and garden, and a certain amount of peat for fuel. Women receive from 3d. to 4d. a-day.

The breeding of cattle in Denmark is only next in importance to the cultivation of the soil; and in some parts, especially in Jutland, is almost superior to it; and forms, in conjunction with agriculture, the principal source of wealth of the country. The average number exported may be calculated at 60,000 head annually; and of this the greater part is sent to England. The cattle from the western part of Jutland are generally considered the best for slaughter, while the eastern part produces the best cows. Improvements in the breed have been particularly effected by animals of the Lemvig race and Ayrshire bulls. In general on the western part of Jutland every peasant breeds several oxen in the year, which are usually sold when three or four years old, to be fattened in the Marsh countries, Schleswig and Holstein. The average price of a bullock appears to be from £6 to £7. It has been calculated that on an average each person in Denmark consumes about 25lbs. of butter a-year; which, as the population is estimated at 2,500,000, will give a total of 62,000,000lbs. The exports of this article are about 16,000,000lbs. annually. The greatest part is sent to England, Hamburg, Lubeck, and Norway. The average produce of a cow is from 70 to 80 lbs. of butter annually, and about 20lbs. of cheese. The largest dairy-farms are to be found in Schleswig, where from 200 to 300, and sometimes as many as 400, cows are often kept. The best Danish horses are met with in Jutland; and it is from thence that the largest exports are made. A great many Yorkshire stallions have been imported, and have materially assisted in improving the breed.

In some parts of the country, especially on the islands, the breed of sheep has been much improved by mixture with the Dishley, Leicester, and Southdown races, by which a great amelioration has been produced both in the flesh and wool. The original Danish race of sheep, which has a coarse, short, and stiff wool, is still maintained in many places without any improvement. Fine-wooled sheep are seldom kept, except on some of the larger estates, as in general they do not thrive well in that climate. Merino sheep are kept in the south of Zealand, and on some of the other islands. The total production of wool is estimated at 5,000,000lbs. annually, and the average yield is 3lbs. The export of wool has increased of late years; but, on the other hand, the home manufacture, which is principally confined to the peasantry, has considerably decreased. There are several agricultural societies in Denmark, which distribute prizes for the best cattle; these prizes consist principally of improved implements, sheep, and pigs.

The detailed returns for 1859 are not yet before us, but those for 1858 show the following exports of animals: Horses, 9,032; cattle, 39,403; calves, 12,466; sheep and lambs, 38,714; and pigs, 40,802. As com-

pared with the previous year these figures show a decline of 736 horses, 11,944 cattle, and 1,304 calves; in sheep and pigs there was a small increase. The other animal products imported from Denmark in 1858 were 55,289 barrels of butter, 2,232,633 lbs. of meat, 3,036,428 lbs. pork, 8,156,935 lbs. of hams, and 3,546,745 lbs. of wool.

There are twenty-one oil-mills in Denmark. The production annually of linseed and rape oil is about 3,000 tons, of linseed and rape cake 6,500 tons. This manufacture has largely increased. A free trade exists with regard to the produce of agriculture and cattle.

By the projected tariff it is proposed that the export duty on the following articles is to be entirely abandoned: Rags, skins, and hides of large cattle, dry, wet, or salted; undressed skins of goats, sheep, calves, and lambs, dry, wet, or salted; hare's and rabbit skins and wool. The manufactures of the country are unimportant. A considerable increase has taken place of late years in the distillation of corn brandy. The produce in 1857 amounted to 47,000,000 quarts. It is taxed about 1d. per quart. Besides the home-consumption, great quantities are exported, especially to Sweden and Norway, and sailing ships.

THE PRODUCTION OF BEETROOT SUGAR ON THE CONTINENT.

The cultivation of the beetroot on the Continent for the manufacture of sugar, which has been so long prosecuted under many disadvantages, would at length seem to have reached a culminating point. It is now being abandoned in many quarters as unremunerative.

The history and progress of beet-sugar manufacture is a curious and interesting one. The cultivation is first noticed by historians in France in the time of Henri Quatre. It was then recommended as food for cattle by one Olivier de Serres, in 1747. Attention was called to the possibility of making sugar from beet; and under Chaptal the manufacture sprung up in France. Achard improved on his method, and announced that he could produce a good coarse brown sugar at something like 2½d. per lb.; at the same time he found that the pulp that remained was excellent food for cattle. The subject attracted great attention in France. The French Institute took it up, and two small factories were established. Those were not successful; the popular prejudice was against them, though their success would have freed France from the monopoly in colonial produce then enjoyed by the British colonies. Thus nothing very important seemed likely to result from the first experiments, until Napoleon passed his celebrated decree, striking at the commerce of England. Amongst other things, British colonial sugar was almost prohibited by an enormous import duty, and the price of sugar rose in proportion. Universal was the attention then bestowed on the hitherto ridiculed cultivation of beet, and the manufacture of sugar from it. The first loaf of sugar thus produced is said to have cost £1,600. And again the caricaturists ridiculed the idea: George III. was represented sweetening his coffee from a barrel of West India sugar, while Napoleon was squeezing a beetroot into his cup with very limited success. Gradually the art was improved, and several men made fortunes by their success in the manufacture. In a short time no less than 150 factories were built. In 1812 the art of discolouring the syrup was discovered. This, effected by means of ivory black, or burnt bones, was the great turning point in the history of beet sugar; improvements in other parts of the manufacture soon followed, and in 1814 it might be

said to have assumed a very permanent and important character. Then followed the general peace in 1815, and colonial sugar again came into competition with it, and nearly three-fourths of the factories fell beneath the shock. Notwithstanding this, however, so valuable was the trade, and so well established had it become, that, much to the surprise of even its best friends, it gradually improved again, so that in 1819 there were again 100 factories at work. In 1823 the quantity produced by 100 factories was 5,000,000 kilogrammes of sugar, equal to 5,580 tons English. In 1838, 575 factories in France produced 40,000,000 kilogrammes; then it was considered able to bear a duty, and this duty was gradually raised, till in 1845 the duty on beet sugar equalled that on colonial. Again the manufacture suffered, one half the factories were ruined, but the vitality of the trade proved its safety. Again it rallied, until in 1849 303 factories produced 61,826,626 kilogrammes, or 69,000 tons of sugar per annum.

From France the culture of the beet spread through Belgium, Germany, Poland, and far into the interior of Russia.

In 1858 the quantity of sugar was about 2,250,000 cwt., and the quantity of beetroot used 37,000,000 cwt. The duty on beetroot was originally fixed at the low rate of 1½ groschen (about 0½d.) per 100lbs., but has gradually been increased to 7½ groschen, or rather more than 2d. In Germany the cultivation of the beetroot, and its manufacture into sugar, are principally carried on in the neighbourhoods of Magdeburg, Halberstadt, and Breslau in Prussia; in the Duchies of Brunswick and the Anholts, and in the Duchy of Baden. The exceeding weight of the raw material precludes its being transported profitably to any distance from the place of production.

In the Duchy of Baden there were last year five manufactories. The root is sold to them at 30 kreutzers per quintal; and if to this is added the 26½ kreutzers tax paid for each quintal, the manufacturer pays from 54 to 56 kreutzers (about 1s. 6d.) per cwt. for the raw material. In the winter of 1858-59 not less than 1,000,000 quintals of beetroot were consumed in the manufacture of sugar, for which the exchequer received

362,000 florins taxes. The manufactory at Waghansel, near Bruchsal, in Baden, is the largest and most important establishment in the Zollverein. The number of hands regularly employed is 560, but during the busy months of the year they are increased sometimes to as many as 2,200. Above 1,000,000 cwt. of beetroot is worked up there, and 60,000 to 80,000 cwt. of sugar produced. In 1855 the company paid a dividend of 17 per cent. on the capital invested, to its shareholders. But this extraordinary prosperity did not last. In 1859 the factory was partially destroyed by fire. At the same time the manufacture of sugar has increased and spread universally throughout the Zollverein, so that competition has reduced the price of sugar to an almost unremunerative point. The effect of this has been that the factory of Waghansel only paid a dividend of 1 per cent. last year; and the growers of beetroot, finding the market glutted with sugar and with the raw material, have been reduced to sell their produce for what it would fetch as food for cattle, and in many instances it has been crushed and used for manure. In all cases where beet factories have been carried on, on the Continent, there has been a marked and beneficial influence upon agriculture. The people have learned the value of manures, and the benefit of science and capital applied to agriculture. In the department of Saône-et-Loire there are two sugar factories, which employ 600 men, give to agriculture £18,000 or £20,000 and 600 cart-loads of manure, producing pulp to feed 300 cattle. In Saxo-Weimar there are two factories, which used last year 237,773 cwt. of beetroot, and paid a duty of £7,102 on sugar. Within the last few years the cultivation of beetroot has been greatly extended, the produce being not only sufficient to supply the local manufactories, but a considerable quantity is sold to the neighbouring states. According to the returns of last year there were 106,602 acres under culture with beet in Bavaria, producing 12,701,559 cwt. of root. In the Duchy of Wurtemberg 8,564 acres, producing an average yield valued at 54 florins (about £4 10s.)

The cultivation of the beetroot for manufacture of sugar has of late years received an immense development in Poland and the adjoining provinces of Russia. As early as 1812 the Government endeavoured to introduce this manufacture into Poland by offers of loans, and by promising freedom from conscription to persons employed in it. These measures, however, did not then meet with success, the first factory being only established in 1831, and the first refinery in 1839. Now, however, there are about sixty factories in Poland, thirty-five of which are in the Government of Warsaw. The number of persons employed in the manufacture in 1857 was permanently 1,748, temporarily 5,902, besides those engaged in the cultivation of the root. The crop of beetroot in Poland in 1858 was estimated at 350,000 tons, which at the current value of 24s. gives the large amount of £420,000 as the benefit derived by agriculture from this manufacture. Calculating the yield of sugar at six pounds for every 100 pounds of beetroot, which is rather under the average, it will be

seen that the quantity of sugar manufactured was upwards of 10,535 tons. This would give a produce of upwards of seven pounds for each inhabitant. But the consumption does not exceed two pounds per inhabitant in Poland, and is even less for the whole empire. The only sugar in the market is refined loaf, costing nearly tenpence per pound, a price quite out of the reach of the poorer classes.

In the last twelve years, the increase in the production of sugar in the States of the Zollverein has been about five-fold, notwithstanding the successively higher rates of duty charged. In 1859 the number of sugar factories in the German States was 257: of these the greater proportion (214) are in Prussia; about a dozen in Brunswick, seven or eight in Bavaria, and six in Wurtemberg. In 1848 95,500 tons of beetroot sugar were produced in Europe, in 1849 129,000 tons, and in 1850 160,000 tons, and now it exceeds 200,000 tons, of which 100,000 are manufactured in Germany, 61,000 in France, and the remainder in Belgium and Russia. France has nearly 300 factories in operation, Belgium 40, Austria 170, and Russia with Poland about 400.

Our continental neighbours are certainly far more enterprising than we are, in utilizing everything, and making the most of every substance. Thus, not content with the sugar to be obtained from the beet, they now produce many other useful articles from it. A kind of rough pasteboard and paper is made from the pulp. A new industry has also arisen in France and Belgium within the last seven years, in the production of spirit from the beet-root. It had been tested experimentally some fifteen years ago; but in 1852 the distillers seriously took up the subject, and 1,600 hectolitres (each of 22 gallons) of alcohol or brandy were made from beet-root. In that and the following year the value of the alcohol obtained from beet-root was £20,000.

The cultivation of the beet-root offers the advantage in France of producing brandy, of the quality of three-sixths, 50 per cent. cheaper than from wine; for a hectare yields 16 hectolitres of brandy. The wine-distiller of the south is ruined when the "trois-six" falls below 60 francs; the distiller from beet will clear a net profit at 50 francs. A very good champagne is said to be made from it, which, if it do not play old gooseberry with those who indulge in it, may perhaps pass muster in quarters where sparkling gooseberry now finds favour. When the juice of the beet-root has been purified by the ordinary process, and a pure solution of sugar and water has been obtained, it is evaporated to a suitable density, after which it is fermented by adding cream of tartar; and the required *bouquet* is given by means of aromatic plants.

IRON A CURE FOR THE CATTLE DISEASE.—
Late foreign papers state that marked cases of the pleuropneumonia in France were completely cured in twelve days with sulphate of iron.

SHORTHORNED CATTLE.

At the monthly meeting of the Newcastle Farmers' Club, held on Saturday, July 14th, 1860, Mr. Chrisp laid before the Club the following paper:—

THE TEESWATER SHORTHORNS—SUPPLEMENTARY PAPER.

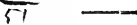
Having dwelt at such length on the origin of the improved breed of shorthorns [I was obliged to give a very cursory glance at those of the present day] I therefore gladly comply with the wishes of the last meeting to give a continuation, with a reference to a scale of the points of a perfect animal of this breed, which may lead to determining their relative value, and the establishment of a set of rules for the guidance of judges of cattle shows, as well as the more general satisfaction of the competitors. Though I feel the difficulty of the task not more easy than to produce a masterpiece of art in painting or sculpture, or even to breed a first-rate prize animal, but still, in compliance with the wishes of our worthy chairman, I make the attempt to give a rough draft of what is still required, the want of which is acknowledged by all who wish to see fair play at our exhibitions of live stock, by the establishment of fixed laws, instead of being determined by individual opinions. Perhaps the uncertainty, if not the capricious decisions of the present practice, cannot be better shown than by the award made at Darlington in March, 1797—when Charles Colling's bull Favourite, then a two-year-old, was placed second with the minimum prize of two guineas; the indignity of the position must have been felt severely by the owner, as he never showed another animal at the Durham Agricultural meetings. We must not forget that Favourite was the sire of the celebrated Durham Ox, as well as of Comet, and must be considered as the great progenitor of the present breed of shorthorns, through whom Hubback's blood is claimed by many herds. In my former paper I dwelt at some length on the conflicting accounts that have been handed down of the origin of the improved shorthorns. I find, however, that similar difficulties arise as to other breeds, such as Ayrshires and Herefords; nor is there any less in the breeds of sheep or of even horses, so that I have therefore no other choice but to assume that in the shorthorns the produce of particular individuals, of marked qualities, have become, by careful selection, and even crossing, peculiarly distinct breeds. This I do with more confidence, as I find such views are now so extended as to embrace all animated nature by a learned and laborious naturalist of the present day, whose researches have just startled the world by the publication of his inquiries into the "origin of species." This view has the advantage of showing the uselessness of any search after original types, and the impossibility of arriving at any satisfactory conclusion in determining the origin of a breed of cattle by looking for the progenitor in the ancient forests of Europe, with the feeble light of such descriptions as are handed down to us. Where all nature seems varying, we must surely believe that domestic animals change for the better. Be these doctrines as they may, it is acknowledged at the conclusion of the eighteenth century a breed of cattle appeared on the banks of the Tees, surpassing all others in beautiful asymmetry of form, aptitude to fatten, as well as fitness for the butcher; consequently, both pleasing to the eye and profitable to the grazier. As

the spirited quick-stepping horse was about this time supplanting the slow and patient ox at the plough and team, the object of the cattle breeder was no longer to obtain large bone and wiry sinews: consequently, C. Colling and his coopeers had only to look for delicate beef and plenty of fat in the produce of their herds, and that those joints should weigh the most which brought the highest price in the shambles. Having but one object in view, they had the advantage over their elder brethren; this object they pursued with zealous care and undivided attention, and a considerable knowledge of animals; their efforts were crowned with astonishing success, so that prince, peer, and peasant became at once enthusiastic admirers, if not breeders, of shorthorns; nay, ladies of high rank are now found amongst our successful competitors at agricultural shows. Nor has the mild and docile temper of the breed rendered them less a favourite with dairymaids, whose well-filled pail renders them grateful for bountiful returns of good feeding and good treatment. I must not pass by their qualifications for the dairy; no other race could come near the older breed for quantity of milk, and we have on record many instances of large quantities from the improved shorthorns; though the breeder often loses sight of this merit in selecting his dams. I therefore urge in making points of perfection that this object ought to be kept in view, as I hold with many authorities that a tendency to lay on fat is not incompatible with a good dairy cow, if due attention is given to her food and other treatment. Many instances could be given of a heavy milking cow becoming fat in a short time when freed from the pail. But I must not dwell any longer upon the general subject, which is inexhaustible, nor shall I attempt to name those herds which bear the palm at present. It would require a person whose life was devoted to the subject, as well as to be continually travelling from show to show, as well as from herd to herd, to do this satisfactorily; but the public must judge for themselves as to individual animals. After the promulgation of rules, this will be most easily done, there being a certain standard to refer to when in doubt. I must attempt to sketch out an ideal Shorthorn, possessing all those perfect points which breeders prize so much. Although most butchers like a large carcass, which brings down the scale, yet they also prize the greatest quantity of beef on the best joints; where these are not to be had together, the latter is preferred, as of most value in the market. Therefore great size is discarded, as leading to overgrown ungainly animals, difficult to fatten. On the other hand, little dwarfed stunted animals are equally to be avoided in breeding, these appearing to have lost that healthy constitutional stamina which in the best Shorthorns is so highly prized. These should be weeded out, as they occasionally occur in herds from cross or close breeding, as well as from food or climate, or even local causes. The Shorthorn bull must have a symmetrical form, of medium size; body (including quarters and neck) rather long than short; bones fine, legs short; all choice parts well covered with gelatinous flesh, and fat mixed, not patchy; skin medium thickness, mellow to touch; hair fine, silky, thick set, long in winter, not wiry; head well set on to neck; scalp wide; face dishd a little, rather long than short; fine muzzle, open nostrils; horns medium size, fine, clear, and waxy, free from black stains; the eyes prominent, bright, but

placid; the neck a little elongated and arched, well set on to the shoulders, which ought to slope backwards, be broad and level, deep, with fine shoulder-points; brisket deep, prominent and broad between the fore legs; ribs round, back straight, quarters long, full-fleshed thighs, deep and full at twist; arms full above, fine at knee; flanks deep and full; tail well set on, at right angles with back, and not thick or coarse; colours, roan, red, white, or flecked—black, or shadings of black on skin, hair, horns, or hoofs objectionable. Altogether, the animal ought to have a gay and "stylish" appearance in gait as well as in form, which breeders consider betokening high blood, and which most animals of the Shorthorn tribe have more or less. The same characters will, with allowances for the more feminine appearance, answer for the cow, though I should add full development of udder, not fleshy, well-set teats, good milk veins, and perhaps a hereditary character for good milking qualities. The following points are the work of a young friend who has kindly helped me. Perhaps the best way to treat them is for a few of our members to take the pleasant labour of trying the prize animals by these rules at our local shows, and reporting the result:—

No. of points. What constitutes goodness.

Head	4	Moderate length, wide, and rather dished, with clear horns, and flesh-coloured nose—not black.
Neck	1	Being well sprung from shoulders, and slightly arched.
Neck vein	2	Prominent and full.
Shoulder and crops	6	Former being well thrown back and wide at top, "points" well covered, and not prominent. Crops being very full.
Breast	2	Coming well forward, wide, and full.
Back	3	Breadth and levelness.
Loin	4	Breadth, and being well covered, not low.
Hocks	2	Breadth, and being at right angles with back bone.
Rumps	2	Not being drooped.
Quarter	2	Length, levelness, and being well filled up.
Thigh	2	Length and fineness, and being well beefed inwards.
Twists.....	3	Coming well down.
Hock	1	Being well bent, and not turned in.
Flank	3	Full, and coming well forward.
Back ribs	3	Well sprung from back, and round.
Fore ribs.....	3	Round, and coming well down.
Quality & hair..	4	Skin not being too thin, but soft and mellow, hair long and silky.
Colour.....	1	Roans and reds.
Udder & milk vessel	3	Well-formed teats and udder, large milk veins.



At the monthly meeting of the Newcastle Farmers' Club on Saturday the 4th of August,

Mr. ATKINSON, in reply to the Chairman, said he agreed with most of the points which Mr. Chrisp had named in the paper, but thought too much stress was laid on a long head. Nor was he in favour of a very long breast, for it indicated a deficiency of weight.

Mr. HEDLEY suggested that Mr. Chrisp should give a few points to elegance and style. No matter how well an animal might be formed, if it had a lowering gait it never looked well.

Mr. CHRISP thought the shape should give style, but had no objection to voting a few points for that. He did not advocate a long head, but a short head was also objectionable.

The discussion then ended, to be resumed at some future day, when the matter has been more matured.

YE CANTERBURY PILGRIMS OF 1850.

To Canterbury's festival
From Southwerk's Tabard poured,
No widow of three husbands,
No miller, friar, or lord,
No Knight of Alexandria,
No clerk of Oxenforde.

Still hundreds of staunch pilgrims
Are journeying towards the shrine,
Not on jennet, mule, or palfrey,
But along the Kentish line;
And their talk is not of martyrs,
But of fleece, and fitch, and chine.

From deep green valleys on the Wharfe,
From Devou's quiet lanes,
From the breezy wolds of Brocklesby,
And Wiltshire's chalky plains—
Men of eagle-eye and delicate touch,
And calm far-seeing brains.

Ye Colonel Towneley is there—who taught
The Warlub Knight to yield,
In the days of his Windsor and Bridesmaid night—
With Culshaw to bear his shield:
His arms two butterflies quartered,
With gules on an azure field.

In vain 'gainst his Royal Buttery
Four Princes in conclave met,
Fortune has smiled on the roan ounce more;
And his buxom bride Rosette
Has baffled the spells of the fair Queen Mab,
And beat Lady Pigot's pet.

Hard by her "The Nestor of Shorthorns" sits
(On a tub or a truss) at ease,
And countless disciples around him flock,
To hear how he likes the decrees,
Ne'er lived a rarer judge of a beast
On the hauks of the stately Tees.

Grundy from Rochdale has come with his Faith,
Determined no fight to shirk;
Wood Rose is there to boast for herself
Of descent from the famed Grand Turk;
Ay! little did Captain Gunter wot
Of the thorns in a rose which lurk.

But first and second the Captain stood,
With his beautiful Duches twins,
Liverpool judges endorsed the white,
But orthodox roan now wins;
And Bedfordshire was a capital third
With Claret from Clifton bins.

See near them the mottle-faced beef machines,
From Hereford pastures sent,
Shorthorns may boast of their pedigree—
"These gentlemen pay the rent:"
But where, oh! where are the champion beasts
Of slow, self-satisfied Kent?

Here, too, are the plums of "the juicy red line,"
From Turner and Quartley's store;
Lancashire rules supreme with its white,
And Suffolk with its black hoar;
And chesnuts from Cretingham Rookery go,
As in olden time, to the fore.

As pure in descent as a Booth or a Bates,
Stood Sanday's Leicester array;
Shropshire is proud of its Patente;
And eighteen strong to the fray
Marched Jonas Webb with his Southdown tups,
And Richmond can't bid him Nay.

And the leason these Royal pilgrims teach,
Is, "Put some life in your shire,
As batsmen and hoppers, you've scored right well—
But Romney Marsh should aspire;
Just hew up for faggots your turn-wrest ploughs,
And brighten your "Kentish fire."

—From *Punch*.

ROYAL NORTH LANCASHIRE SOCIETY.

MEETING AT BURNLEY.

This flourishing society had of course very little to expect from Burnley on the score of weather, and the town on Thursday, Aug. 30, was as true to its rain charter as ever. In fact, we seldom remember such an uncomfortable day, and the show ground gradually became such a complete morass, that it was no small exertion for the more plethoric of the shorthorns to wade from their stalls into the ring.

The society was established in 1846, and has twice before held its meeting at Burnley. In spite of the gratuitous irruption of the sixpenny Goths over the palings at Blackburn in 1859, the take at the gates was £260, or the highest on record up to that date; but this year it rose to £307. The implements entered, as compared with those in the highest of the previous years, were 429 against 390, the cattle 103 against 126, the horses 121 against 142, the sheep 188 against 183, and the pigs 24 against 40. Still, if the present show had not quantity on its side, it had abundance of quality in the four great classes of stock, and more especially in the shorthorns. Mr. Booth and Mr. Ambler were wanting, it is true, to make up the serried array, but Colonel Towneley was in great force, and Captain Gunter's trio of Duchesses arrived, with not a few other crack representatives of the leading herds. Royal Butterfly 1st and Bow Bearer 2nd was the first slice of luck for Towneley Park in the Aged Bull class; while Fairy King, the Ulverstone victor, was highly commended, and won the head Tenant-farmers' prize. Muscovite, bred by Mr. Jonathan Peel, and Lord Beaumont, the property of Mrs. Ellen Waterhouse, were the other commendations. In the Yearling Bull class, Duke of Holland, an own brother to Prince of Prussia, took double first honours, and as Malachite, the Royal winner, was in the second place, Mr. Dickenson rather regrets that he did not meet him at Canterbury. "Duke" is a nice sort of a bull, but perhaps rather lacks masculine character about his forehead. Sir Charles Tempest's Prince Frederick, the Pontefract winner, was highly commended, thus reversing the Yorkshire decision between him and Malachite, and setting up the Canterbury one once more. In the Bull-calf class, Colonel Towneley came to the front with a Royal Butterfly from Vestris 5th, beating Mr. Marjoribank's Tally-ho by Great Mogul. This was a somewhat motley class, as one of the competitors had attained the mature age of 1 month and 9 days. The Cow class struggle, between Moss Rose, Emma, Rosette, and Duchess of Glo'ster, was a very interesting one, but the latter was soon out of it; and although the judges, Messrs. Unthank, Stratton, and Clarke of Long Sutton, hung very affectionately over the massive but not very even Moss Rose, they soon reduced it to a question between Mr. Eastwood's cow and Emma, and the more beautiful proportions of the latter, whose side view is all

but perfection, carried the day. Duchess of Glo'ster was commended, and Moss Rose was highly commended and secured a first among the numberless prizes which Mr. Atherton won in the Tenant-farmers' classes. Rosette has a heifer-calf to Royal Butterfly, and was served again by him on the very morning of the show.

In the Two-year-old Heifer class, Duchess 77th defeated her half-sisters once more; and again, for the fifth time this year, the white twin was preferred for second honours to the roan, who shared the H. C.'s with Harmless and Mr. Atherton's Cherry Blossom. Stanley Rose and Empress of Hindostan were quite in the ruck this time; but we trust that better success is in store for The Branches' herd with its young Queen of Athelstane.

Frederick's Grand Daughter (who got transformed into Frederick's *Giant* Daughter, by the Pontefract printer) followed in the footsteps of Emma, whom she very much resembles, except in the head, which, as it struck us, rather lacks finish and expression. Mr. Peel took the second place in this Yearling Heifer class with his Bounteous, a red daughter of Grand Duke 3rd, and with a great deal of very gay Batess character about her to counteract one or two weak places. Young Butterfly was highly commended, and so was Mr. Atherton's Nannie, a daughter of Sixth Duke of Oxford. The Speke herd also brought out a most wonderfully matured first prize winner, Wild Eyes 19th, by Lablache, in the Calf class. Her neck-vein, and handling were especially good, but her back rather told tales, and Mr. Atherton will be a lucky man, if he can keep her in form for next year. Mr. Marjoribank's Joyful was second, and Mr. Eastwood's Ruby, a clever red daughter of Moleskin and Rosa, was commended. The extra stock took up their stand, heavily sheeted, under an ash tree; and when we got up to them, we found that they consisted of two massive whites, which turned out to be nothing more nor less than our old friend Beauty's Butterfly and Precious Stone, both of them heiresses of the departed Master Butterfly. His son Royal Butterfly did not keep the crowd very long in suspense, when he was marched into the ring for the Bull Challenge Cup, for which he had such a memorable tussle last year with Prince of Prussia, from whom thousands of miles of sea now divide him, at the Society's meeting at Blackburn. On that occasion Mr. Douglas held out against the three other judges, but he quite acquiesced in the Canterbury decision, when he saw the pair confronted nine months after. The excitement was very different when the cup for females was decided, and every movement of the judges was scanned, as they went restlessly backwards and forwards, between Duchess 77th and Emma, first tape-lining them, and then consulting, and then comparing point by point again,

for nearly twenty minutes. Things were so evenly balanced, that "I can't read them!" burst from the lips of the staunchest adherents of the roan and the red; but at last came the long-looked-for sign to the secretary, and Emma was called up to receive the winning card. It afterwards transpired that Mr. Unthank had been in vain urging his colleagues to go for Duchess 77th, but that, as in the case of the twins, he had been outvoted. Fidelity, who beat Emma at Warwick, won this cup for Colonel Towneley last year.

The horses seemed to be here, there, and everywhere, when they were not in the show-ring; and they got quite mixed up with the crowd under the trees during the continuance of the showers. Young Napoleon, the Pontefract agricultural class hero, came from Manchester, and was the winner of the *dray* horse prize this time—a line of business to which he seems more suited. The agricultural class prize was awarded to Gilknoekie, from Cumberland, who beat a very creditable field of horses; but the thoroughbreds, of which St. Clair was deemed the best, were not much. Young Conqueror's owner must have been rather doubtful as to his lineage, and, to make matters safe, entered him both as a thorough-bred and half-bred, "price £500." Jessie, a seventeen-year-old mare belonging to Mr. Jonathan Peel, who was first with her at Blackburn last year, and, with two of her stock as well, repeated the performance, as far as she was concerned, in the Brood Mare class for road or field, and got the 10-guinea cup—an honour which fell, in the Agricultural Brood Mare class, on the Rev. Thomas Cooper, of Stonyhurst College, who was highly commended for his Aighton Hero, among the agricultural stallions. General Scarlett, the president of the society, also won a first prize with a three-year-old filly for road or field.

The sheep were very various in their kinds; and Mr. Charles Carr, of Harewell Hall, near Pateley, had it quite to himself in Leicester rams, and the Duke of Devonshire in Southdowns. A good three-shear Shropshire Down of Mr. Archibald Stewart's kept up the honour of its class; and the ancient rivalry between the breeders of the mountain rams resulted in the triumph of a splendid pure-bred Lonk of Mr. Jonathan Peel's, to the great discomfiture of the Herdwicks.

At the meeting of the society at Ulverstone, the Herdwick ewes did well; but the apparently rough hair at the back of the neck, and the rather coarse wool, came out badly by the side of the patriarch Lonk, who won seven first prizes last year, and is just off on his Yorkshire circuit again.

The well-known winning names of Mr. John Harrison, jun., Mr. Wainman, and Mr. Halton of Addingham are a guarantee for the excellence of the prize pigs; and the Lancashire people hung with no little fondness over the poultry, which was generally good, with the exception perhaps of the silver-pencilled Hamburgs. We saw very little of the roots and seeds, beyond a long board on the ground, on which mangels, potatoes, onions, and other esculent roots were arrayed in order, at the imminent peril of being squashed by the horses, to say nothing of the appetites of three donkeys, one of which was solemnly conducted about in sheets, waiting to be judged for the one-guinea and ten-shilling prizes.

The trial of implements took place on the Wednesday; but, with the exception of Smith and Ashby's rotating harrow and Major Munn's patent horse-hoe turnip thinner and "nigger killer" (which seems a most deadly foe with its brushes to the caterpillars), there was nothing very new. The ploughing trials were not remarkably good, but the reaping and mowing machines gave very great satisfaction. Twenty-six churns were entered, but only five were tested. Sixteen quarts of cream were put in each, and the winner made 12½ lbs. of butter in fourteen minutes. Of the minor implements exhibited, none created more general interest than Summerscales' (of Keighley) washing, wringing, and mangling machine, which quite astonished "the gude wives" by its rapidity and cheapness, and well deserved its prize. The dinner in the evening was presided over by Sir James K. Shuttleworth. Mr. Unthank, in returning thanks for the judges, spoke upon the great error committed by the farmers generally in not keeping beasts better their first year; and the success of those two spirited Lancashire tenant-farmers, Messrs. Atherton and Dickenson, who each won a head prize in the Shorthorn classes against all England, was also alluded to more than once, in the course of the evening, with no small pride and pleasure.

ARTIFICIAL DRYING OF CORN FOR STACKING OR THRASHING.

In some parts of Sweden, Norway, and Russia, corn is dried in the sheaf, so as to render it fit for stacking and thrashing; and from time immemorial similar propositions have, every now and then, been enunciated by farmers in this country to secure their crops in wet seasons. It is now upwards of thirty years since the writer took part in the discussion of the subject, which at that time was an old story at the "farmer's fireside;" the practice of the North of Europe, with such improvements as the progress of things might suggest, being as familiar topics of conversation to grandpapas as to their grandchildren.

The various schemes may be divided into four classes:

1st, hanging up the sheaves in an atmosphere heated by a stove, or with flues under the floor of the barn, on the principles adopted in the North of Europe; 2nd, blowing in dry air among the sheaves, in various ways; 3rd, drawing out the moist air; and 4th, thrashing the crop, and drying the corn upon a kiln afterwards.

Experiments to some extent have been made under each of these plans in this country. We ourselves have frequently followed the latter plan; indeed, there was hardly ever a late and wet harvest but what less or more wet corn was thrashed, the straw turned into the straw-yard for litter, and the corn sent to the kiln to be dried, sometimes for

horse corn, sometimes for meal, and sometimes for the market, or granary. "The blacksmith's bellows" have also been tried to blow the heat out of the stacks in the stack-yard! while among the western and northern isles of Scotland, where "it rains for ever," drying the sheaves at the fire, or in a current of air between two doors, is no uncommon thing in very bad seasons.

There being nothing new in the proposition of "smoking corn sheaves like red herrings," can we improve upon the old practice? With our portable engines, stacks travelling on railways, blast-furnaces, and other appliances of modern discovery, all pregnant with their respective suggestions, is the time approaching when we shall wheel in our dripping sheaves of a wet harvest, all hung up like herrings on a large framed-truck, at one end of a large barn, constructed like a railway tunnel, and wheel the stacks out at the other end to their respective stands in the stack-yard, all thatched, prepared for the winter, and ready for thrashing at pleasure?

If this, then, is the solution of the problem, what is to prevent its being successfully done? It is manifest that, if the barn is of sufficient length and breadth, and properly heated and ventilated, a very large crop could in a very short time be passed slowly through it; for with three lines of rails, three pitchers could be kept going, unloading their carts at the one end, and three stackers stacking upon one stack at the other; and with such a force daily at work, field after field would soon be cleared, and the largest stack-yard in the kingdom filled.

Such being a general outline of the feasibility of our proposition, let us examine somewhat more closely its details from a practical point of view, in order to see if it is likely to return interest on the capital required to carry it out.

It is very clear in the outset, that in England, with only a wet season now and then, the project will not pay interest on capital unless we can "hit two dogs with one bone," as the proverb has it. In the North of Europe, and even in Scotland, a drying barn, as above, might be yearly used, and might therefore pay, although only used for the ingathering and drying of crops; but in those provinces where fine harvests are the rule, and wet ones the exception, it would, we fear, be otherwise.

Can we contrive to dry our sheaves in any other farm building, such as in a feeding-house for cattle? Can a building be so designed as to serve the twofold purpose of a drying-house for sheaves during harvest, and a feeding-house for cattle afterwards?

In the erection of a new homestead there is nothing to prevent this being economically done, without the expense of an extra farthing as to the building. A drying barn, for example, 200 yards long 12 yards wide, and of a suitable height, would make a splendid feeding-house after harvest, capable of being fitted up for 200 head of cattle in 200 movable feeding-boxes, 100 on each side, with a fine wide passage along its whole length between them. On the one end of this would be the turnip barn, which would also serve for unloading the sheaves from the carts, and putting them in the railway trucks; and on the other end the sheaf-barn now used would also serve for the stacks being built in, and from which they could be wheeled to the stack-yard, being thus built and wheeled out, as they are now wheeled in, to the thrashing machine, the work being only inverted, as it were, in its details.

With regard to railway, three lines of portable rails could easily be laid down the whole length, with one outside line for bringing round the empty trucks upon. And with regard to the trucks and their framing, they could be con-

structed in various ways, rude, strong, and simple, at a trifling cost each. One plan of constructing them might be as follows, viz.:

A rough frame 20 feet long by 10 wide, on four small wheels, similar to those of a travelling crane, with four uprights at each end, three or four horizontal bars, according to the length of the sheaves, lengthways between each pair of uprights, thus forming three passages along the length of the truck, across which the sheaves are hung on small rods, three sheaves upon each rod, the ear end downward, the rod being thrust through the sheaf immediately below the band, which would thus support the weight of its sheaf upon the rod; about 300 sheaves to a truck, allowing two square feet to each sheaf as the horizontal sectional area which it would have to dry in; the diameter of each sheaf about six inches, and the sheaf loosely tied, to allow the free ingress of heated air and egress of moisture in the process of drying.

In filling the trucks, one man hands the sheaves to two others, who put them on the rods, while two on the truck put the rods on the bars for drying. Five hands would thus empty a cart in the usual time it is done in the stack-yard at present by two hands, or three where two are allowed upon the stack.

If a gentle inclination were given to the railway, the trucks would pass along the line to the other end at any speed the process of drying would permit. Or the trucks could be hauled along a level line by means of a wire-rope and capstan.

In unloading the trucks and stacking, an equal number of hands would be required as at the other end; and about half the work would be done by boys or women.

Thus far we have discussed the matter in the stack-yard long ago, put the sheaves upon a pitchfork handle as fast as another could hand them to us, and set them aside; while it was admitted that a country carpenter could make a truck for about £2, timber being cheap, the bars of the feeding-boxes serving as part. Also in the field, if the moving was going on at the same time, the sheaves would not have to be stooked, but would be taken directly from the binder to the drying barn.

We now come to the process of drying, and the conclusion at which we and other practical farmers have generally arrived, was that heated air would be necessary; and that to give it free circulation among the sheaves, so as to dry them thoroughly in the shortest time, it would require to be let in at the bottom or below the sheaves, and taken out at the top by means of fans. If a regular current of heated air is got to play through the sheaves, the process of drying will be but a short one, and effectually done. In drying such corn upon a kiln, a process of which we have had considerable experience, success depends upon "how the kiln draws;" for if steam is allowed to stagnate at a high temperature among the corn, it does an immense harm, destroying the colour and quality of the corn in a very short time; but if the "kiln draws well" so as to take off the steam rapidly in a current of air as fast as it is generated, the corn is soon ready for removal to the granary. As there cannot be a doubt but the same result would be experienced in the drying of sheaves were steam allowed to stagnate in the heart of the sheaf, similar means must be used for its removal. The sheaves, therefore, must be small, loosely tied, and hung so as to let the heated air pass through them for the purpose of removing the steam as fast as it is created. The principle thus contended for is familiar to farmers in the rapidity with which sheaves

in the stook dry, when the wind is playing through them; and the same effective means will be found equally necessary in the drying barn.

The objection that the sheaves would not be equally dried—the bottom ones being liable to be too dry before the uppermost ones were ready for stacking—must be entertained; but, although the objection has a certain amount of truth in it, it is only but an illustration of what is experienced in the stook—the sheaves on the one side being dry before those of the other. The air must not be of too high a temperature; and, if this be attended to, the stacking of the top and bottom sheaves together will obviate the contemplated harm.

The egress and distribution of a uniform current of heated air below the sheaves is our next problem. If the air is drawn-out at the top of the building by means of fans, it will flow in at the bottom through any opening made for it, on the principle that air flows into a vacuum. But to dry the sheaves properly, the heated air which thus flows in below must ascend equally through the sheaves to dry them.

We must now go back and take a closer view of our feeding boxes and passage between, lest we get into a dilemma with our practical readers. This passage between the two rows of cattle, they will say, should be some four or five feet at least above the bottom of the boxes, otherwise the liquid from the manure will soon drain into it. Instead, therefore, of the three railways and trucks being on the same level, the middle one will be the height of the passage above the other two.

Can we take any advantage of this passage by constructing a permanent flue along its whole length? can we by means of a fan or otherwise send along this main flue a continuous blast of hot air from the furnace of our fixed engine, which would be driving the other fans on the top of the drying-barn and keeping all the machinery of this kind in motion? and can we then by means of moveable flues distribute to either side heated air to dry the sheaves in the two side-rows of trucks? If we can dry them, there will be no difficulty experienced in letting out plenty of heated air, to dry the sheaves in the trucks immediately over the main flue. The temporary flues of the two side flues could be made of large drain pipes under the trucks.

Motion could easily be given to any number of fans on the top of the building by means of a lying shaft, with rope or chain, so as to discharge the greatest quantity of air required. The fans and whole of the working-parts could be inside the roof, and protected alike from the breath of the cattle as from the weather.

But to make the discharging fans effective in producing a uniform upward current of heated air through the sheaves from the flues below, the whole building must be made close—the flues only excepted—so as to exclude the influx of the external atmosphere at doors, windows, and other places. This can easily be done at little expense, save at the ingress and egress of the trucks, which would require double doorways, so as to permit of the one set being shut before opening the others. In this, however, the extra expense would be very trifling, as such subdivisions and doors are already required. The only difference necessary would be in the extra size of the doors, and a little ingenuity in wet cloth or other contrivance to make them comparatively close, so as to keep out air. But in this, too, little difficulty would be experienced, as the inward current at any crevice or small opening would have a tendency to draw a wet cloth or the like close to it, so as effectually to shut it.

Such is a general view of what we and many other farmers appear to be looking forward to, as an auxiliary in a wet harvest; and however many objections it may yet have—and

doubtless it has many—it has nevertheless something so utilitarian about its several parts, as to give to them the common characteristic or family likeness as if they were already the actual members of a successful working system. What is sound in principle, however imperfect it may be in many of its minor details, is soon improved by the hand of practice, every turn or bend from the right line of progress being gradually worked off by daily use.

The system has another utilitarian characteristic of some promise, which must not be passed over unnoticed altogether. Many are now not only looking forward to drying-barns in wet harvests, but to the artificial heating of their homesteads in winter—the combustion of coal being cheaper than that of feeding material. And here, again, the main flues required for drying sheaves in a wet harvest, are also required to keep our cattle warm in a cold winter; so that a twofold object in the march of improvement may again be obtained—a most important consideration, especially when the subject is examined from an *£ s. d.* point of view—a view which must never be lost sight of, in all agricultural projects of the kind.

Drying-houses of the kind in question may be made of any size. By means of a few cross-bars and draining-pipes, a small farmer may, in a wet morning, convert his barn or cow-house into a place for drying his crop, the fan on the top being worked by manual labour. Some of the small kilns in the North, for drying corn, are not more than six feet square. Across this small area a thin layer of straw is laid upon joists, and over the straw is placed the corn or malt, to be dried by a gentle fire below. And although we never saw sheaves dried in such kilns, we know that in very bad years stook after stook has been dried in them, until the whole of the small farmer's crop was secured. And there is nothing to prevent the principle being carried out on a somewhat larger scale, and a pretty large crop dried by heated air from the kitchen-fire of the small farmer in a wet harvest, and his cows kept comfortable in winter by the same means.

Much disappointment and loss is often experienced from the corn not being sufficiently dry for thrashing to meet an early market, even in comparatively good harvests; so that, were the practice of artificial drying once commenced, it is difficult to say to what extent it might be carried even in the South: while in the less favourable climates of the North the probability is that drying-houses would be annually used. In many places it is generally Christmas before corn is in a profitable condition for thrashing and marketing; while the loss sustained in such cases is often twofold—the quality of the grain and straw being deteriorated, and the price more than proportionably reduced. To say nothing of the deterioration of the grain and the reduction of its price, if the loss now sustained on the straw could be avoided, it would amply pay for the whole process of drying.

The common objections to drying corn artificially are the extra work it requires at a time when hands can often hardly be had for money, and the thrashing out of the corn in the frequent handling. Many of the proposals made for drying corn in wet seasons are wholly impracticable on account of this latter objection, the quantity of corn thrashed out and lost in the handling being so great, as to exceed in value the benefits gained. Another cardinal objection is the injury done to the land by the horses' feet and the wheels of carts when it is wet. Even when dry, no little damage is often sustained: but in rainy weather the cutting and poaching is ruinous to the land, while the extra work it incurs is killing to the teams. These are drawbacks which will always be experienced against the system. So that the practical problem for solution is the least of two evils.

ON COMPOST AND VEGETABLE EARTH.

[TRANSLATED FROM THE "JOURNAL D'AGRICULTURE PRATIQUE."]

(Continued.)

In the preparation of compost, nitrification is not the main object, and the measures we adopt are frequently very unfavourable. Thus, when local circumstances allow it, we overload with urine, night-soil, blood, &c., and that only a short time before the compost is spread over the meadows. This is a most defective plan in regard to the success of nitrification. Practice teaches us that in the quantity of animal matters intermixed, there is a limit which cannot be exceeded with impunity, and the very conclusive experiments communicated to the Academy by M. Pelouze prove that if these matters predominate, not only will they be unfavourable to nitrification, but that they even destroy the nitre already formed, by transforming the nitric acid into ammonia. The saltpetre works, therefore, suspend the use of them many months before the time fixed for the lixiviate. During this last period the moistening of the earths is only affected with water.

A short time after I had presented to the Academy my researches into the quantity of nitrates contained in the earth and the waters, an English agriculturist of the first character advised the cultivators to establish artificial nitre-beds. I will not go so far as that. Although my conviction of the utility of saltpetre in the fertilization of the soil is very profound, I shall limit myself to proposing that in the compounding of composts, whether for the farm, the kitchen-garden, or the flower-garden, we follow, so far as circumstances will permit, the prescriptions recommended for the establishment and management of a nitre-bed. For this object I have placed at the end of my memoir an extract, which I shall not repeat here, from the instruction, so remarkable, for which we are indebted to the former stewards-general of gunpowder and saltpetre.

Let us now examine the utility of the nitrification accomplished in the compost.

The efficacious matter contained in a pulverulent manure, spread over a high meadow, will penetrate into the soil only after having been dissolved by rain or dew, and if these media are wanting they will remain exposed to the winds and sun. Let us admit that the fertilizing azotous elements are carbonate of ammonia, or ammoniacal fixed salts, susceptible of being converted into carbonate volatile on contact with the calcareous matter which the earth in common contains, the deficiency occasioned by volatilization of the ammonia will become considerable. These fixed salts by their nature will remain on the surface of the meadow without sustaining the least loss, until the rain causes them to penetrate into the soil after having dissolved them.

It therefore appears to me that nitrification has the effect of giving to the fertilizing azotous principles of the compost a stability they would not have possessed

if they assumed or preserved the constitution of ammonia.

If we consider that the nitrates form at most only 1-200th of the compost, we are led to ask if it would not be more economic to apply directly to the meadows the Peruvian saltpetre, rather than obtain the nitrate acid in an enormous mass of materials, the transport of which exacts from the teams a great expense of power. The American nitrate of soda, costing 50 francs per 100 kilogrammes, by adding to it 500 grammes, having a value of 25 to 100 kilogrammes of any kind of earth, we shall obtain in the form of nitric acid, but in that formation, the equivalent of a quintal (1 cwt.) of the richest compost.

That we may derive, even in Europe, great advantages in the form of improvements from the Peruvian saltpetre mixed with the slime of rivers or the scourings of ditches, employed generally in the dressing of meadows, is incontestible: the experiments of M. Kuhlmann and Mr. Pusey leave no doubt upon that point. In the meantime, a simple addition of saltpetre to mould cannot constitute a true compost, the efficacy of which depends also on phosphates and other substances, alkaline and calcareous, brought by the materials of which it is composed.

Nitrification, wherever it manifests itself, follows at first a progressive course, the rapidity of which in the compost I should have wished to state, but I have been prevented by the difficulty of deducting samples representing even approximately the mean constitution of so considerable a mass composed of elements so different and so unequally distributed. I have limited myself to making the investigation on a well-manured soil, that of the kitchen-garden of Liebfrauenburg, sufficiently homogenous when we have separated from it the straw and stones.

Ten kilogrammes of earth well damped were laid prismatically on a sand-stone flag, and sheltered by a glass-covering. When it was judged necessary, it was sprinkled with distilled water free from ammonia.

The day on which I began the experiment the earth had been perfectly mixed, and we had taken from it 500 grammes in which we had dosed the nitric acid. We had dosed several similar parcels between the 6th August and the 2nd October. The following are the results of these doses, the litre of dry and subsided earth weighing 1 kilo. 300:

NITRATES EXPRESSED BY NITRATE OF POTASH DOSED IN DRY EARTH.			
	In 500 Grammes.	Per cubic metre.	
	Grammes.	Grammes.	
5th August, 1857.....	0.0048	....	12.5
17th " "	0.0314	....	81.6
2nd Sept., "	0.0898	....	233.5
17th " "	0.1078	....	280.3
2nd Oct., "	0.1033	....	268.6

From the 5th August to the 17th September, in 43 days the production of nitre made rapid progress. The quantity of saltpetre rose from 12.05 grammes, when the little nitre-bed was established, to 280.03 grammes. From the 17th September to the 2nd October, the nitrification remained stationary.

At first sight the equivalent of 200 grammes of nitrate of potash diffused in a cubic metre of earth will appear a very feeble dose of azotous manure. But, in reality, the earth is only the excipient of the fertilizing principles; it is therefore in the water by which it is penetrated that, most generally at least, reside the agents destined to interpose in culture. Now, 100 parts of the soil of Liebfrauenberg absorb, when completely saturated and without changing its volume, 12 parts of water, say 546 kilogrammes per cubic metre. Every litre of water absorbed will contain therefore the equivalent of 0.512 grammes of nitrate of potash. Arable land is still sufficiently moistened when it retains no more than half the water it is capable of absorbing: being then more accessible to the air, it becomes more favourable to vegetation. In that state every litre of water will contain 1.024 grammes of nitrate, representing 0.172 grammes of ammonia, 0.141 grammes of assimilable azote, the germ of about 1 gramme of the proteous matter, the dry vegetable meat that the plant is capable of organizing.

I have already said that the compost owes not its fertilizing properties to saltpetre alone. I have thought that in order to complete the investigation it would be proper to seek for the azote and the carbon, the phosphoric acid and the ammonia, as I had already done with the vegetable earth, for these are the actual or approximate elements of fecundity.

The compost of the market-gardeners of Paris, which I have more closely examined, is the result of the slow decomposition of dung operated in the beds, established to determine that vegetation as precarious as vigorous, which is the true type of the most intense culture that it is possible for man to practice.

In order to form a hot-bed, we cover the soil with a dressing of horse-dung, of 1 m. 40 wide, and 0 m. 30 thick: we then water and press it strongly. Upon this basis we depose the bed of earth from 0.15 to 0.18 deep, more or less, completed by previous preparation, in which the plants develop themselves.

When we take away the hot-bed, the dung that constitutes the base is converted into an incomplete compost. This is a new earth, very porous, which we leave to acquire age by laying in heaps. There it subsides, becomes more dense, more homogeneous, more earthy; it is in this state that we form of it the upper stratum, the cultivable soil of a new hot-bed.

The compost obtained in one year not being employed entirely in the formation of the hot-beds of the succeeding year, there always remains an excess that the market-gardeners sell for top-dressing the lawns of pleasure-grounds.

I have examined two specimens of compost, one having been exposed on a heap for four or five months belonging to a market gardener; the other a new compost taken from a hot-bed of a garden belonging to M.

Vilmorin. The first was dosed with dry matter the equivalent of 1.071 grams. of nitrate of potash per kilogramme; in the second, the equivalent of 0.940 grams. of the same salt. With the magnifying-glass we perceived in these composts fragments of quartz, very limpid and colourless, small calcareous nodules, detritus of vegetables more or less marred, having a brown tint acquired from the peat. The compost has otherwise much analogy with vegetable earth, as it is easy to satisfy ourselves by comparing its composition with those of different earths.

1st. The mould of a kitchen-garden at Bischwiller, near Haguenau: soil sandy, strongly manured.

2nd. The light mould of the kitchen-garden of Liebfrauenberg.

3rd. A very argillaceous earth, very strong, from Becheibronn, taken in autumn in a soil where wheat had been harvested.

IN A KILOGRAMME OF MATTER DRIED IN THE AIR:

	Market-gardeners.	From Verriers.	From Bischwiller.	From Liebfrauenberg.	From Becheibronn.
	Gram.	Gram.	Gram.	Gram.	Gram.
Azote entering into the composition of organic matters..	10.503	5.281	2.951	2.594	1.397
Ammonia quite formed.....	0.118	0.084	0.020	0.020	0.009
Nitrates, equivalent to nitrate of potash	1.074	0.940	1.526	0.175	0.015
Phosphoric acid ..	12.800	5.424	5.536	3.120	1.425
Lime	63.006	11.280	32.030	5.516	20.914
Carbon belonging to organic matters	99.400	66.422	23.770	24.300	11.590

We find, in fact, that the compost and vegetable mould taken in situations sufficiently various, present, notwithstanding, in their constitution, the same active principles, and that the real difference lies only in their properties. Thus it appears that a fertile earth may be represented by compost disseminated with a quantity, more or less strong, of a mineral basis, whether argillaceous, calcareous, or siliceous. If, for example, we add 4 kilogrammes of sand taken from the sandstone of the Vosges to 1 kilogramme of the market-gardeners' compost near Paris, we shall obtain a mixture approaching in its aspect and composition the vegetable mould of Liebfrauenberg, and differing from it certainly less than the latter differs from the mould of Bischwiller, of which, however, the sandy basis possesses the same nature and origin.

In one kilogramme there was of

	Grammes.
Azote entering into the composition of organic matters	2.101
Ammonia perfectly formed	0.024
Nitrate, expressed by nitrate of potash...	0.212
Phosphoric acid	2.560
Lime	12.600
Carbon belonging to organic substances ..	19.800

A happy circumstance has furnished me with an opportunity of extending my investigations to vegetable earths, which M. Le Gendre Déclay, a zealous traveller, had reported on the shores of the Amazons, and its

principal tributaries. The six samples put into my hand represented the compost or ooze of the shores of the Rio Madeira, the Rio Topajo, the Rio Trombetto, the Rio Cupari, and the Rio Negro, whose waters uniting themselves to those of the Casiquiare, establish the junction of the two greatest rivers of the New World, the Oronoco and the Amazons; a communication so astonishing that geographers have doubted its reality until the memorable exploration of Alexander von Humboldt.

The Earth from the shores of the Rio Madeira.—Argillaceous; very plastic; bluish grey, enclosing debris of radicles; does not effervesce with acids; forests; culture, tobacco and sugar-cane.

The Earth taken at the embouchure of the Rio Trombetto in the Amazons.—Very argillaceous; a clear brown; makes no effervescence; forests; culture, tropical.

The Earth taken from the embouchure of the Rio Negro in the Amazons.—Furnished by a yellow sand, very loose; alluvium, having its origin in the granitic mountains of Guiana; does not effervesce; a steppe clothed with herbaceous vegetation.

The Earth taken from the shores of Lake Saracca, near the Amazon.—Mixture of clay and sand; a deep brown, interspersed with debris of roots; makes no effervescence. The deposit forms on the shore a cliff of from 80 to 100 metres thickness. The sample has been taken from land cultivated with tropical plants.

The Earth from the plateau of Santarem, elevated from 200 to 300 metres above the Amazons.—Mixture of sand and clay, almost black; abundant debris of vegetable matter, having sometimes the appearance of fossil wood; makes no effervescence; soil very fertile; rich culture of cocoa trees.

The Earth taken from the shores of the Rio Cupari, at the point of junction with the Rio Topajo, is the most remarkable for its constitution and extraordinary fertility. It forms a bank, one or two metres thick, arising from the superposition of alternate strata of sand and leaves, often well preserved, of a deep brown. It becomes entirely disintegrated, and then the sand is easily separated by the sieve. From 100 parts we took—

Sand	..	..	..	60
Decayed leaves	..	..	..	40
				100

The soil of Cupari must be considered as a deposit of compost of leaves, the extent and power of which explains at once both the vigorous vegetation and the formidable insalubrity of that hot and humid locality. This natural compost exhibits the peculiarity of containing no trace of nitrates, whilst it is unusually rich in ammonia.

I have disposed the results of these experiments in a

tabular form. In discussing them we cannot refrain from offering this observation—that the soils of Brazil, undoubtedly the most fertile we are acquainted with, are derived from Feldspathic rocks, and contain only a few thousandth parts of lime.

In a kilogramme of air-dried earth—

	Azote entering into the composition of organic matters.	Ammonia well formed.	Nitrate equivalent to nitrate of potash.
	Gramm.	Gramm.	Gramm.
Rio-Madeira	1.428	0.090	0.001
Rio-Trombetto	1.191	0.030	0.001
Rio-Negro	0.688	0.038	0.001
Amazons, near Lake } Saracca	1.820	0.042	0.000
Amazons-Santarem... }	6.490	0.083	0.011
Rio-Cupari (natural } compost)	6.850	0.525	0.000

	Phosphoric acid.	Carbon belonging to organic matter.	Lime.
	Gramm.	Gramm.	Gramm.
Rio-Madeira	0.864	9.100	2.032
Rio-Trombetto	—	5.863	3.696
Rio-Negro	0.792	5.900	3.304
Amazons, near Lake } Saracca	0.176	14.944	4.696
Amazons-Santarem... }	0.288	71.585	15.640
Rio-Cupari (natural } compost)	0.445	129.000	4.408

It appears from these researches that, in spite of origins, diversity of situations, on the borders of the Rhine, and in the valley of the Amazons—in soils superabundantly improved by European cultivation, and in alluviums deposited by the great rivers of the impenetrable forests of America—the vegetable earth contains always the same fertilizing principles, the same that we find in larger doses in compost, the spoils of what has vegetated and lived on the globe; ammonia, or nitric acid, the most ordinary of ammoniacal salts united to nitrates; phosphates mixed with alkaline and earthy salts; and constantly organic azotous matters, of which the carbon, given by analysis, is evidently the index, and in some sort the measure. Complex matters incompletely studied, to which, in the mean time, according to my experiments I recognize that singular property of producing, under certain influences acting in the normal conditions of arable land, nitric acid and ammonia, that is to say, the two combinations in which azote is assimilable by plants.

BOUSSINGAULT,

(Member of the Academy of Science, and of the Imperial and Central Society of Agriculture.)

THE VINEYARDS OF LA BELLE FRANCE.

We will now, if you please, visit the vineyards of Burgundy; and though Burgundy has no longer any geographical existence, but is cut up into a variety of smaller departments, it will only cease to be known by this distinction when it has ceased to be distinguished for its wines. Custom is a great conservative, and defends his territories against all innovations, as those of us know to our cost who have attempted to divert a foot-path that has existed from "time immemorial." The states of Normandy, Anjou, and Navarre, are so closely connected with our historical associations, and those of Champagne, Provence, and Burgundy by their productions, with our tastes, that many centuries probably will elapse before the Postmaster-general will succeed in blotting out these ancient distinctions.

We take our ticket at the terminus Boulevard Maras, near the Bastille, and proceeding through the valley of the Seine, pass the forts that guard the approach to Paris by that river at Charenton. Running very near the celebrated veterinary college at Alfort, and the town of Melun, from which the English were ejected in 1530, and crossing several fine viaducts, which imply an undulating country, our ears are assailed by cries of "Fontainebleau," from railway officials not more celebrated for correct pronunciation than ours in England. It is quite natural to start up, and strain the eye in hope of discovering the Chateau Royal, restored by Louis Philippe, while the mind reverts to the abdication of Napoleon, signed there—the touching leave of the remains of the Old Guard before Napoleon's departure for Elba, taken there. While we are thinking about the imprisonment, too, of the old Pope Pius VII., and the efforts made by Napoleon to wring from him a renunciation of the temporal power, which are now being again made by his nephew, the fine old groves of oak and beech, with their memories of Francis I. and the Bon Roi Henry IV., fade away in the far distance, and Thomery is reached. It is a very pretty town, the houses and walls being festooned with vines. Should you enquire for Fontainebleau grapes in Paris, they will have come from this place. During the season some 5,000 baskets of them, packed in heather, are sent down to the Seine every week. At Montereau, where the Yonne loses itself in the Seine, the plain is surrounded by the heights of Lurville, and the country is charming around, the chateaux of the old noblesse and the spires of the churches peeping over the trees. Here Napoleon pointed his last victorious cannon against the Allies, Feb. 18th, 1814. Vineyards everywhere to be seen as we ascend the valley of the Yonne. Dashing past Sens, which may be interesting to an Englishman, from possessing various ecclesiastical garments of Thomas-à-Becket, the train runs over an open chalky district.

Making a detour to Auxerre, and then proceeding to Tonnerre, we visit a considerable number of vineyards, which furnish Paris with a large quantity of rather in-

different red wine. Those in the former district, of which the principal is the Clos de la Chainctte, and Des Olivotes, Pitoy, Perrière, and Préaux, in the latter, exported a superior wine to England times gone by; but the farmers, by the substitution of a more prolific grape for the celebrated plant *channay*, which was less generous in the abundance than in the quality of its juices, have reduced the demand for these wines. Passing Montbard, where lies the chateau of Buffon, desolated by the revolutionists, the train arrives at Dijon, the ancient capital of the Duchy of Burgundy. Yes! Turner, with his true artistic skill, has seized upon the main features of the splendid picture. Very striking indeed is the appearance of that old city, throwing up from the plain in massive structure the battlemented palace of the warlike Dukes, contrasting well with church edifices and the simple dwellings of the 29,000 citizens, the Jura faintly bounding the horizon.

This is one of the great depôts for the wines of Burgundy.

Between Dijon and Chagny are situated the principal vineyards of the Côte d'Or; so called, either because of the value of their produce, or because of the colour of the soil—a light red loam, mixed with the debris of calcareous rocks. The sunny sides of the chain of hills are clothed with vineyards, ascending in terraces, and spreading over the table land upon their summits. The same fickleness which we observed in the vines of the Champagne district is also here observable, for a hill side will produce one sort of wine at the top, another or two half-way down, and a fourth or fifth at the foot, where the soil, washed down by rains, is usually deepest. Nor is there any accounting for this. It is often the case that two vineyards, divided only by a path, shall produce wines of most unequal value, although the chemical composition of the two soils shall be identical, as well as the aspect, and the training to which the plants have been subjected.

While we are skirting the Chambertin vineyard, which consists of 15 or 20 acres of land, divided amongst numerous proprietors, there is a capital opportunity for making our observations as to the system of cultivation pursued. The vines are planted in trenches, at the distance of two feet apart, and trained on poles to the height of 30 or 40 inches. Rather stumpy-looking affairs, and not materially adding to the picturesque of the scene. The artist, in fact, in search of subjects for the walls of next year's Academy's exhibition, is usually disgusted to find the purely visionary character of his ideal vineyard, and turns away as disappointed as the city child who finds that all lambs are not born white with pink ribbons round their necks. Between these trenches are crops of potatoes, clover, and maize, and dotting the fields are almond and cherry and walnut trees.

Presently the train brings us to Vougeot Station

where the celebrated Clos Vougeot Vineyard, consisting of 112 acres, advances considerably into the plain, and faces the east, while those of Nuits and Beaune lie towards the west. Its history will show how far a year of slovenly culture, an injudicious pruning, or the substitution of new plants for old, may for ever ruin the reputation of a vineyard. It belonged formerly to the monks of the Abbey of Cîteaux, who being lovers of good wine, were careful by the most diligent pruning to uphold the sacred character of the *vinum theologicum*. Flavour was the only quality required, and a vine might be stunted and scraggy, denuded of foliage, and spare of fruit: provided that its fruit was of the genuine flavour, it pleaded not in vain with the tonsured pruner. What they could not consume was reserved to confer obligation on the lords around, or to propitiate the favour of crowned heads. These Cistercians were satisfied with obtaining from 20 to 30 hogsheads of the finest quality of wine; but since it has fallen under lay supervision, the original vines, supposed to have been some centuries old, have disappeared, and the new ones, though yielding about 300 hogsheads, produced a second-class wine, which is very far from supporting the repute of the wines of Vougeot. This vineyard has lately been bought by Mr. Ouvrard for about £500 per acre.

Proceeding to Nuits we find the vineyards of Romanée, Richebourg, and La Tache, whose wines were prescribed to restore the health of Louis XIV.

At Beaune, owing its prosperity to the fact of its being one of the main seats of the wine trade, we are reminded of the insinuation of Petrarch, that the wine of this neighbourhood did much towards prolonging the residence of the Papal Court at Avignon. And having just noticed the liberality of the Cistercians, of Cîteaux, there was probably a good foundation for the insinuation. Amongst the events that marked the close of the reign of Louis XIV. was a paper war, the matter of contention being *The Wines of Burgundy v. The Wines of Champagne*. It was waged by a Student of Medicine at Rheims and a Collegiate Professor of Beaune, and was decided in favour of the champagne wines by the Faculty of Medicine of Paris. The Professor mentions the produce of the Clos St. George, a neighbouring vineyard, as a wine "*qui n'a pas son pareil, et ne peut être assez prisé.*" There are in this town about eighty mercantile houses engaged in the trade, and the annual exportation amounts to 40,000 butts.

Continuing our route, we keep company with the same chain of hills which overhangs the vineyards of Côte d'Or, extending through the departments of the Saône et Loire and the Beaujolais, towards the banks of the Rhone, and presents along its base very favourable exposures for the growth of the vine; but from some cause or other the culture is not successful, and the wines produced, known as Mâcon, do not occupy a high rank.

Leaving the rails at Beaune, and travelling across a charming country two and a-half leagues to the south-east, we arrive at Poligny, where is produced at the Mont Racht vineyard the best of the *white* wines of

Burgundy—not inferior to the red, either in flavour or aroma.

We have now passed over the tract of country from which the Dukes of Burgundy were designated "*les princes des bon vins,*" a country whose richness caused it to be a great bone of contention amongst the kings.

The vintage is a more simple affair than that practised in Champagne. It does not occupy long. In consequence of the populousness of the country between Dijon and Beaune, the proprietors of the vineyards can get over a large amount of work in a short time. Four to five hundred of people will be engaged at once in the various processes. Truly, a merry scene! the women gathering in their picturesque costumes; the trains, with the tottering loads, wending their way to the presses, where in many-coloured vestments, the much-perspiring natives, their feet armed with wooden soles, dance with exhilarating measure upon the luscious fruit, bruising it to the cadence of some vintage song. This pulp is passed through open-worked baskets, which separates from it about two-thirds of the stalks, and is then thrown into the vat, where the *must* has already preceded it from the treading troughs. The vat is covered by a lid, which floats upon the liquid, or rather on the stalks and *mare* or husks (whose colouring matter, dissolved by the alcohol eliminated in the process of fermentation, give to the wine its hue), and is gradually lifted up as the process of fermentation is developed. As the chief excellence of these wines consists in the fulness of their flavour and perfume, it is obvious that fermentation should be conducted only with a view to the most complete preservation of the aroma; hence the lighter wines—Pomard and Volnay, &c.—are allowed only to remain in vat twenty or thirty hours. The best wine is always produced from the most rapid fermentation. As, however, wine so rapidly fermented retains a portion of its saccharine and uncombined extractive matter, it is not safe for it to be exported except in bottle.

When the fermentation has ceased, the wine is drawn off in large casks, which contain about 700 gallons each. Every three or four months it is pumped by means of a syphon and bellows into another cask of equal dimensions. The Burgundy of the Clos Vougeot receives no other preparation; but it is treated to this last operation, till sold, as frequently as seems desirable. This wine is sometimes kept for ten or twelve years; but it is generally bottled and sold when three or four years old.

In England we are little accustomed to distinguish amongst the delicate shades in this wine.

The common vineyards, or those about Dijon, sell for £63 19s. 2d. per acre. The produce of these is estimated at about £13 to £14 per acre. They pay, therefore, about 6 per cent. The best vineyards of Bourgogne sell at £120 to £150 per acre. For the best vineyards of the department *Côte d'Or*, such prices as £500 per acre are not uncommon: the produce of such vineyards is about £46 to £50 per acre. At Baume the price per acre is £163 16s.; at Chagny, £40, with a

produce of £8 3s. 7d. The labour of cultivation costs from £4 to £5 per acre.

In Bourgogne and Beaujolais, the former being between 45 and 47 degrees of N. latitude, and the latter between 45 and 46, there are 96,632 hectares* of land producing wine.

In the Department of the Yonne, there are 37,212 hectares. The produce is 950,000 hectolitres, of which 250,000 are consumed in France. Of the first growths are to be distinguished amongst the red wines *des Olivotes*, les vins des *Côtes de Pitoy*, *la Grande Côte d'Auxerre*. That which takes first rank amongst the whole is called *Faumurillon*.

In the Department of Côte d'Or, there are 20,658 hectares of vineyards, producing 560,000 hectolitres.

The first wines of this department, in which class are ranked *La Romanée Centi*, *Le Chambertin*, *Le Richebourg*, and *Le Clos Vougeot*, provided the year is good, unite happily all those qualities which constitute a perfect wine. They need no doctoring—none of those "*soins qui aident à la qualité*" which wines of inferior quality require. Such tampering is sure to ruin their bouquet. The secondary red wines of this district, are from the vineyards known by the names, *Vasne*, *Nuits*, *Préméau*.

In the Department *de Saône-et-Loire* there are 900,000 hectolitres, the produce of 38,872 hectares; and 47,190 proprietors. France consumes 250,000 hectolitres.

None of these wines are to be compared with wines of the first class. They are generally known as *de vins de Mécon*, and are more esteemed as good ordinary wines, than as wines of a high rank. Amongst the first are *le Moulin à Vent*, *Chénas*, *Les vins des Tours*.

As a whole the Burgundy wines are distinguished by their beautiful colour, fine flavour, and aroma, combining in an extraordinary degree the qualities of lightness and delicacy with richness and fulness of body.

The principal white wine of Burgundy, in no way inferior to the red, is known by the name of *Mont Rache*. The secondary qualities are known as *Les Charmes*, *La Perrière*, *La Combotte*, *La Goutte d'Or*, all of splendid amber tint.

The produce of these vineyards is very much on the increase, and, as the demand for wine becomes more felt, will be larger and larger. This conviction is strengthened by the fact that the vineyards occupy generally those lands upon which wheat will not grow, and there will consequently be no battle to fight amongst the economists, and no question to determine as to whether the growth of the vine should be discouraged on behalf of the grain crop. As I pointed out while we were looking at the soil of *Eutre-deux-mers*, between the *Garonne* and the *Dordogne*, the French are able to grow their national beverage upon soil that in England is handed over to rabbits and ferns, leaving their barley lands quite unburdened, ready to the full to augment, by a little encouragement, the national resources. There is, therefore, every reason why capital should flow to

the waste lands; and it is a remarkable sight in France to see those lands, which in most countries are left till last, coming first into cultivation, and producing such large results as we have seen, while much of their best land is lying comparatively idle. The French are very much to blame not to have made this fact tell with greater significance. With their splendid advantages, food, and climate, why are they to be found not so much advanced as we were 100 years ago?

I suspect that the want of a good government (which is another word for self-reliance and freedom on the subject), and a peaceable disposition, may answer the question.

Now, as to price. The *Romanée Centé* of the second years' vintage can be bought at 5s. per bottle, the *Clos Vougeot* at 4s. to 5s., and the *Chambertin*, *Veoney*, *Baume*, and *Richebourg* at 3s. 6d., in France. But these are the better classes of wine, that will not bear transport. If we would regale ourselves with the *premières crus*, we must make their acquaintance on the other side the channel.

When the full duty shall have been taken off the third and fourth qualities, which are very superior wines, they will be placed on our tables at a very easy rate. It is not to be supposed that Burgundy will become exactly pot-house tipple, or that it will mantle in the pewter of the coalheaver; but in a few years we shall drink the produce of Bourgogne and Beaujolais at the same price we now give for bitter beer.

May we quickly get back again to the simple tastes of those English knights, who, in that noon-tide of English chivalry which Froissart describes, disliked warring in Spain because of her fiery wines, which they complained burnt up their livers and aggravated the heat of the climate and the weight of their armour. F. R. S.

MESSRS. CHILD AND OWEN'S PATENT SMUT MACHINE, OR SCOURING SCREEN.

We received an invitation a few days since, to inspect a new smut machine, the invention of the above machinists, whose "grain separator," and improved Allen's mowing and reaping machines—the latter now manufactured by Messrs. Burgess & Key, who obtained by it the first prize and the honorary gold medal at the late imperial meeting at Fougla—have already attracted so much of the public attention and approbation.

The machine we went to inspect was at the Great City Mills, near Blackfriars Bridge, now conducted by Messrs. Hadley Brothers, who politely afforded us every opportunity of inspecting the working of the machine (with which they expressed themselves well satisfied); and also showed us over the mills, the machinery of which surpasses anything of the kind we had ever before seen, in the completeness and adaptation of the several parts, and the steadiness and entire absence of vibratory motion with which the steam-engine of 400 horse-power, and 40 pairs of stones, &c., &c., performed their work.

The smutter consists, in the first place, of a vertical cylindrical frame, or "concave," about 5 feet 6 inches in height,

* The hectare is equal to $2\frac{1}{2}$ English acres, the hectolitre to 22 English gallons.

composed of round iron rods three-eighths of an inch in diameter, which are fixed into five or more circular grooved ribs or bands, and sufficiently apart to admit of the dust passing through, but retaining the wheat. The interior of this concave consists of five convex plates, exactly fitting the inclosed space, and placed at the distance of about 15 to 18 inches from each other. The upper plate which first receives the grain is corrugated. The others also are grooved, and, in addition, are supplied with small conical projections, or "nipples;" and six iron rods or beaters (three on each side) which pass through them from the upper to the lower convex plate. Through the centre of the whole, and fixed to them, passes the shaft or spindle, on the top of which, above the machine, is the drum, which connects it with the motive power. In each of the compartments, between the convex plates, and fixed into the shaft, are fliers, for the purpose of driving the grain against the "concave," and for expelling, by the blast, the dust between the rods.

The motive power being applied to the drum, the machine is set in motion at the rate of 550 revolutions per minute. The wheat, being poured upon the upper corrugated plate, is conveyed up a projecting flange into the first compartment below, where it immediately comes in contact with the fliers

and beaters, by which it is projected against the sides, and is from them again thrown back upon the rough surface of the corrugated convex plates. The centrifugal force of these flings it again to the circumference in an agitated state, heightened by the action of the rough surface of the convex, and of the fliers and beaters. It finally makes its way by the flanges into the second, third, and fourth compartments, receiving in each of them the same rough treatment, and subject all the time to the strong blast of the fliers, which expels every particle of dust, through the rods of the concave, that the scouring process has separated from the grain; so that when the latter passes into the receiver below, the sample, as we saw it, it presents a perfectly clean appearance.

We understand that this machine, which is of very recent origin, is now under trial in several of the largest mills in the kingdom, and that thus far it has been highly approved. The success with which Mr. Child has applied his mind to the subject of cleaning and separating grain from dirt and seeds, leads us to expect that in the present instance he will be equally fortunate, and that the difficult task of perfectly divesting it of that pest of the miller, smut, by one operation, will be accomplished.

MR. DUDDING'S SALE OF SHORTHORNS AT PANTON.

The long-wished-for Michaelmas summer seemed to set in Friday, Sept. 7, just in time to give *éclat* to this great Shorthorn gathering. In fact, it was a little too hot, and those who had brought umbrellas, owing to the drizzle in the morning, were fain to put them on parasol duty. The harvest kept many at home, but still the ancient love of a sale was all potent among the Lincolnshire men, and at least 400 did justice to a very elegant lunch in the double marquee which was pitched in the park. Mr. Torr of Aylesby, cousin to Mr. Dudding, presided, and got through the toasts with speed and felicity combined. The Queen, "the best woman in the world," was duly honoured, and so was Prince Albert, Mr. Turner (the landlord of Panton), Mr. Wetherell, and Mrs. and Mr. Dudding. In proposing the health of the latter, the chairman confided to the assembly, amid much merriment, that he had never seen "such an attractive band of females as the heifers of Panton," and they endorsed his opinion pretty decisively before nightfall by an average of 50 gs. It is rather remarkable, that the 80 females fetched exactly two guineas short of 4,600 gs., and that the 14 bulls should have also averaged 50 gs., with three guineas to spare. Those who had time to dwell on coincidences also observed that lots 32 and 47 each fetched a corresponding amount of guineas. The supplemental catalogue contained two heifer and seven bull-calves, which made 226 gs. in all, thus bringing up the grand total to £5,180 11s.

Only on the Thursday previous, Mr. Dudding's average for rams had been £14 2s. 6d. for 77, and never was such double success so patiently and deservedly won. Since 1834, pure Booth blood had been his great aim, and Leonidas, Baron Warlabay, Vanguard,

and Sir Samuel proved the most faithful of adjutants. Baron Warlabay's blood made the sale; and the two gentlemen who came determined not to be beaten in their honourable intentions towards Lady Mary Bountiful and her beautiful daughter, had made their calculations for the two at just 10 gs. more than they fetched. In great bidders, however, the sale was anything but prolific. Few, in fact, of the leading herds were represented at all; but still Lord Feversham, Capt. Oliver, Mr. Challoner, and Mr. Torr stood in the breach, and fought out some of the principal lots with the most exciting tenacity.

The ring was formed on the green, between the house and the outbuildings, not far from the little village church, which formed a quaint contrast to the busy life scene of that September day. Five waggons—which never lacked occupants and bidders—were drawn up outside the hurdles. Four of them seemed principally tenanted by Lincolnshire men and their friends; but the fifth, just opposite the auctioneer, was the great bidding battery, and Mr. Torr, on behalf of himself and Mr. Challoner, "made some good practice," along with Captain Oliver and Mr. Richardson of Glenmore, in the course of the afternoon. Among the other visitors we noted the Hons. N. Hill and E. Lascelles, and Messrs. Turner, jun., W. and H. Smith, Sanday, T. Booth, Barnes, Wetherell, Barnett, Naylor, Noakes, Chaplin, Topham, Kirkham, Greatham, Bartholomew, &c. The Wragby inn had a few occupants the night before, but the rest of the attendance was principally from the county, and one shorthorn breeder drove 90 miles there and back in his gig, to the scene of action, changing his horse on the road between Newark and Lincoln. In a few

short introductory remarks, the auctioneer called attention to the spirit which Mr. Dudding had always shown in getting the best bulls, be the price what it might, and reminded them that when he gave 200 gs. for Childers, 60 or 70 gs. for a bull was enough to set a whole neighbourhood in a ferment of pity and speculation combined.

The rumpy twelve-year-old Adora was the first to make her *entrée*, and 20 gs. from the waggon, whose tenants were sadly covetive in their bidding throughout, put her up at 20 gs., from which she gradually progressed to 27 gs. Lots 2 and 3 were ill or dead, and it was not until The Belle (dam of Bride Elect) came out that the bidders seemed to answer to the whip at all. Canary, a daughter of Leonidas, and half Booth and Bates, was the first that had much in the way of gay looks to boast of, and reached 61 gs. Pellonia, a daughter of Baron Warlaby, and with a head which at once revealed her descent, all but achieved that price, and Lady Mary Bountiful, for whom Colonel Towneley once offered 150 gs. in vain, became Mr. Torr's, after a sharp struggle, we believe, with Lord Feversham, for 120gs. Fancy 12th, a Baron Warlaby cow of fine substance, went to Mr. Noakes, of Kent, who did great execution during the afternoon. Admiration, with her Rose-of-Athelstane sort of head, sold well; and seven of the Baron Warlaby cows, nine of them less than five years old, averaged 69 gs. Alice Hawthorne, a daughter of his, had splendid size and substance, but her breeding powers were under suspicion; and with Lola Montes, who went abroad at Mons. Zœpritz's nod, the result of the first hour was announced by the amateur Quilter and Balls as nineteen lots for 1,024 gs.

It was rather appalling to find that only seven out of twenty-seven pages of the catalogue had been cleared, but the pace improved as the sale advanced, and twenty-two were sold in the next hour, and twenty-six the one after. Easthorpe Rose (41 gs.) was a good and cheap daughter of Lemnos; still the sale hung at this point, but revived when Easthorpe Belle (66 gs.), the cleverest and thickest of three good daughters of The Squire, came on the scene. Canny Lass (68 gs.), with her nice hair and quality, also bore good testimony to Superior; and the level-topped China Aster (66 gs.), whose sale was enlivened by the exhortation of "Go along, Charley," addressed by a Lincolnshire man to his bidding fellow, did no disgrace to General Sale II. Lady Sale (47 gs.), one of his daughters, went to Ireland; and then there was a capital 71-guinea rally for Rose of Cambridge, and a still grander one for the rare daughter of Sir Samuel and Lady Mary Bountiful. The crowd seemed to have quite awakened out of its drowsy dream, and all eyes were turned on the "Irish Waggon," when Mr. Torr and Captain Oliver, "him in the white hat," rattled their five-guinea bids along. However, the former stayed the longest, and Lady Louisa Bountiful is destined to take her place in the Challoner herd. Woodbine 2nd, a very nice, red, young daughter of Kalafat and a Leonidas cow, and reminding us something in

her style of Mr. Douglas's Rose of Cashmere, also fell to the lot of Mr. Richardson, another member of the dangerous Irish division; and she and Unity are bound to the same Glenmore pastures in which the celebrated young Soubadar used to roam. Capt. Oliver also fought well for Charity, a well-made fifteen months roan by Sir Samuel, which fetched 95 guineas, or just four guineas more than her red half-sister Syph. Annie Laurie, by Kalafat, found few to beat her in point of snugness, and we quite expected that the 76-guinea bid would have been the fruitful mother of a hundred more; but it was not so. Vanguard's heifer-getting powers came out gloriously in the good and thick Fancy Lady, and Lord Feversham and Capt. Oliver were soon in action for her, and were not separated till victory was declared for his Lordship at 125 guineas. Next time, however, Capt. Oliver brooked no opposition for Autumn Rose (71 guineas), a very even short-legged daughter of the same bull, nor for Anne (42 guineas), by Vanguard, dam by Belvedere IVth, a beautiful Duchess 77th roan, who seemed as cheap as Plum Blossom (32 guineas). The Hon. E. Lascelles, who won the calf prize at the recent Pontefract Show, contented himself with Pearl (38 guineas); and then the somewhat flat-sided Bride Elect closed the female list.

After such a plethoric list of female beauties, it was quite refreshing to see Lord of the Manor—a son of Lemnos and Lady Mary Bountiful—enter the ring. He is rather deficient on the chine, and about the setting on of the tail; but in other respects he is a very grand animal, on a beautiful leg, and with an unsurpassable twist. He is a nice-tempered bull in private, but this public ordeal did not suit him, and his leader was several times begged by the spectators to get another man to hold the chain while he kept the pole, but, thanks to the admirable patience and tact with which he was managed, the suggestion became unnecessary. He won the head prize at Horncastle a few weeks since, beating Prince Alfred, who is considered to be perhaps the best show bull Mr. Booth has; and hence he had well earned his right to stay in the county. At first the bidders dwelt dreadfully, but the 40 gs. eventually became 90 gs., and he departed to Mr. Greetham, who will find few handsomer bulls, go where he may. The thick-fleshed Admiral had also many admirers; but he had less style, and did not make so much by nine guineas. The white Lord Alexis, whom Mr. Dudding purchased for 70 gs. some time since, fell short of that money by 17 gs.; and the useful Colonel Collings (95 gs.) did something towards retrieving the famed Vanguard as a bull-getter. The sale occupied very nearly five hours, but the people were very constant to the last; and although one omnibus man had long before sung out "*Bardney Station*", and another had sounded his horn, as a hint that he would like to be moving on, the hint was not generally taken, and nearly all the pencils were busy to the last. There was every inducement to prolong the afternoon, as the tables in the tent were liberally re-spread for tea, "and something more," and full

honour was done both over the festive glass and "the social cloud," to the memory of the Panton Herd. And thus ended a very memorable Baron Warlaby day. Subjoined is a list of the prices.

1. ADORA, red, calved in Sept., 1848; got by Belvedere 4th (3130), dam (Augusta) by Truc Blue (5522)—Mr. Martin, 27 gs.
2. end 3.—*dead.*
4. ARCESTA, red and white, calved in Sept., 1851; got by Sugar Plum (10894), dam (Alice) by Master Charley (7215)—Mr. Willes, 31 gs.
5. THE BELLE, red, calved in March, 1852; got by Sugar Plum (10894), dam (Belladonna) by Nero (4557)—Mr. Searson, 35 gs.
6. JACINTH, roan, calved in October, 1852; got by Leonidas (10414), dam (Janette) by General Washington (6036)—Mr. Singleton, 46 gs.
7. CANARY, roan, calved in January, 1853; got by Leonidas (10414), dam (Carnation) by Duke of York (6947)—Earl Arlie, 61 gs.
8. ALICIA, roan, calved in 1853; got by Leonidas (10414), dam (Alice) by Master Charley (7215)—Mr. Johnson, 36 gs.
9. CORIANDA, roan, calved in October, 1853; got by Leonidas (10414), dam (Cowslip) by Fitz Harry (7009)—Mr. Naylor, 50 gs.
10. URANIA, red and white, calved in June, 1854; got by Baron Warlaby (7813), dam (Utility) by Earl Stanhope (5966)—Baron Nathusias, 31 gs.
- 11.—*dead.*
12. PELLONIA, red and white, calved Nov. 23, 1854; got by Baron Warlaby (7813), dam (Philippa) by Earl Stanhope (5966)—Mr. G. Phillips, 60 gs.
13. LADY MARY BOUNTIFUL, red and white, calved Dec. 19, 1854; got by Baron Warlaby (7813), dam (Lady Bountiful) by Usurer (9763)—Mr. Torr, 120 gs.
14. FANCY 12th, red and white, calved in February, 1855; got by Baron Warlaby (7813), dam (Fancy 4th) by True Blue (5522)—Mr. Noakes, 71 gs.
15. ADMIRATION, roan, calved in February, 1855; got by Baron Warlaby (7813), dam (Adora) by Belvedere 4th (3130)—Mr. Barclay, 72 gs.
16. PRETTY MAID, roan, calved in April, 1855; got by Baron Warlaby (7813), dam (Priscilla) by Earl Stanhope (5966)—Mr. C. Clark, 61 gs.
17. ROSE OF SUMMER, roan, calved in 1855; got by Baron Warlaby (7813), dam (Rose d'Amour) by Regent (13580)—Mr. G. Frere, 42 gs.
18. CLARA NOVELLO, roan, calved in 1855; got by Baron Warlaby (7813), dam (Casket) by Frederick (10243)—Mr. G. Bland, 54 gs.
19. AMBROSIA, white, calved in April 1855; got by Baron Warlaby (7813), dam (Amy) by Earl Stanhope (5966)—Mr. Greetham, 84 gs.
20. LADY SALISBURY 2ND, roan, calved in May, 1855; got by Baron Warlaby (7813), dam (Lady Sale) by Sugar Plum (10894)—Mr. Pigot, 35 gs.
21. ALICE HAWTHORN, roan, calved in August, 1855; got by Baron Warlaby (7813), dam (Artless) by Lambton (9273)—Mr. Turriß, 68 gs.
22. LOLA MONTES, red and white, calved in February, 1856; got by British Soldier (12497), dam (Laura 4th) by Sugar Plum (10894)—Baron Nathusias, 40 gs.
23. CRINOLINE, roan, calved in April, 1856; got by Lemnos (13146), dam (Canary) by Leonidas (10414)—Baron Nathusias, 41 gs.
24. FERONIA, white, calved April 29, 1856; got by Lemnos (13146), dam (Fidelity) by Leonidas (10414)—Sir G. Phillips, 28 gs.
25. EASTTHORPE ROSE, roan, calved in April, 1856; got by Lemnos (13146), dam (Eastthorpe Lady) by General Washington (6036)—Mr. Aylmer, 41 gs.
26. ANGERONA, roan, calved in May, 1856; got by Lemnos, (13146), dam (Amy) by Earl Stanhope (5966)—Mr. Noakes, 38 gs.
27. ADORATION, red and white, calved in May, 1856; got by Stamboul (13780), dam (Artless) by Lambton (9273)—Baron Nathusias, 31 gs.
28. ARCONA, red, calved in May, 1856; got by Stamboul (13780), dam (Arabella) by Leonidas (10414)—Mr. Greetham, 40 gs.
29. CALYCE, white, calved in June, 1856; got by Lemnos (13146), dam (Corianda) by Leonidas (10414)—Sir G. Phillips, 45 gs.
30. LADY LOVE, red and white, calved in June, 1856; got by Lemnos (13146), dam (Lady Louisa) by Earl Stanhope (5966)—Mr. Noakes, 33 gs.
31. CALISTA, red, calved in December, 1856; got by The Squire (12217), dam (Coquette) by Lambton (9273)—Hon. Col. Duncombe, 35 gs.
32. SUNSHINE, red, calved April 25, 1857; got by Stamboul (13780), dam (Songstress) by Baron Warlaby (7813)—Mr. Noakes, 32 gs.
33. WISHFUL, red, calved April 27, 1857; got by Stamboul (13780), dam (Witchcraft) by Baron Warlaby (7813)—Mr. Adkins, 46 gs.
34. AMIGAIL, red, calved May 27, 1857; got by Superior (15362), dam (Acco) by Baron Warlaby (7813)—Mr. Frere, 36 gs.
35. LADY COLLING, roan, calved in April, 1857; got by The Squire (12217), dam (Laura 4th) by Sugar Plum (10894)—Mr. Woodward, 26 gs.
36. GARLAND, roan, calved in June, 1857; got by Stamboul (13780), dam (Graceless) by Baron Warlaby (7813)—Lord Feversham, 46 gs.
37. ALPHA, red, calved August 28, 1857; got by The Squire (12217), dam (Alicia) by Leonidas (10414)—Mr. Hemmings, 31 gs.
38. PRINCESS ALICE, red roan, calved August 20, 1857; got by The Squire (12217), dam (Priestess) by Leonidas (10414)—Mr. Hemmings, 27 gs.
39. AVICE, white, calved in August, 1857; got by Superior (15362), dam (Arethusa) by Baron Warlaby (7813)—Mr. Woodward, 34 gs.
40. EASTTHORPE BELLE, red, calved in December, 1857; got by The Squire (12217), dam (Eastthorpe Lady) by General Washington (6036)—Mr. Noakes, 66 gs.
41. WELCOME, red, calved in December, 1857; got by The Squire (12217), dam Winfred, by Earl Stanhope (5966)—Sir G. Phillips, 56 gs.
42. FANCY 13th, roan, calved in Dec., 1857; got by The Squire (12217), dam (Fancy 9th) by Leonidas (10414)—Mr. Briggs, 55 gs.
43. CANNY LASS, roan, calved in Jan., 1858; got by Superior (15362), dam (Corianda) by Leonidas (10414)—Duke of Sutherland, 68 gs.
44. CHINA ASTER, roan, calved in April, 1858; got by General Sale 2nd (14606), dam (Canary) by Leonidas (10414)—Mr. Adkins, 66 gs.
45. PRISCILLA, roan, calved in April, 1858; got by Superior (15362), dam (Philippa) by Earl Stanhope (5966)—Duke of Sutherland, 52 gs.
46. LADY SALE, roan, calved in May, 1858; got by General Sale 2nd (14606), dam (Lady Like) by Sugar Plum (10894)—Mr. Chaloner, 47 gs.
47. FAIR MAID, roan, calved in May, 1858; got by General Sale 2nd (14606), dam (Felicia) by Baron Warlaby (7813)—Mr. Bland, 47 gs.
48. CONSTANCY, white, calved in May, 1858; got by Kalafat (13101), dam (Constance) by Sugar Plum (10894)—Duke of Sutherland, 30 gs.
49. ACTRESS, red and white, calved in May, 1858; got by General Sale 2nd (14606), dam (Alceata) by Sugar Plum (10894)—Mr. Torr, 30 gs.
50. ROSE OF CAMBRIDGE, roan, calved June 17, 1858; got by Superior (15362), dam (Rose of Sharon) by Earl of Salisbury (11409)—Mr. Oliver, 71 gs.
51. FAIRY, white, calved June 22, 1858; got by Kalafat (13101), dam (Fauldless) by Regent (13580)—Mr. Barnett, 35 gs.
52. PRUDENCE, red, calved July 19, 1858; got by Kalafat (13101), dam (Pellonia) by Baron Warlaby (7813)—Mr. Noakes, 48 gs.
53. UNITY, roan, calved Aug. 15, 1858; got by Kalafat (13101), dam (Urania) by Baron Warlaby (7813)—Mr. Charley, 51 gs.
54. CHERRY, roan, calved Sept. 3, 1858; got by Superior (15362), dam (Columbine) by Lambton (9273)—Mr. Adkins, 48 gs.

55. RUTH, white, calved Sept. 4, 1858; got by Superior (15362), dam (Rose of Summer) by Baron Warlaby (7813)—Mr. Hodgkinson, 35 gs.
56. CHINA ROSE, roan, calved Oct. 12, 1858; got by Superior (15362), dam (Clara Novello) by Baron Warlaby (7813)—Mr. Hemmings, 42 gs.
57. PRINCESS AUGUSTA, roan, calved Oct. 20, 1858; got by Kalafat (13101), dam (Priestess) by Leonidas (10414)—Mr. Noakes, 39 gs.
58. FAITH, roan, calved in 1858; got by Superior (15362), dam (Faith) by Earl Stanhope (5966)—Baron Nathusias, 49 gs.
59. AMELIA, roan, calved in January, 1859; got by Superior (15362), dam (Adora) by Belvidere 4th (3130)—Mr. Woodward, 33 gs.
60. LADY LOUISA BOUNTIFUL, roan, calved May 18, 1859; got by Sir Samuel (15302), dam (Lady Mary Bountiful) by Baron Warlaby (7813)—Mr. Chaloner, 279 gs.
61. EVA, roan, calved April 26, 1859; got by Sir Samuel (15302), dam (Eastthorpe Rose) by Lemnos (13146)—Mr. Aylmer, 44 gs.
62. WOODBINE 2ND, red, calved April 22, 1859; got by Kalafat (13101), dam (Woodsorell) by Leonidas (10414)—Mr. Richardson, 47 gs.
63. FAWN, roan, calved April 24, 1859; got by Sir Samuel (15302), dam (Felicia) by Baron Warlaby (7813)—Mr. Hemming, 41 gs.
64. ANEMONE, white, calved April 28, 1859; got by Sir Samuel (15302), dam (Arethusa) by Baron Warlaby (7813)—Mr. Barnett, 32 gs.
65. JULIA, roan, calved April 30, 1859; got by Sir Samuel (15302), dam (Judith) by The Squire (12217)—Mr. Upson, 30 gs.
66. FAITH, white, calved April 28, 1859; got by Sir Samuel (15302), dam (Feronia) by Lemnos (13146)—Mr. Singleton, 36 gs.
67. CHARITY, roan, calved in May, 1859; got by Sir Samuel (15302), dam (Canary) by Leonidas (10414)—Lord Feversham, 95 gs.
68. ALBONI, roan, calved in May, 1859; got by Sir Samuel (15302), dam (Alcona), by Stamboul (13780)—Mr. Barnett, 28 gs.
69. SYLPH, red, calved in May, 1859; got by Sir Samuel (15302), dam (Splendid) by Baron Warlaby (7813)—Mr. Barclay, 91 gs.
70. AVALANCHE, roan, calved in May, 1859; got by Sir Samuel (15302), dam (Angerona) by Lemnos (13146)—Mr. Cruickshank, 33 gs.
71. SINGING BIRD, roan, calved in May, 1859; got by Sir Samuel (15302), dam (Songstress) by Baron Warlaby (7813)—Mr. Robson, 42 gs.
72. ANNIE LAURIE, red, calved July 22, 1859; got by Kalafat (13101), dam (Ardless) by Lambton (9273)—Mr. Barclay, 76 gs.
73. PHOEBE, red, calved in May, 1859; got by Superior (15362), dam (Philippa) by Earl Stanhope (5966)—Mr. J. Richardson, 25 gs.
74. FANCY LADY, roan, calved August 2, 1859; got by Vanguard (10994), dam (Fancy 8th) by Leonidas (10414)—Lord Feversham, 125 gs.
75. AUTUMN ROSE, roan, calved August 5, 1859; got by Vanguard (10994), dam (Admiration) by Baron Warlaby (7813)—Mr. Oliver, 71 gs.
76. CINDERELLA, white, calved November 2, 1859; got by Vanguard (10994), dam (Clara Novello) by Baron Warlaby (7813)—Mr. J. Richardson, 30 gs.
77. JENNY LIND, white, calved November 25, 1859; got by Vanguard (10994), dam (Jacinth) by Leonidas (10414)—Mr. Robson, 46 gs.
78. PRINCESS CAROLINE, red, calved November 20, 1859; got by Vanguard (10994), dam (Priestess) by Leonidas (10414)—Mr. Naylor, 52 gs.
79. FLORA, roan, calved December 13, 1859; got by Vanguard (10994), dam (Fidelity) by Leonidas (10414)—Mr. Byron, 41 gs.
80. ANNA, roan, calved December 18, 1859; got by Vanguard (10994), dam (Adora) by Belvidere 4th (3130)—Mr. Oliver, 42 gs.
81. PLUM BLOSSOM, red, calved December 21, 1859; got by Vanguard (10994), dam (Pellonia) by Baron Warlaby (7813)—Mr. Marris, 33 gs.
82. PEARL, white, calved December 30, 1859; got by Vanguard (10994), dam (Pretty Maid) by Baron Warlaby (7813)—Hon. G. E. Lascelles, 32 gs.
83. BRIDE ELECT, roan, calved January 2, 1860; got by Vanguard (10994), dam (The Belle) by Sugar Plum (10894)—Mr. Minor, 40 gs.
84. AFFECTION—Sir Geo. Phillips, Bart., 17 gs.
85. LADY SARAH—Duke of Sutherland, 12 gs.

BULLS.

1. LORD OF THE MANOR (14855), roan, calved March 17, 1856; got by Lemnos (13146), dam (Lady Isabella Bountiful) by Vanguard (10994)—Mr. T. Greatham, 90 gs.
2. ADMIRAL (14063), red, calved August 13, 1856; got by Superior (15362), dam (Anna) by British Boy (11206)—Mr. Bruce, 81 gs.
3. LORD ALEXIS, white, calved August 10, 1858; got by Cardigan (12556), dam (Lady Alicia) by Prince Arthur (13497)—Mr. E. Hodgkinson, 53 gs.
4. ACTOR, roan, calved April 26, 1859; got by Sir Samuel (15302), dam (Ambrosia) by Baron Warlaby (7813)—Mr. R. Fisher, 45 gs.
5. ARCHDUKE, red, calved April 27, 1859; got by Sir Samuel (15302), dam (Affiance) by The Squire (12217)—Mr. Oliver, 27 gs.
6. AUGUSTUS, roan, calved July 29, 1859; got by Vanguard (10994), dam (Amy) by Earl Stanhope (5966)—Mr. Beverley, 29 gs.
7. FANCY KING, roan, calved August 19, 1859; got by Vanguard (10994), dam (Fancy 9th) by Leonidas (10414)—Mr. Elande, 40 gs.
8. COLONEL COLLINGS, red, calved September 23, 1859; got by Vanguard (10994), dam (Camilla) by Leonidas (10414)—Mr. Barratt, 95 gs.
9. LORD SALISBURY, red, calved October 26, 1859; got by Vanguard (10994), dam (Lady Salisbury 2nd) by Baron Warlaby (7813)—Mr. Chaplain, 50 gs.
10. LORD LINCOLN, roan, calved October 29, 1859; got by Lord of the Manor (14835), dam (Landscape) by British Soldier (12497)—Mr. Upson, 40 gs.
11. ALEXANDER, roan, calved November 22, 1859; got by Lord of the Manor (14835), dam (Alicia) by Leonidas (10414)—Baron Nathusias, 60 gs.
12. FANCY BOY, roan, calved December 19, 1859; got by Lord of the Manor (14835), dam (Fancy 10th) by Leonidas (10414)—Mr. J. Richardson, 31 gs.
13. ROYAL DUKE, red, calved March 30, 1860; got by Vanguard (10994), dam (Rosette) by Stamboul (13780)—Mr. R. Martin, 14 gs.
14. EARL OF LINDESEY, roan, calved in May, 1860; got by Vanguard (10994), dam (Eastthorpe Rose) by Lemnos (13146)—Mr. Goulton, 28 gs.

THE COST OF A BATTLE.

The time may come when the fondest hopes of the Very Reverend Dean Doleful, and Friend Boanerges Broadbrim, will be realized; when all violent muscular amusements having been discontinued, pheasants and partridges having become as scarce as bustards, foxes as rare as the old English black

rat, devoured by the brown Hanoverian, hunting and shooting amusements as obsolete as the tournaments of the middle ages, gunpowder mills and kennels will be turned into cotton-factories or lecture-rooms. About the same time the youth of England will be satisfied with constitutional

walks and gymnastic drill, varied by tea-meetings, lectures on the ologies, or part-singing.

The love of sport, as we in England comprehensively term a long line of exciting and peculiarly unprofitable outdoor amusements, is at present one of the marked characteristics of an Englishman. It prevails in all classes, it is understood by both sexes, and it crops out in the most curious and unexpected families. Quakers ride to hounds: one of the greatest masters of horse-knowledge is a distinguished and intellectual member of that mild and stay-at-home sect. A wealthy and serious soap-boiler of our acquaintance, who, from a misdirected letter, learned that his son and partner, in the teeth of parental precept and example, had for several years combined the best shooting and hunting with his annual northern business tours, was by no means alone in his misfortune, although quite as much astonished and nearly as much shocked as if he had discovered his otherwise exemplary offspring robbing a till or forging an acceptance. As will happen with others of like tenets now and then, his precepts and example had not crushed a sportsman, but had cultivated a hypocrite.

Shopkeepers, brokers of stock and of produce, lawyers, civil engineers, bankers and their clerks, supply a large proportion of the fishing men, the shooting men, and the hunting men. The navy grown into a contractor (no uncommon metamorphose a few years ago), the potboy converted into a wine-merchant and laud owner, the mechanic who has built up a fortune as well as a factory, the gardener and the fishmonger, the artist and architect, who—from small beginnings and humble origin have risen to be great and famous—all hold shares in the great joint-stock company for cultivating health, exercise, and mental rest, sociality, geniality, hospitality, and other virtues difficult to cultivate in this hard-working, class-divided world of England.

The peculiar school of money-making philosophers who look upon squires, pheasants, and foxes as all alike—vermin—and destined to be extinguished by the march of agricultural improvement, would be rather puzzled if any chance should lead them to join an agricultural-minded public dinner, by the manner in which the toast of "Fox-hunting" wakes up to light and life those down-trodden vassals, the tenant farmers, whom in their poetical eloquence they often picture as mourning in their melancholy homesteads, crops destroyed and fences smashed by the red-coated invaders, and poultry decimated by the useless vermin of the chase; it would be amazing to them how the glad tally-hos, triumphant who-woops, and "one cheer more," come from the very hearts of the farmers; and when the Master of Fox Hounds, who has been sitting very quiet, gets up and says, not fluently—for he seldom is fluent except when on horse-back—that "he wishes to show sport, but cannot do so without the farmers to back him as they have done, and he hopes they will still," an overflowing simultaneous burst of applause from the brown-red faces drowns the conclusion of the sentence, and enables the M.F.H. to resume his seat. And if our politico-philosophical philanthropist should, by any force less than that of cart-horses, and cart-ropes—say in search of a profitable investment—be drawn into a truly rural district to some comfortable four or five hundred acre farm just after harvest, he would learn what genuine hospitality is; and then, in the fox-hunting season, he might note young farmers riding "like mad" in front, and old ones inviting friends and strangers to trot round and take a glass of ale. In fact, he would find that there is not a well-farmed district in England in which *fair* sport is not popular with the real farmers.

But there is another kind of sport, a bastard selfish sport if sport it can be called, which has been so well dissected and injected and presented in all its hideous deformity in a pamphlet,* that we cannot do better than take our examples from the anatomical museum of the author, descendant of a long generation of sportsmen.

A battue is a contrivance for killing the largest quantity of game in the smallest time, with the least amount of trouble, by a small, select party. It is next-door to firing wild German swine while taking their daily meal of corn, as some German princes do, or shooting into a poultry-yard at feeding time.

The sportsman fond of shooting expects to walk hard and work hard to fill his bag, as the phrase goes; although, by the way, game in this country is seldom bagged, if it can be helped, but carried daintily by an attendant, in a sort of portable pillory. The peculiar charm of a battue appears to lie, first, in its enormous cost, which places it out of the reach of men of moderate means; next, in the arrangements for wholesale slaughter by people who, being neither good shots nor good walkers, are unable to take advantage of the working of well-trained dogs.

For a battue, it is essential to concentrate an enormous head of game in a confined space. Thus, after birds have been bred on the plan of a well-managed poultry-yard, hatched under hens, and fed regularly on chosen spots, they are driven, if partridges, into selected turnip-fields, and if pheasants, into coverts, where certain rides or paths have been stopped up with netting, so that the tame birds may not run out of danger.

The landowner or game-renter who determines to indulge in the ostentatious luxury of a battue, begins by engaging a large army of keepers, who are practically, if not legally, invested with an authority that can only be compared in its exercise to the functions and privileges of the police and spies of certain continental states. It is the gamekeeper's business to repress poachers; to encourage the breeding of every kind of game, feathered and four-footed, on every acre of land under his master's control; and to destroy everything he chooses to call vermin. Rabbits—the especial enemy of the farmer—being the head gamekeeper's peculiar perquisite, are specially protected and multiplied. A gamekeeper has been known to net three hundred pounds a year by rabbits alone. Hares are the next objects of his care; for they are safe and favourite battue-marks, and he does not do his duty unless they are at least as plentiful as sheep on turnips, within a mile circle of the principal battue coverts.

Then, in the breeding season, it is his business to find out every outlying pheasant, and every partridge's nest, and have it watched, as a "political suspect" is watched by a French mouchard. The farmer (that is, the tenant-at-will farmer) and his men are continually under the ever-watchful and malicious eye of the keeper and his understrappers, who are promoted poachers or lazy labourers. "There is nothing," says Mr. Corbet, "they can do but it is 'his duty' to overlook them. He stands by the mowers, to see they do no harm to 'his nests.' He struts into the reaping field, to make sure they don't harm 'his birds.' The boy with his scarecrow, the shepherd with his dog, and the little lass with her kitten, are alike the objects of his hatred and tyranny. He has been known to wrench a gun from the hand of a farmer's son for shooting a rat; to tell a farmer himself that he should prefer his not firing at the

* The Over-Preservation of Game: a paper read before the Central Farmers' Club, by Henry Corbet, the Secretary; March 5, 1867.

sparrows in the corn, as it was 'such a trouble to be always coming to see what he was after;' to inform against a farmer for picking up a hare his horse had killed in her form; and against a labourer who had taken the dead pheasant out of the snare which he (the keeper), to secure a conviction, and confirm his suspicions, had first put there."

Besides these protective duties, the keeper destroys all the birds and animals which feed on and keep down the vermin of the farm. The "windhover," or kestrel, and the barn owl—two birds which prey on mice and beetles exclusively, the weasel, as well as the fox, are pursued by him with relentless activity. The consequence is that, wherever game is strictly preserved, rats, mice, and beetles swarm like an Egyptian plague, and foxes are not to be found.

Agricultural improvements come within the range of objects offensive to the view of the battue-preserver. Some years ago, a ukase was issued, on certain great estates, against the use of the turnip-drill, because partridges were apt to run along the straight lines under the broad green leaves of that invaluable plant, instead of rising on the wing. But the weight of the rent-paying interest, which is fortunately dependent in all partridge counties on the root crop, defeated, after a brief contest, this attempt to stop the way of agricultural progress. Since that time, however, the use of artificial manures, of reaping machines (as cutting the stubble too close), and the wholesome practice of trimming banks and cutting hedges, have successively, and in the last instance too often successfully, been prohibited by zealous and ignorant game-preserving landlords.

Where time is an object, where two or three years are too long for the preparations of an impatient battue maniac, then breeding and vermin-killing do not suffice, and resort is had to the illegal purchase of eggs and of birds. Tomkins Trotman, thatcher by profession and poacher by taste, is haled off to prison for being caught with a dozen pheasant's eggs in his Jim Crow hat, by the sentence of a magistrate who has through his head gamekeeper bought or sold a couple of thousand eggs that very same season. So large is this illegal traffic, that one of the London game-dealers, by whose intermediation such transactions are usually concluded, offered last year, in answer to an application from the executors of a great game-preserving landlord, to take one hundred thousand pheasant's eggs, as fast as they could be delivered; and he bought five hundred live pheasants every week for several weeks, from a well-known earl and battue-giver.

The Earl of Washington and Slashington, or Squire Southacre, or the Rev. Mr. Vulpecide, or David Deadun, Esq., attorney and bill-discounter, and in virtue of the profits of these professions renter of a mansion with demesnes and the right of shooting over some thousand acres—although not the owner of a single acre—having completed, early in the year, arrangements for holding one, two, or at most three, battues between October and Christmas, and having enabled from a dozen to a score of guns to fill a two-horse waggon on each eventful day—and having, also, concluded an arrangement with a London tradesman for the sale of the produce of each day's butchery—will probably not be seen or heard of in the district any more until next year: except through his dogs in office, the gamekeepers, or his viceroys, the law agents who collect the rents.

The consequences of this abuse of sport—this mixture of the game slaughterer's and the game seller's callings—are

to be found in crops ill cultivated, because devoured and destroyed before harvest; in discontented farmers and demoralised labourers; in goals supplied with artificial criminals; in poor-houses tenanted by the wives and children of the imprisoned poachers; in London shops loaded with tame-fed game, wheat-ricks swarming with rats, hedgerows ruined by rabbits, hares taking the place and the food of sheep, and pheasants as wild as Cochia Chinas and a good deal fatter.

Of course the vast cost produces very imposing statistics of the "sport" (?) of the battue manufacturer. The following is an extract from the game book of a nobleman, which last year went the round of the local papers, with some complimentary remarks on the excellent sport which the distinguished peer had shown his friends: "1st day, 178 hares; 2nd day, 292; 3rd day, 60; 4th day, 195; 5th day, 77; in all, 802 hares in five days, besides countless pheasants and rabbits."

A competent authority, Mr. Grey, of Dilston, the agent of the Greenwich Hospital estates in the north, says: "Look at the progress of a single hare in a wheat field; you see him pick a stem here and a stem there, in his course over the field; he will nibble an inch or two from this stem, and he does not stop until he has cut off a great many. It is not the inch he has eaten, but what would have been a wheat ear, which is thus destroyed." Hares are great travellers. Imagine the damage that eight hundred hares can do in a single night. We have ourselves ridden, in the dusk of the evening, through a forty-acre field—on the farm of a non-resident landlord in Lincolnshire, which was eventually abandoned by the tenant in consequence of the hare nuisance—and have disturbed hundreds of hares, as thick as rabbits in a warren, all eating, and trampling in their play more than they eat.

Rabbits, when strictly preserved, are perhaps even more mischievous than hares. Although they do not travel so far, they multiply more rapidly. They undermine hedges, stop up drains, fill ditches with their fresh earthings; thus, between their dainty teeth, their greedy appetites, and their poisonous droppings, vegetation is annihilated wherever gamekeepers are paid by perquisites instead of by salary, as is often the case where the game preserver is non-resident. When we hear of keepers clearing their two and three hundred per annum by the sale of "coney," we know that the farmer loses at least two for every one hundred pounds thus pocketed. By the law, rabbits are not game, and, therefore, the unlicensed tenant is at liberty to destroy them; but short-sighted landlords step in with a special agreement reserving the nuisance, and then transfer their right to their servant: "that is to say, the gamekeeper has a direct interest in maintaining a stock of the vermin which are above all others the most prolific and most mischievous to the farmer."

Live rats are worth in London, at certain times of the year, two or three shillings a dozen. Let us imagine the sensation that would be produced by a landlord reserving, when letting a farm, the right of catching rats, and then transferring the privilege to a servant or London dog-fancier, who would, of course, at once set about annihilating traps, ferrets, and terriers. As it is, gamekeepers not only wage war on the mice-destroying birds, but shoot the terriers, and trap the cats that kill the rats; thus, the balance of nature is, as it were, upset, and vermin increase inordinately.

As for the poor cats, there is strong reason to believe that keepers use drugs, such as valerian, on their domiciliary

visits, to entice them to wander from their legitimate pursuits, into unlawful paths, and thus increase the grinning trophies of the "Gamekeeper's museum" nailed on a barn door. Mr. Buckland, in his amusing *Curiosities of Natural History*, tells of a gamekeeper who purchased distant and domestic cats to swell the evidences of his zeal. As for dogs, a battue-manufacturer in a moment of candour declared that a farmer had no business with any dogs, and that "the shepherd's collie was a useless nuisance," for ever disturbing and attracting his master's eye to the sacred animals which in England occupy the place of the cats and the ibis of the ancient Egyptians, and the bulls of the modern Hindoo.

Under the influence of this religion, we have had magistrates, and clergymen too, convicting and fining a farmer for picking up a hare killed in her form by his horse's foot;* sending a labourer to prison for pocketing a leveret "the size of a rat," which had been first mortally wounded by a companion's scythe while mowing; and the young daughters of a farmer, returning from a social party along the high road, have been first brutally assaulted by gamekeepers, and then fined on the charge of hunting game with the house-dog they had with them for their protection.

And what is the repayment for all the destruction of corn and roots, of man's food and cattle food; all the burdens imposed on farmers, poor-rates and gaol-rates which ought to be called poacher's rates; all this demoralisation of labourers, tempted beyond human endurance by half tame birds and beasts scattered in their path like so many live half-crowns, squeaking "Come sell me! come sell me!"? It ends in some half-dozen blasé gentlemen lazily turning out about mid-day, placed with due regard to rank and precedent by the head keeper at certain favoured spots, at the head of rides, where the game driven up by the beaters and stopped by nets comes up in droves on to "hot corners," and the final sport consists in a boquet of pheasants shot by sportsmen who have nothing to do but blaze away as fast as the loaders can hand them their guns. Which noble result is duly recorded in a paragraph in the *Morning Toast-rack*, relating how the Earl of Wholesale and Retail, Lord Kickupadust, the Honourable Frank Fastman, and three or four other great guns at his lordship's magnificent seat, the Slaughter-House, in the course of the morning killed some two hundred pheasants, a hundred-and-fifty hares, three hundred rabbits, two woodcocks and a water-hen, seriously wounded a jacksnipe and a beater; and, it might be, but is not, added, "half ruined a tenant farmer." Well may the Secretary of the Farmers' Club observe: "What exercise—what skill—what of the excitement or the prowess of a sportsman's life is there in this?" The lad who gets his three shots a penny at the tiny running hare in the famous Home preserve at Cremorne, may be quite as good a marksman; the worthy citizen who sits in his punt under Marlow-bridge, pulling up gudgeons as fast as the boatman can pull them off, enjoys a vast deal more of glowing exertion. And, what is more, the punt-fishing enthusiast does give the silly gudgeons a choice and a chance of his line. To parallel the battue, the fisherman should cast his line in a well-stored basin, or a tub duly filled over-night with hungry roach and dace.

The extent to which the mania for easy shooting, and a complimentary puff in the newspaper, is carried, may be illustrated by the fact that a few seasons ago, a nobleman being about to shoot in an outlying wood in which there

was little or no game, ordered his keeper to put some pheasants in overnight. The poachers did not, on this occasion, get at the secret, as they sometimes do. In the morning came my lord and his party—pretty good shots all of them—and famous sport they had: so good, in fact, that after lunch they wanted to go back to the big wood; but the keeper hesitated, and, when pressed, explained that "it was of no use my lord going there again; they had killed a hundred and eighty and odd pheasants already, and he had only turned down a couple of hundred."

This is the ridiculous side of the question; but there is a lower deep. Pheasants well fed may be kept at home, and it may be presumed that, in many instances, or on great estates, they are not fed on the farmer's produce, or, if so fed, that the tenant gains in rent what he loses in game—though this would be rather strong presumption in a case last season, where, on the property of a noted game-preserving peer in Suffolk, towards the close of an autumn afternoon *three hundred* pheasants were counted round a tenant's barley stack. But then, when the battue is over; when, to paraphrase Dryden,

They are all shot down and vanished hence,

Three days of slaughter at a vast expense,

where do they go? To market generally, to compete with the expensively dairy-fed pork and poultry of the farmer class, who feed their landlords' more sacred animals for nothing. After one of these double-barrelled festivals in Essex last year, pheasants and hares were sold at a *shilling a head*, and rabbits were cheaper than meat or poultry. We know a parish within an easy rail-ride of London, where farmers with lands overrun with game, are obliged, when they want a brace of pheasants or a hare, to send to Leadenhall Market and buy them. And their landlord, who does not shoot himself, hires his shooting out to a stranger:

We have referred to the popularity of the master of the fox-hounds; we mean, of course, the master who takes pains to make himself liked by all classes; who does not forget the farmers in the game season, or the farmers' wives in personal politeness or payment for poultry. But who is hated like a battue game preserver, especially a pheasant-preserving parson? Ask the farmers in Nottinghamshire, say in Sherwood Forest; ask them in Norfolk or in Suffolk; or, if a great landlord doubts, let him try the toast ingeniously proposed by the Secretary of the Farmers' Club, and give at a lively agricultural dinner after the tally-hos have died away, "The truly British sport of battue shooting," and let him, in a neat speech, thank the farmers for having enabled him to kill hundreds upon hundreds of hares and pheasants in a day, "and trust they will still continue to enable him to show sport to his fashionable guests."

The honest truth is, that the battue system is as dishonest, as it is ridiculous; and the sooner public opinion, which is much more powerful than acts of Parliament, washes it clean away, the better for the landlords in a rent-paying, in a popular, a social, and a political sense. Good sport, on the other hand, is consistent with well-paid rents, and the widest and warmest popularity among tenants. What says Squire Shirley, owner of a fine estate, formerly M.P. for a county, a Conservative in politics, and as good a sportsman as ever followed a brace of pointers, or put a horse at a fence, in his evidence before a committee of the House of Commons?

"I am very fond of shooting, but my amusement is shooting with my own dogs, and walking. I never sold any game in my life. I have shot two or three times at battues, and don't like it. In Norfolk, at my brother-in-law's, in a

* This conviction was reversed on appeal to the Commissioners of Inland Revenue.

battle, I remember we were ten guns, and there were three or four guns fired at each bird; each man had his servant behind him, who scored the birds to you or to me, so that at the end of the day there was a list of a vast number more heads of game killed than were in the bag. . . . Before I came into Sussex, I was a game preserver in Warwickshire upon the estate of Lord Digby. I could not afford to spend much upon game preserving, but I had as good shooting as I could wish. And it was preserved entirely by the tenants themselves. I had only one person I

could call a gamekeeper. I was dependent entirely on the farmers for my sport; and they were so hospitable, that my difficulty was, not to get tipsy with their strong ale, and indigestion with the pork pies they brought out to me in the field. They had a right to kill rabbits, and hares by coursing, and I would never shoot a hare so as to interfere with their coursing. They marked for me, and the shepherds and labourers kept all intruders off. In my whole life I never knew such civility and kindness."—FROM DICKENS' "ALL THE YEAR ROUND."

AGRICULTURAL PROGRESS.

SIR,—Much frothy nonsense and delusion has been both spoken and written during the last five years, eulogistic of agricultural progress both in England and Ireland—England soaring high in the world of machinery and puff, puff; Ireland, in the world of blarney and speech, speed. Never having set foot on English soil, we, of course, can form no idea of your agricultural system, nor its extent; all we know being from hearsay and reading your journal. All we have read lately about steam-ploughs, steam this, and steam that, and steam the d—I know what, we had begun to think you were actually turning your mountains (if you have any) and waste lands upside down, and into fertile corn fields; and had almost arrived at the happy conclusion that England had at last awakened to a sense of her state of dependence on foreigners for her bread, and that she had now determined to grow her own corn, and thus be fortified inside as well as outside, and thereby be able to resist all unfriendly intruders, no matter what their cast or colour. The last few weeks, however, of cold, dark, and rather drenching weather, which has cast such gloom around, caused such doubt, and thrown such consternation into all internal affairs, and so unsettled the mind of man, as to unnerve his whole faculties of action, clearly prove that agriculture (notwithstanding the opinions of modern political economists to the contrary) is not only the propelling, but is also the governing power of this great nation.

We who know, and have watched what is called Irish progress, are in no way taken short, and our onward course must have very shortly, if not this very year, brought us to the necessity of adopting the half-holiday system to the Irish stomach, independent of the season, so far as our own bread production is concerned. We have not grown our own bread for the last three years, our importations being higher than our exportations. We go on, oblivious of all changes of circumstances and seasons. No human afflictions, ancient or modern, seem to act as a warning, nor serve to beget our forethought or reflection. We rely, as they say, on Providence for everything, good and bad; when the bad thing comes, it is Providence's will, and of course no use in trying to avoid it. We rely, with the most perfect confidence, in the adage, that when things come to their worst they will right themselves, without our aid; yet here we are, past the middle of the nineteenth century, and our most faithful adage has just as much appearance of being verified as it had one thousand years ago.

The interesting history of Jacob and his progeny, and the wonderful interposition of a Divine Being in having sent Joseph into Egypt as a commissary, we may say, to buy up and store corn, in times of plenty, against future scarcity, either by the effect of seasons or any other unforeseen cir-

cumstance—this direct precept, by a ruling Providence, as to the necessity of forethought, and of being provident, seems to be entirely lost sight of by us of the green isle. Jacob was a greater stockmaster than almost all Ireland put together; had the whole land of Canaan as a run for his herds and flocks; when one district failed he could migrate to another. Still we are told that he and his whole house must have died for the want of corn and bread, except for the stores in Egypt.

Let us come down to the period from 1780 to 1784, known in Scotland as the time of the white Peas, and when the three kingdoms were suffering distress and famine, from the double calamity of *bad seasons* and *war*, which made it hazardous to import corn from the Baltic, and even from England. In 1782 a number of people were lost on the Scotch mountains, between Stirling and Inverness, through their philanthropy, and risking a perilous journey, in search of corn for themselves and neighbours. Again, so bad was the season and harvest of 1799, that oatmeal in the spring of 1800 rose to the enormous price of five shillings per peck (nine pounds) in the Glasgow market.

We ourselves well remember that first season and harvest of our farming trials (1816), and so may our then juvenile fingers, being frostbitten in the month of November, picking the dry sheaves out of the stook, and shaking the snow off others, and turning them to the midday sun to dry. Hunger, distress, and war prices followed in 1817, and stomachs had to put up with half-holiday allowance, and some even less. All classes had to lower sail and take in a reef or two.

Need we mention the direful famine that devastated this country during the years 1845-6-7-8 and 9, the vision of which still bedims our optics, and recalls to mind the charnel houses of death from starvation and fear, we were wont to meet in the provinces on every cross-road, and even on the deep bogs?

Yet with all these events of former ages, and those of modern date, and in our own times, to guide and to warn, we still pursue the old beaten track, stumbling over mountains in search of molehills—sinking in the substance in pursuit of the shadow—and are now less prepared to meet scarcity than we were in 1846. Where, then, is our so much boasted agricultural improvement? We cannot see it; and our opportunities have neither been few nor far between. We know the whole country, from the Giant's Causeway to King-head, and from Ochil-head to Howth-head; and, except an odd place or two in a county, we unhesitatingly say there is no such thing.

If starving human beings, and driving them to every corner of the world in search of employment and food, which they cannot find at home; if the pampering of a few fat

bulls and steam-puffed rams means agricultural improvement, then we are the real Simon Pures. Agricultural improvement! when you can run on a railway for fifteen—aye, and for twenty miles, through the finest soil and country in the world, and not see a ridge of corn, or a man at a day's work, except dressing a sheep, or perhaps mending a gap in our slovenly fences. Agricultural improvement! when the county of Galway has only yet reached 13, Leitrim 13½, Mayo 12, and the fine inland county of Roscommon only 17½ acres per cent. of *all tillage*! Agricultural improvement! when there has not been seen in the Dublin market for the last three months a sample of home-grown wheat, and in many of the provincial markets neither wheat nor oats! We are now living on sour American flour, or doubly fermented foreign wheat, the very dust and smell of which, on delivery at our quays, would suffocate and surfeit a very pig. Such is the indigestible, guts griping, and choleric tendencies of this foreign stuff, and such the necessity and demand for purgatives, that our Dublin Reviewer, some week ago, thought well to counsel his readers as to the advantage of turning some of their otherwise half-barren fields into the growing of medicinal herbs, for the better scouring of her Majesty's liege subjects from the dangerous effects of bad foreign corn and flour. The *Morning Herald*, the other day, in a lengthened and able article on our food prospects, also lamented the extent of mortality in London, and appeared to attribute its height to the state of the atmosphere; but, knowing the complaints here, we fear the same cause exists in London, and which is nothing more nor less than over-fermented and unwholesome foreign corn and flour.

This, then, is what our new-fashioned model farming, blamey, and speechifying have done for Ireland. Now, let us see what the arts, science, and machinery, the Lois-Weedon system, that modern amateur, the *Daily News* (the seer into the dark future, and whose forebodings are too likely to be realized), are doing, and are likely to do for England. We have no authorised statistical data to guide us with regard to fair England. She, however, thought well of knowing what Paddy and Sandy were about; but John Bull's deeds of darkness, it appears, were so dimly black that they could not bear the light of day, and he will insist on carrying on his trade in the dark (but more of this again). We have, however, such data as enable us to see a little behind the scenes, and will for the present serve our purpose.

Like a great many others, we, for a number of years, had our misgivings as to the capability of British soil being sufficient to grow food for the fast increasing population; but, thanks to the statistical system adopted in Ireland and Scotland, that delusion is now completely dissipated. We can not only tell to an acre what these portions of the United Kingdom have been doing, but what they must still do, and the scope they have for additional doing, before they even reach a five-course rotation, on our arable surface.

We have been for a long time poring over and prying into a proper system of agricultural statistics, even before there was any agitation about them. The alarm consequent on this rather cold and wet season caused us to try and discover something of England's position, and we think we have discovered sufficient to account for the tenacity of concealment. England and Wales represent an area of 37,324,915 acres. Now, suppose we allow a-half—18,662,457—for cities, gardens, pleasure grounds and parks,

and which we suppose, from what we have heard of England's surface, will be considered an extravagant allowance.

There is only one-fourth of Ireland under all waste, and three-fourths arable. Two-thirds of Scotland are, we may say, perfectly waste, that is, incapable of being cultivated. Well, then, we have here for England 18,662,457 acres for the purposes of tillage, and nearly equal to the whole of either Ireland or Scotland. But suppose, for the purpose of preventing all cause of difference, we allow twenty per cent. more for farm steadings, gardens, lawns, and old meadows, which perhaps we might be inclined to keep sacred, if we may so speak. Well, still we have a surface of 14,929,967 acres. Will the most absolute Hotspur, Percy, or champions of the green acre, either in England or Ireland, deny or dispute this portion of mother earth being applied to the production of food for men, when we can prove, as clear as that two and two make four, that, under a proper rotation of cropping, it would produce nearly double what it can do now in money, beef, mutton, and bread and butter? Then let us see what the result would be in wheat alone. We shall resolve the 14,929,967 acres into a five-course rotation, as that which we understand is most common in England, and suppose one-fifth under wheat, being 2,935,993 acres, which, at four quarters (or 32 bushels) per acre, would produce, under deduction for seed, 10,834,225 quarters of home-grown wheat, and something over 4¾ bushels to every human being, young and old, on English ground.

Who then would oppose statistics, were they carried no farther than to ascertain this scientific fact of wheat production—the staff of life? But, instead of this happy state of things, what do we find? McCulloch represents the area of English tillage in 1850-4 to be 11,400,000 acres; her production in wheat, under deduction for seed, as 9,642,357 quarters. But no later than same time in this last summer we saw in your journal the area of English tillage, as returned by the Poor Law Commissioners, to be something over 7,000,000 acres only, and which, on a five-course rotation, would only afford, under deduction for seed, 5,075,000 quarters, or 2¼ bushels per head.

Now, these last figures are more like the truth, and are borne out by the English market returns for 1855-6-7. Where then is the much-boasted effects of the arts, science, and machinery? where the hope of those who have nailed their faith to a spinning jenny, and their stomachs to the chemist's crucible. And we would venture to tell this prognosticator of evil, this would-be amateur agriculturist of the *Daily News*, and all such frothy philosophers, that they had better betake themselves to those subjects that they may and can understand, than thus be misleading the public on a subject of such vital importance, by holding out phantoms that never can be realized, and dangerous even if possible of realization.

If, then, the effects of arts, science, and machinery have been to reduce England's tillage during a period of five years 4,000,000 acres, and, as a natural result, her bread by one-half; if Ireland's blamey and speechifying have also, within the same period, reduced her area of tillage by hundreds of thousands of acres, and thus rendered us the victims of famine—we think the sooner such arts, science, and machinery, such blamey and speechifying are numbered amongst the things that were, the better.

Connaught, Sept. 8th.

Yours, &c.,

PLOUGH, PLOUGH.

SHORTHORN SALES "WITHOUT RESERVE."

TO THE EDITOR OF THE MARK LANE EXPRESS.

SIR,—It is high time that public opinion should be brought to bear upon the practice you so properly *denounce* in your paper of this week, of advertising for sale by public auction WITHOUT RESERVE AN ENTIRE HERD of Shorthorn cattle, and *buying in* the best and most attractive animals.

So common has it become for men occupying the position of gentlemen thus to trade upon the public faith in their integrity, that many of the older and more experienced breeders habitually *distrust all statements made at these sales*; and I know several besides myself, who have *firmly resolved never to attend another*.

The proprietor of a Shorthorn herd finds himself incumbered with a large proportion of *inferior* or otherwise unprofitable cattle. With a view to rid himself of these, he offers for sale WITHOUT RESERVE his ENTIRE HERD, comprising, perhaps, animals of well-known merit or fashionable breeding, whose excellences he previously contrives to have duly lauded in proper quarters. The terms of the advertisement being clearly intended to lead the public to suppose that there will be a *BONA FIDE SALE* of every animal in the herd, and in fact amounting to an *express promise and engagement* to that effect, a host of bidders is attracted together. Amongst these is the *usual proportion of foreigners, and young or inexperienced breeders*, whose competition has the desired effect of clearing off the inferior lots at *very satisfactory prices!* The really valuable animals, on the other hand, though ostensibly sold, are in fact *bought in*, and reappear some few weeks or months afterwards, as the property of the *original proprietor*, who, we are given to understand, has repurchased them! The deluded victims of this *mendacious auction* have then the miserable satisfaction of knowing that they have incurred the expense and inconvenience of a long journey to purchase animals which the proprietor had really no intention of selling; and I may add, that it seems to be the general rule to grin and bear it!

The remedy, however, for this disgraceful state of things, is really in their own hands. The term "without reserve" is understood by the law to exclude all interference by the seller, or those employed on his behalf, with the right of the public to have the animal at the highest bidding. Any arrangement, therefore, between the seller and a third party, the result of which is to prevent a *bonâ fide* sale of the animal, will render the sale null and void. Hence, where it can be proved that the animal has been bought in, the last *bonâ fide* bidder can either recover by an action at law all the expenses incident to his attendance at the sale, or, if he chooses, enforce in a court of equity his claim to the animal. Or, where any person has been employed to run up the price of the animal, or prevent it being sold under a fixed sum, the purchaser is clearly not bound

by a contract which he has been led into by the seller's want of faith, and no court of law or equity would enforce it.

If a man is desirous of selling his herd by auction without running the risk of certain animals going below their value, surely his proper course is openly to state that a reasonable reserved bid will be put upon these particular lots. This was done at one of the sales at Farnley (4th March, 1856), when it was announced that a few of the animals would be offered subject to a moderate reserve (from 40 to 80 guineas each), and the announcement did not interfere with the success of the sale. Or, if it be desired to retain a few favourites, why not state that the entire herd will be sold, with the exception of such and such animals, which may be seen on the premises, and which are kept to form the nucleus of a fresh herd? Something like this was the plan adopted by Mr. Bolden, on the 5th of July, when he sold his Waterloo tribe, reserving all the other families of his valuable herd. The prices realized at this sale were something remarkable. "When once a shorthorn breeder, always a shorthorn breeder," seems to be so general a sentiment that the suggestions I have ventured to make would, I am persuaded, have the approval and sympathy of the public, who would bid with none the less spirit from feeling that all was fair and above-board.

In conclusion, I beg to observe that these remarks have been called forth simply by the notorious prevalence of the practice deprecated in your paper of this week, and with no reference to any particular sale, much less to any now on the *tapis*, which indeed I have reason to believe will be far from meriting any animadversions of this kind. The question is one which nearly concerns the whole Shorthorn community, every member of which is bound to raise his voice against any practice which has the appearance of fraud, not only as contrary to the rule of right and justice, but to the interests of their whole body, by destroying confidence, and so deterring bidders at respectable sales, besides lowering our national character in the eyes of foreigners, now liberal purchasers of our Shorthorn cattle. I am, Sir, your obedient servant,

Stackhouse, *Settle*. Sept. 12.

WM. CARR.

[Mr. Dixon has requested the insertion of the following explanation on the result of his sale. His statement does not tend to raise the character of such gatherings, but only goes to confirm the unfair combination, for or against, now too commonly associated with these occasions. Mr. Dixon has given us the name of the offender, hitherto considered an authority in the shorthorn world; but as further proceedings are contemplated, it may for the present be better to withhold this. It must be clearly understood, however, that our columns are open to a full investigation of the case.—ED. M. L. E.]

A malicious report was circulated previous to and during my sale by a pretended friend in this neighbourhood, and which

must have injured me with strangers. It was to the effect that MY PEDIGREES WERE NOT TO BE RELIED UPON. I have been a breeder of shorthorns for nearly fifty years, and I have now more than twenty bulls out in the county. I can with confidence appeal to those parties with whom I have for so long a time done business, and to the public generally, to say whether I am capable of such a gross fraud as has been attributed to me. No man has paid more attention to the pedigrees of his herd than I have done. My object has never been to feed up my stock for show alone; my attention has chiefly been directed to blood and quality, with a view to suit the requirements of the experienced farmers in my own county, who are ambitious enough to improve their stock. How far I have succeeded I might leave the county to judge; but I cannot help indulging in a degree of pardonable pride at the thought that I have done at least as much as any man to improve the breed of shorthorns in my district. The motive which prompted at once so malicious and mischievous a report it is not for me to divine; I leave myself and my traducer entirely in the hands of the public, with a firm conviction that they will do justice to both. I am very much grieved at being obliged to make this public statement; I do not do so, however, without having the most positive evidence of the report having been circulated, and of the quarter from whence it arose.

I remain, sir, yours truly,

Caistor, Sept. 13th, 1860.

JAS. G. DIXON.

To "the man about town" all the amusing detail of the mock-auction will be familiar enough. He knows at a glance the substantial, respectable-looking auctioneer, who turns so methodically to "the next lot." Equally well acquainted is he with the well-dressed "duffer" who carelessly bids another half-crown; or the more business-like decoy, handling the article with a calculating air, and apparently engaged in an argument with himself as to whether it is worth "going on" or not? Able can such an observer estimate "the party" in the trade who regrets that he has already so large a stock when these tea-pots are to be had for "next to nothing." And how keenly can so experienced a customer enjoy the compliment, that on his very entrance is paid to himself! How at once the bidings get brisker and brisker! How the well-to-do auctioneer wakes up in a moment! How longingly the man in the trade eyes the silver broad-basket; and how jealously he scans his neighbour, the thimble-rig swell, who audibly announces his intention to have that at any price! While, all the time, every one of the precious crew has a covert glance on the stranger. He is the actual embodiment of "the excellent opportunity that now occurs." His, with a little judicious by-play, will be "the fearful sacrifice"; and he it is, that the worthy official in the pulpit, is now exerting all his persuasive eloquence to "sell without reserve." But a well-spent life in London saves the intended victim, and ere he has fairly crossed the threshold he has turned again, with a smile of contempt at the shallow wiles of the needy gang. Not for such as he is it that table-spoons are sorted, clocks set going, and China punch-bowls paraded. Rather is it of the country gentleman and jolly yeoman that a market is to be made. Such as these is it who must be lured to bite at bargains, and to take back

to the missis a present, which shall not be worth carriage or lumber room.

"Have a care," then, ye hapless rurals, how ye nod the head or catch the eye, when you come up to town! But, alas! there is no hope for you. Within a few miles of your own homes, in the midst of your own friends and people, you shall find the twigs far more artfully laid to entrap you, than ever they were in Cheapside or the Strand. The man in the trade shall carefully handle the article and run you up. Your dashing facetious friend on the waggon, evidently warmed by the good wine he took with his luncheon, shall have "a shy" at you. The respected owner will quietly ear-wig you that "they must all be cleared off;" and the equally excellent auctioneer more openly assure you that this is a sale without reserve, and that the character of the stock and their breeder requires no eulogium at his hands. And the man in the trade, who looks anxious and eager enough to begin, blurts out his "hear, hear!" The swell, who so relished that bottle of "thirty-four, swears "this is as it should be!" And one of our much-amazed staff opens his book, his mouth, and his eyes, to believe all he sees and rather more than he hears. And then, of course, there is "a running fire"—and a "sharp rally"—and one is "not to be denied"—and another "gets his second wind"—and so forth. Quaint remarks are dropped involuntarily. Curious little bits of excellence are ingeniously illustrated by some established humourist. And everybody leaves with the one common feeling of regret that this magnificent herd is so thoroughly dispersed; coupled with an expression of gratitude for the genuine hospitality of the host, and a similar record of thanks for the straightforward conduct of that amiable individual, the well-known auctioneer.

This is a picture of English life—hearty, open, and honest—yielding readily and gracefully to the pen of a descriptive writer. But proh pudor! it is so only on the surface. The well-advertised "sale of stock without reserve" is in truth NOT without reserve. The worthy owner who declares to you they shall all go, has made his arrangements perfect for keeping back the best of them, and

"Plans your ruin while he grasps your hand."

The man in the trade who so "flashes"—there is no other word for it—his eagerness to buy, is in reality only buying IN. The jolly gentleman warmed up with port wine has known the part he has to play this month since, and is here merely and solely to lead you on. In a word, this genuine sale of Shorthorn stock is a far more discreditable mock auction than ever you encountered in the streets of London. The plot is deeper laid, and the well-dressed duffers are far more dangerous than the pitiful self-proclaimed scoundrels that waylaid you in your ramble round the metropolis. Men of repute and character lend themselves now almost habitually to such a business. An honourable member of the "Royal" or the "Club," who shall be ostensibly your opponent for the roan heifer, is nothing more than "a sweetener," or, to say

it plainly, "a duffer." Gentlemen by position shall in their acts deny their own words, and on the very strength of their good names calmly proceed with a course of chicanery and deceit that ends in little less than downright robbery. Let our reporters, for the future, be rather the cold cynics than the genial philanthropists, and incline to believe nothing they hear, and not half of what they see.

These are hard words, no doubt. But we mean them to be so. For some time past our attention has centred on this abuse, and from all sides we hear how systematically the evil is spreading. Men, we repeat, of the highest characters play habitually into each other's hands. Prices are bolstered up, and "lucky pennies" returned. Sales are settled merely to get **QUIT OF CULLS**; and really good animals only put into the catalogue to make up a show and a draw, and with no more intention of being let go, than the gentleman who is under a bet to sell sovereigns for a shilling each has, to part with the genuine coin he allows you to look at—without it be to a confederate. It is, of course, somewhat difficult to find an opening at an evil of this description, so cautiously is the whole thing generally conducted. But the bubble has burst at last; while the public are already taking up the matter, and "forming" for their own protection. In another column of our journal of to-day will be found a letter from a gentleman—well known to most breeders of shorthorn stock—who speaks out at once, and to the purpose. In the name of the agricultural public we have to thank Mr. Carr, of Staekhouse, for his letter. Let us hearken to what he says in it: "So common has it become for men occupying the position of gentlemen thus to trade upon the public faith in their integrity, that many of the older and more experienced breeders habitually *distrust all statements made at these sales*; and I know several besides myself, who have *firmly resolved never to attend another*. The proprietor of a shorthorn herd finds himself incumbered with a large proportion of *inferior* or otherwise unprofitable cattle. With a view to rid himself of these, he offers for sale **WITHOUT RESERVE** his **ENTIRE HERD**, comprising, perhaps, animals of well-known merit or fashionable breeding, whose excellences he previously contrives to have duly lauded in proper quarters! The terms of the advertisement being clearly intended to lead the public to suppose that there will be a **BONA FIDE SALE** of every animal in the herd, and in fact amounting to an *express promise and engagement* to that effect, a host of bidders is attracted together. Amongst these is *the usual proportion of foreigners, and young or inexperienced breeders*, whose competition has the desired effect of clearing off the inferior lots at *very satisfactory prices*! The really valuable animals, on the other hand, though ostensibly sold, are in fact *bought in*, and reappear some few weeks or months afterwards, as the property of the *original proprietor*, who, we are given to understand, has repurchased them! The deluded victims of this *mendacious auction* have then the miserable satisfaction of knowing that they have incurred the

expense and inconvenience of a long journey to purchase animals which the proprietor had really no intention of selling; and I may add, that it seems to be the general rule to grin and bear it!"

Mr. Carr would seem to speak with the practical emphasis of a sufferer; while it is thus that the corrective is slowly, but surely coming: "The remedy, however, for this disgraceful state of things, is really in their own hands. The term 'without reserve' is understood by the law to exclude all interference by the seller, or those employed on his behalf, with the right of the public to have the animal at the highest bidding. Any arrangement, therefore, between the seller and a third party, the result of which is to prevent a *bonâ fide* sale of the animal, will render the sale null and void. Hence, where it can be proved that the animal has been bought in, the last *bonâ fide* bidder can either recover by an action at law all the expenses incident to his attendance at the sale, or, if he chooses, enforce in a court of equity his claim to the animal. Or, where any person has been employed to run up the price of the animal, or prevent it being sold under a fixed sum, the purchaser is clearly not bound by a contract which he has been led into by the seller's want of faith, and no court of law or equity would enforce it." It is not the law only that we must enforce. There must be some more social and moral cognizance of the crime—after all, perhaps the most effectual preventive. But we must go even further than is here intimated. Men who lend themselves to such schemes must no longer be suffered to occupy the positions they have done. No longer must they sit in judgment upon their fellows. They have their price, however high it may be, and sell themselves as surely as they do the victims Mr. Carr joins with us in defending. It will never do to pool-pool or treat so grave a question as a mere every-day bagatelle. At any rate it must be such no longer; but every offender must be branded so soon as he is discovered. Moreover, men who thus lend themselves and their names to systematically deceive the public, can scarcely be becomingly entrusted with the direction of the public's affairs.

ORMSKIRK AND SOUTHPORT AGRICULTURAL SHOW.

This show was held on Wednesday, Aug. 15, at Southport, in a field adjoining the railway, and was attended by upwards of 7,000 visitors. In the shorthorn classes Mr. Atherton, of Speke, won no less than eleven first prizes, including the medal for the best cow or heifer; while that for the best landlord's bull was adjudged to Sir Thos. Hesketh, Bart. The horses were good, especially some of the stallions; and the poultry were in very great force; Captain Hornby and Messrs. Teebay and Worrall sending especially fine pens. Mr. Dickinson, of Upholland, the late owner of Prince of Prussia, had no stock in the yard, owing to some inadvertence in making the entries. The dinner in the evening was numerously attended, and Sir Thos. Hesketh, president of the society, was in the chair.

THE ECONOMY OF CAKE AND CORN IN FEEDING STOCK.

With the current month the agricultural year closes. The past season has been one of a very exceptional character as to the weather—trying in the extreme both to the animal and vegetable kingdom. A retrospective view of what has been experienced is suggestive of many practical questions. What hath its hardships, for example, taught us? Have we forgotten all about frosted mangolds?—the extremes of winter and spring, with the cold drenching rains of summer? Or have we profited anything by the pinching lessons it has month after month thus unfolded for our instruction? It is a well-authenticated fact that Necessity hath, under similar circumstances, discovered many short cuts in the onward struggle of life. Have we, amidst starving cattle and the other kindred concomitants experienced, learned how to take better care of our root crops, and otherwise economise the food of our cattle?

The current year has been characterized by a searching spirit of inquiry into the economy of food for cattle. All are familiar with the often-quoted agricultural maxim of Dr. Johnson—"To make two blades of grass grow where one only grew before"; and its counterpart, "to make one blade of grass produce as much butcher's meat or daily produce as two did before," is just as important a beacon in the march of progress; and this is just the spirit of inquiry now abroad in the management of cattle. True it is that the eye of the stock-farmer has long been bent in this direction; but the facts sought after have hitherto been more of a commercial and statistical character, than physiological, chemical, and hygienic, and consequently, like all data of the kind, are tolerably devoid of fundamental principles for safe guidance, being merely an illustration of what we and other practical farmers have long been familiar with, viz., that "one farmer's practice can never be another farmer's rule." We are aware that the rejection by practical men of *crack systems* of farming, such as are exemplified at Tiptree Hall, Lois-Weedon, and other places, as a rule, has been branded as a reigning prejudice of the agricultural body; but the progress of physical science is fast showing that practical men have more right on their side than their opponents can boast of, and the triumphant progress of Practice with Science over the theoretical but fallacious deductions of a sort of generalizing amateur experimentalism has been very conspicuous during the past year in the feeding of stock.

Let us investigate this progress by confining our remarks to the economy of "corn cake." We are now purchasing stock for winter feeding, and laying in feeding material of this kind for them, and I shall therefore endeavour to make our observations as practical and applicable to the season as circumstances will permit.

It is an old saying amongst farmers, that "we cannot turn our cake and corn all into mutton, and also all into manure." And again, "If we pass off our cake and corn in foul wind behind, there will be little left for the scales, and less for the land." Our readers will experience no difficulty in the satisfactory solution of these two old maxims and their application to what follows.

The large quantities of beans, peas, and cake given to cattle some time ago were really incredible, and the waste of feeding material truly enormous. We confess that we

are here speaking of our own experience in the getting of first-prize stock ready for annual exhibition, hiring, and sale; and the practice followed by ourselves was but too common. We also look back with "burning shame," if we may so express ourselves, to the extra quantity of turnips (including roots of every kind) given to cattle, and the prodigal waste of feeding material thereby sustained.

The consoling *solatium* to all this extravagance was found in the manure; but, although as familiar to the ear as "Household words," the doctrine involved was never accepted by ourselves and a large body of practical men in any other light than an unsatisfactory make-shift—the putting of the practical man's candle, as it were, under the scientific man's bushel. From time immemorial "he who makes the most money of his butcher has always been the thriving farmer," and we aver that this will continue to be the case to the end of the chapter; for to convert our corn and cake into manure in order to grow more corn and cake to be converted into manure, has always been experienced a sort of profitless philosophy in the dark.

"Turn the penny" is now our maxim, and not turn the manure as before; to convert our corn, cake, and root crops into twice the quantity of butcher-meat and daily produce we have hitherto done, and to grow double the weight of our present crops by means of the steam-plough and improved artificial manures. Such is now our go-ahead ambition, that we aim not only at an increase of quantity from a given amount of feeding material, but also at an improvement in the quality by means of the same philosophical data; the economy of the raw material thus effecting an increase in the quantity and quality of the manufactured article, with a corresponding advance in the price realized for it when sent to market.

The whole secret of success in feeding on less food than hitherto, lies in going right a-head, guided by the infallible laws of Nature, instead of going round-about by our neighbour's homesteads for a helping hand to lead us like children, lest we should lose ourselves among the "thorns and thistles" of this world. Farmers were never very fond of this, and the longer we know them the less they like it. If others make more money than we do, we are now beginning to get discontented with anything less than the reason, the infallible laws of physical science just mentioned, why they do so?

An example or two will best illustrate the above, and the first we shall take is from Mr. Tanner's prize essay in the *Bath Journal*, "On the comparative value of different kinds of food;" and we may premise that the quotation is made for the three-fold purpose of showing the spirit of inquiry now abroad, the facts adduced relative to the economy of cake and corn, and the unsatisfactory character of the quotation, its being out of date, and therefore worse than useless to the practical farmer, who is master of his own profession.

"By a very careful examination of numerous similar experiments upon food, the following table has been prepared. These data are the results of actual trials of food, and are not merely speculative estimates of what they are calculated to produce, but reliable reports of what they usually accomplish:

	Increase, Live weight, produced	1 lb.
150 lbs. Swedes consumed in the field		
100 lbs. swedes fed in field, with a shed to run under	.. .. "	1 lb.
12 lbs. clover hay	.. .. "	1 lb.
8 lbs. beans	.. .. "	1 lb.
8 lbs. peas	.. .. "	1 lb.
7 lbs. oats	.. .. "	1 lb.
6 lbs. barley	.. .. "	1 lb.
5 or 6 lbs. linseed cake	.. .. "	1 lb.
1½ lbs. linseed cake and peas in equal proportion	.. .. "	1 lb."

Now, this table, with the conclusions at which the writer arrives, points in a very conspicuous manner to a principle now very keenly canvassed relative to the economy of corn and cake by the proper mixture of foods, for here we have 1½ lbs. of "half-and-half" producing as much live weight as nearly twice the quantity of corn when given alone. The impropriety, therefore, of giving corn or cake alone is manifest.

But who would ever think of giving any of the above articles alone to stock—cake or corn more especially? And although we have often given cake and peas mixed in equal weights to sheep and oxen, we never gave the mixture alone, or would be so foolish as to do so. What, then, we should like to know, is the use of the table, seeing it is not applicable to our present practice, or to any practice worthy of commendation?

The next example we shall quote is from Mr. Frere's paper "On the Feeding of Stock," in the *Journal of the Royal Agricultural Society*.

"Per day—6lbs. of linseed.
6lbs. of meal (half bean and half wheat).
6lbs. of hay.
6lbs. of locust beans.
8½lbs. of swedes."

"It will be observed," (adds Mr. Frere to the above daily allowance), "that here the albuminous substances are diminished, and the fat-producing food increased. The locust beans are in their proper place, when from long feeding the animal is getting dainty; their want of nitrogen being unimportant for the last stage of fattening."

Putting the above two examples together, they may be taken as an illustration of the means now being adopted to economise corn and cake; and the questions which they naturally suggest to us, as a practical reader—questions which have during the past season engaged the minds of many other landowners and agriculturists with whom we are now in correspondence on the subject—are as follows:

1. What is the most profitable combination of cake and corn with the other feeding materials now used?
2. How is the success or economy of combination accounted for, in physical science? Are the commonly received notions on the subject correct?
3. Why cannot we form flesh with flesh-forming food, such as beans, peas, and cake? and how are farmers to produce plenty of finely-flavoured corn, beef, and mutton—the "rich venison-flavoured meat" of the olden time?
4. How are we to account for the addition of peas enabling the animal to manufacture more fat with less fat-forming material? How is the anomaly that exists here between the last two articles—6lbs. of linseed cake and 4½ lbs. of the half-and-half—to be reconciled?
5. If 6lbs. of barley yield as much live weight as 8lbs. of beans or peas; and if we can rear and fatten animals on the data here laid down for our guidance, then we establish the rule—that the less the proportion of flesh-forming matter the

greater the quantity of flesh! How are we to reconcile this anomaly?

6. If we can reconcile questions 1 and 5, how then can we reconcile Mr. Frere's practice, and the somewhat hasty conclusions at which he has arrived, relative to his cattle when they begin to get "dainty"?

7. How are we to account for the increase of superior milk yielded by milch cows under Horsfall's and other systems of feeding dry stock?

To the first of these questions, no one acquainted with the little progress yet made in this department of physical science will expect a definite answer. Every link in the chain of progress here is a discovery, and the discoveries made during the past season in the economy of cake and corn, including linseed-cake, beans, peas, and Indian corn, all the grinding of them into meal along with other substances, as carob-beans, ginger, gentian, anise, &c., in such a manner as to preserve the flavouring principles of the compound in their normal state; the quantity of cake and corn in other respects depending upon the animal to which it is given, as subsequently shown under the 7th question.

The second question is of a twofold character, and to both divisions of it a separate reply will be necessary.

To the first, "A more perfect system of assimilation, with consequently a less waste of feeding material for the dung-hill, and a less daily waste upon the body," is the obvious reply.

As to the second, there cannot be a doubt that many fallacious dogmas are now being propagated relative to the nutritive value of feeding materials. There is perhaps nothing more objectionable than the many perplexing columns of figures now being strung together for the guidance of practical farmers. "Arithmetical farming at the fireside" has never been popular among them. We ourselves have weighed crops and cattle, food and manure, but could never find the figures of one year any use to the practice of the following one. Every year calls for the exercise of judgment specifically its own; and the practical man's best rule is at his banker's—a secret that for many reasons he keeps to himself.

The questions which are now engaging attention under this head are partly chemical and partly physiological. At present no one can say what are the proximate principles best adapted for feeding this or that animal; while physiologists are discussing the question of the daily waste of the body, that enters the circulation, being reconverted into the living organism. Again, in estimating the proximate principles of the excrements, who can tell what is due to the food and what to the waste of the body, and what to good or bad management? Practical farmers have got all these practical data to take into consideration, and they who pay no attention to them must stumble and fall.

The third question involves the healthy development of muscle, which cannot be effected without proper exercise, let the food be the best that can be given. Exercise, we repeat, is essential to the growth of muscle. In the absence of exercise muscles become atrophied. These are facts so universally admitted, that none can plead ignorance of them, and we have found them just as necessary to be attended to in the feeding of prize stock as they have from time immemorial been found necessary to be attended to in feeding athletes and others for their respective feats that require great muscular development. The conclusion therefore which we append to this is, that more exercise is necessary to the proper development of muscle than is generally received under the forcing system of in-door feeding, or extra quantities of unwholesome food, which has a tendency to make cattle dull and inactive.

The revival of the old question, "*Rich venison-flavoured meat*," is rather an interesting one. Considering the prominent place it occupied about the commencement of the present century, it is rather surprising that it should have lain so long asleep. In Lawrence's *New Farmer's Calendar* special attention is drawn to the controversy that existed on the breaking up of our downs and sheep walks, and the consequent loss that would be sustained under the improved system of in-door feeding on artificial food; "Epicurean reasoners," as he termed them, prophesying what we now generally experience, "the loss of the fine venison flavour of the Down mutton." To obviate so great a loss, Lawrence proposes the cultivation of those plants of which cattle were thus deprived, while the writers of the "*Complete Body of Agriculture*," even propose the cultivation of anise; and Sollysell, Gibson, and others, who wrote long prior to this, advocated the same doctrine. To avoid repetition, our remarks on flesh-forming food, as beans and peas, are reserved for the seventh or last question.

The fourth question is not very easily reconciled with any common sense view of feeding stock—the food being half-cake half-peas, as in the above table; hay, straw, turnips, carrots, or some other food being generally given at the same time, either along with the mixture of corn and cake, or else before or after it. Digestion does not commence in the first stomach of a ruminant animal, and if mixed with other food during rumination, then the proportion of half-cake half-peas ceases to exist; but if we can suppose any farmer so foolish as to feed his stock exclusively first upon peas, then upon cake, and next upon half-and-half, then we have some difficulty in giving credit to the veracity of the results in the table, more especially as to cake; for, although a small quantity might prove alimentary, we are afraid that to the generality of animals a large quantity would prove cathartic; at least, it belongs to that class of articles whose action is such: so that any other food added to half the quantity of cake would be beneficial. Again, from the large quantity of extractive matter which beans and peas possess, it is difficult, in the present state of knowledge, to say what effects it may produce when mixed with the fat-forming elements of the cake, or what anti-septic action it may exercise when taken into the system, as a reduction of 1 lb. of daily waste would be equivalent to 1 lb. increase of live weight. These are all practical questions that must be taken into consideration by farmers in estimating the comparative value of feeding materials; and they are practical questions, too, which are at present engaging a very lively interest in the minds of all who are called upon professionally to investigate this department of science.

The last three questions (5, 6, and 7) may be disposed of together. There is a wide difference between different

animals in the consumption of nitrogenous food; a draught animal requiring more than an idle one—a growing animal than one that has arrived at maturity—a nervously ill-tempered animal than a peacefully disposed one. Exercise, we have seen, is essential to the growth and healthy development of muscle; so that it may not inaptly be said that the manufacture of muscle is more a matter of skilful management than of chemistry. If an animal is confined, *without exercise and light*, on large quantities of oilcake, and other food having a tendency to produce obesity, the nitrogenous matter of the food will not only go to the dunghill, but the live muscle itself will become atrophied, so that no small portion of it also goes to the land, instead of to the butcher. The increase of weight in such cases is not lean meat and rich venison-flavoured juices, but bad fat and a sort of foul water. The difference between the two is as easily known at our bankers' as at our dinner-tables. The Mohammedans in their harems fatten their women, some on "fine flour and honey," others on rice and a sort of currie-powder, in the short space of three weeks "plump and round." So Pereira, in his work on "*Food and Diet*," informs us; but he at the same time calls the increase of weight thus formed "*disease*"—"obesity." Analogous to this is the increase of weight in cattle, in too many cases, under the forcing system. But in every case where the practical man of experience and skill handles his ox or sheep, he has no difficulty in arriving at a satisfactory conclusion as to why barley-meal or Mr. Frere's compound allowance returns a greater increase of live weight than more nitrogenous food, and why the latter makes richer manure.

Again, in the olden time, growing muscle had more exercise, along with those plants that give to meat its rich flavour; while, as Sir Humphrey Davy observes, all the grasses of our best fattening pastures so greedily preferred by cattle, oxen, and sheep, "*have a sub-acid taste*." In other words, they contain those proximate principles required by the digestive functions for the manufacture of flesh-forming matter into flesh, and without which the work cannot be done. Hence the rationale of Arthur Young's success in the feeding of his pigs on steeped beans, &c.; the lactic acid thus formed aiding digestion. Hence, also, the large quantities of nitrogenous and other qualities of food required to produce rich milk, that is now used in some of our large London dairies; and also according to Horsfall's system. A milk cow has got a way for disposing of rich nitrogenous and oleaginous food, such as corn and cake, if along with these she gets the means of doing so; but this would require an article by itself, and therefore we may return to it with a little more time and space; X.

TRIAL OF REAPING MACHINES.

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

Sept. 4.—The following is a copy of the award of the judges of reaping machines at the late trial at Canterbury, which was deferred until after the meeting in July.

“September 4, 1860.

“We, the undersigned, award the prize No. 26, given by the Local Committee of the Royal Agricultural Society's Show at Canterbury, to Article 792, exhibited by Robert Cuthbert

& Co., Bedale, Yorkshire, as the best reaper. At the same time we consider the reaper exhibited by Burgess & Key worthy of high commendation. (Signed)

“P. S. PUNNETT,
“THOS. ABBOTT,
“FRED. MURTON,

“THOS. RAMELL,
“H. P. AUSTIN.”

YORKSHIRE AGRICULTURAL SOCIETY.

The adjourned trial of reaping machines was held at Darlington, on September 10. At the show six weeks ago, the

backward condition of the crops, consequent upon the unfavourable state of the weather, rendered adjournment of the trial of reapers not only desirable, but absolutely necessary. A tolerable number of implements were entered for trial, and the satisfactory and all but perfect manner in which they performed the work allotted them, proves incontestably that this branch of mechanical science is destined ultimately to prove a decided success. The ground selected for the trial consisted of two large fields, forming a portion of Mr. Thos. Taylor's farm, at Darrington, on the estate of the Right Honourable T. Southern Estcourt, M.P. The field in which the trials were first conducted, consisted of twenty acres of fine wheat, rather beaten down; and this latter fact, coupled with the undulations abounding on the ground, rendered the contest a most severe one. Indeed so trying was the task, that though all the implements worked admirably in ascending the slope, the wheat laying towards them; yet in descending, and consequently cutting in the direction in which the crop was laid, the result, in many instances, was not unexceptionable. Among these we are compelled to class Messrs. Burgess and Key's, and Messrs. Wood's American reapers, which, notwithstanding the enviable reputation they have acquired, failed to convince the judges, Messrs. Morton and Wells, of their superiority over all others on the ground. In our opinion they certainly worked well, Burgess and Key's in particular, but their comparative expensiveness forms a serious objection to their general adoption. We also believe that the judges took this point into their consideration in giving the awards, and shaped their conclusions accordingly. Shortly after twelve o'clock the trial commenced, and the following machines took part in the contest: The Cuthbert reaping-machine, manufactured by R. Cuthbert and Co., Bedale, Yorkshire—this implement is an improvement upon what is generally known as Hussey's reaper; Beckwith's reaper, manufactured by Beckwith, of Ripon—the most prominent characteristics in this machine are simplicity of structure, ease and efficiency in working, and cheapness of price; Burgess and Key's reaper, manufactured by this well-known firm, at their establishment, Brentwood, Essex. A very compact and freely-working implement was exhibited by W. Coates, of Millenham, which created a deal of interest, from the very clean and efficient style in which it performed its work. Wood's combined reaper and mowing machine—the well-known merits of this implement sustained a little drawback in this trial, in consequence of some untoward circumstance. The rest of the machines were by J. W. Wray, which worked in capital style; Dray and Co., which has a back delivery, and works very smoothly and freely; Hengh, of Bedale, York, which would compare with the best on the ground, were it not for a liability to choke; and A. C. Bamlett, of Ripon. The last machine we did not see in operation, and therefore cannot speak of its merits or defects. After the competition in the wheat field, the judges desired to have a still further test among a splendid crop of barley; this was accordingly carried out, after which they gave their award in the following order:—

First prize, Cuthbert's machine.

Second, Beckwith's.

Highly commended, Messrs. Burgess and Key's.

Commended, Coates'.

Mr. Morton, who responded for the judges at the dinner, defined the principle upon which the award was made, as giving a preference to machines that proved themselves capable of working under all circumstances.

IMPLEMENT MAKERS AND IMPLEMENT PRIZES.—One of the imperfections necessarily incident to a

competitive trial of implements and machinery, is that results may be obtained superior to those to be derived from similar machines when in use on the farm. That machines shown may be adapted rather for such temporary and limited trials than for sheer hard work, is also to be anticipated. Such things seem to be necessary and inevitable to the prize system. All that can be tested in short periods is the principle. This is one of the imperfections of prize giving, and we do not see how any other tests than the mechanical one in use by the Royal Agricultural Society can be applied. Thus the amount of steam generated from a given quantity of coal, or of power consumed as indicated by the dynamometer, would seem to be the best, if not the only test, which can be applied to steam-engines at an agricultural meeting. It is possible that great excellence on these points may be attained for a short exhibition, at the sacrifice of more substantial merits, such as safety, durability, or simplicity, for the purposes of a real working engine; but how is that to be avoided? We have read with attention a paper in "Newton's Journal of Arts," which professes to set forth the reasons of the principal agricultural implement manufacturers who have for the present withdrawn from exhibiting at the Royal Agricultural Society's yearly show. They are thus summarised: "1. That the Society has broken faith with the exhibitors, in departing from the quadrennial system of trials mutually agreed upon. 2. That the prize sheets are so indefinitely worded that makers are in the dark as to the kinds of machines the Society desires to encourage. 3. That the trials are unsatisfactory and the awards capricious; inasmuch as the time devoted to the trials is necessarily very limited, and no fixed principles of judging are laid down for the guidance of the judges. 4. That the exhibitors have no power to object to their appointment of the judges, whether on the ground of incompetency, or their business relations, or to the choice of the consulting engineer, who stands in the position of umpire. 5. That the reports of the trials are meagre, inaccurate, and incomplete, and published so long after the show as to be of little service either to the public or to the trade. 6. That the expenses of exhibiting and competing for prizes have increased so greatly, that the business resulting from attendance at the Royal Agricultural Show is not commensurate with the outlay." Now, most of these are sufficiently vague and not very explanatory, but from other portions of the paper we are inclined to suspect that these great firms, who have derived no small portion of their greatness from successful competition and constant exhibition at the society's shows, feeling strong on their legs, wish to discountenance all further competition, save the ordinary and natural competition of trade. This is quite intelligible, and is perhaps in the main a sound view of the subject, but still it can scarcely be expected that the council of the society, which has been to some extent at least the ladder by which these firms have mounted to eminence, should be content to be thus quietly kicked down. Thus it is said "it is no secret to those who have mixed much with inventors and makers of agricultural implements, that for years they have expressed discontent at the frequently recurring contests, in which they are expected, like prize-fighters, to be always ready to jeopardize their hard-earned reputations by entering into competition with all comers. The mental labour and anxiety attendant on the efforts which firms of repute felt it necessary to make, to retain their position, not merely as manufacturers of the best implements in their several specialties, but also of those which could win prizes, superadded to the ordinary cares of a large manufactory, were found to be so

wearing, to say nothing of the personal attendance at the shows, and consequent absence from their works thereby occasioned," that a deputation of manufacturers in 1855 brought this matter under the consideration of the Society's Council. Then it was arranged that implements and machines should be arranged in classes, and competition in each class only take place once in three or four years. Now it seems what the manufacturers ask for is "that trials of agricultural machinery should be of longer continuance than heretofore, and conducted as much as possible in the manner and under the same circumstances that such machinery will be used in the ordinary practice of farming." This may look plausible enough, but how can trials at an agricultural show be so conducted? At the same time the Council of the Society, undertaking to offer prizes, should,

so far as they reasonably can, meet the views of the manufacturers. Perhaps it may be found the prizes have done all they can for steam-engines, as applied to thrashing and analogous purposes, and that there is really no use in offering such prizes any longer. These engines may have become so generally known and used, that further improvements in them had best be left to the competition of makers and the discrimination of their customers. These and other questions may usefully engage the Council's deliberations. By some means or other, the agricultural public ought to have the opportunity of inspecting at the Society's show the machinery of the great firms who object to the arrangements which until lately have been supposed to be entirely successful.—Economist.

ON THE INFLUENCE OF THE QUALITY OF GRAIN ON THE PRODUCTION OF THE CROPS.

[TRANSLATED FROM THE "JOURNAL D'AGRICULTURE PRATIQUE."]

Seeds which have not acquired their full development, and all the qualities of the species they represent, generally yield but weak products. There may be exceptions, but the facts which I shall cite appear very conclusive.

Seeds that are incomplete for want of maturity cannot produce complete types. Do we not find similar results in animals that are too young or too old? A bull, a cow, a horse, whose members are incompletely formed cannot impart what it does not possess. A decrepid animal, too—can it impart what it has lost? I think not. Dogs of a breed whose tails have been cut for many generations are born without tails. I have had pigs in a similar condition. Cows without horns produce similar calves.

In gardening, we obtain plants deprived of certain organs; others which have them in abundance, and which end in producing varieties. Thus eschalottes which have been too long sown near onions, yield no longer any seed, and become useless. For the same reason, some varieties of potatoes have ceased flowering, because we take them up for a long time before the period of flowering. Seed taken from flax and hemp of great height, but not having acquired their full maturity, yield very small products; and if we continue to harvest it before it is fully ripe, the plants will go on diminishing in vigour and height to such an extent, that after some years our flax and hemp seeds will be transformed into dwarf species.

Colza, of the large kind, which we harvest before its complete maturity, in order to avoid losing the seed, diminish in height after a few years. If afterwards we allow these degenerated species to attain maturity, we shall restore their size by degrees, until they reach the point from which they had declined. We may therefore diminish or increase in size the breeds of animals and species of plants, by employing for reproduction, individuals that have acquired all these qualities, and are capable of transmitting them; or else, by taking others imperfect, and unable to impart what they do not possess.

Twelve or fifteen years ago, trefoil sown in one of my fields, after presenting in autumn the finest appearance, disappeared in the spring. The leaves shrivelled up, the stalks did not rise, the major part of the plants dried, and were

attacked with a species of decay. I attributed this disease at first to the state of the soils then to the temperature; in short, to three or four other causes more or less likely; but the bad quality of the seed did not occur to my mind.

Some years later I harvested, before its full maturity, some rye that I had sown for forage, and which, not being able to consume it in proper time, was kept to make bands. It was cut while yet green; but the grain, in appearance ripe, had probably not acquired that degree of perfection indispensable for reproducing its species. I sowed this rye in order to obtain forage in the spring. It came up well, and exhibited a good vegetation at first; then the foliage became yellow and wasted, and the soil became so denuded, that I found it necessary to plough it up to replace it with another crop. Many causes were alleged for it, but the true one remained still unknown. Last year, however, in a field of three hectares, which had borne a fine crop of beetroot, I sowed in April barley and clover. In two-thirds of the field I sowed cloverseed of middling quality that had been taken from very vigorous plants but the heads had not ripened in a uniform manner. In the other part, I sowed seed perfectly ripe, and of the best quality.

At the time of harvest, after having cleared the field of cereal crops, the clover was fine throughout, and the field presented a uniform aspect. As the clover was high enough to be mown, it was cut for forage in October, and it maintained its fine appearance until December. Towards that time many of the stools of the clover in that part where we had sown the bad seed dried up; then others; and at last, in the spring there remained of them only a few tufts, here and there; the rest had either died out or were so poor, that we could no longer reckon upon them: they seemed to have been pierced by insects. Those stools, proceeding probably from the refuse seeds, still subsisted, and yielded a middling crop, being few in number; the second cutting was rather better, but still it was meagre. In that part in which the good seed was sown I retained a good crop of forage, cut green, and the second cutting was very fine, very thick, and seemed of a different species.

In view of this fact, I recollected my first pasture of trefoil and rye, and of some sowings of wheat, which had the same

result. When farmers come to me for seed of my large beetroots, in order to have them of the same size on their farms, I say to them, "Dung well and plough deep, and you will have them as fine with any other seed." In the meanwhile, I have often been assured by them that they have sown my seed, and others less ripe, and the beetroot proceeding from them appeared not to be of the same species.

I will not go so far as to say that everything depends upon the seed; for a good seed committed to a bad soil, or one

badly prepared, will assuredly yield a bad crop; whilst seed of an ordinary quality will sometimes succeed in a good soil. But I am satisfied, from observations which I have had the opportunity of making during an extended practice, that the choice of seed is very important, and that we cannot make too great sacrifices to obtain seeds well harvested, and that have arrived at their full maturity.

J. BODIN,

Director of the Agricultural School
of Rennes (Ille-et-Vilaine).

THE TRADE IN AGRICULTURAL IMPLEMENTS.

If we occasionally take a hint from, or adopt a transatlantic or colonial mechanical improvement, we still keep up our reputation and credit for agricultural machinery and mill-work, and carry on a large and profitable trade in supplying foreign and colonial orders. Wherever scientific agriculture is pursued, there the best class of implements is speedily in request for tilling the ground and harvesting the crops. Although labour-saving machines are less in demand here, for many ordinary purposes, than they are in the United States and in Australia, where wages are high, and labourers saucy and independent, still we give fair and frequent trials to steam ploughs, reaping machines, drills, and every contrivance or implement that bids fair to improve existing processes of tillage or cheapen production. The ingenuity and skill of the mechanic and the engineer have done much to improve our implements, and the implement-makers of Great Britain may certainly take rank as the first in the world for quality and performance of their implements, much as our American brethren plume themselves on their inventions and handiworks. Their manufacture in this country has been taken up as a separate and very important trade, and many individuals have gone largely into this business, which employs a great amount of capital and skilled hands. Only those, however, who study the parliamentary returns can form any estimate of the increasing value of the exports of agricultural implements, machinery, and mill work, carts, and waggons, as well as saddlery and harness, &c. And this increase is not only a proof of the quality and estimation in which British manufactures are held, but is also an evidence of the progress of scientific agriculture in distant quarters.

Farmers are no longer content with the rough-and-ready implements which were formerly turned out to do duty on the soil. English-made ploughs and harrows, horse hoes and drills, carts and thrashing machines are found to do their work better, and to be more durable, than anything of native manufacture could be, and therefore it pays better to import them, even at an enhanced price. Even such an article as mill-grease, to the extent of 70,000 or 80,000 cwt. a year, must be had from England.

The declared value of the agricultural implements sent out from this country annually averages now about £190,000, of which the great bulk (£100,000) goes to our own colonies. Upwards of 1,000 carts and wag-

gons are also sent away, valued at £20,000. The mill-work and machinery exported averages nearly £2,800,000, of which about one-fourth is ordered by India and the colonies. The mill-work and machinery shipped have doubled in value in the past five years, exclusive of steam-engines, many of which are ordered for agricultural use, and especially for sugar estates, saw-mills, &c.

The detailed return of exports for 1859 is not yet published; but referring to 1858, we find that of the foreign countries Russia took the largest amount of agricultural implements, £22,966 in value; Brazil next, £12,200; Hanover stands for £9,129, the United States £6,027; France, Germany, Prussia, and a few other Continental States for a few thousand each. Of the British colonies Australia took nearly £79,000 worth, and the Cape £12,000. Russia takes the largest amount of our machinery (and mill-work) including steam-engines; the shipments in 1858 were to the amount of £564,115. France stands second in the list for £229,546, Hamburgh £171,221, Belgium £127,456, Spain £110,000, Brazil £83,461, and various other countries for sums below these. Of our foreign possessions India takes the largest amount, £251,388; Australia stands second, £120,000; and our West India colonies and Demerara third, for £76,852.

Widely as improved agricultural implements are now employed, we should like to see them in more extensive use in such countries as India, China, Turkey, Brazil, and other quarters. The better the soil is tilled and the crops gathered, the greater the advantage to the producer and the consumer.

The wildness of the forest is subdued by implements of iron; the axe and the spade are the pioneers of cultivation, and the portable steam-engine, the improved plough, horse-hoe, and drill follow in their train. A large and important department of manufacturing skill is that which is devoted to agricultural implements and machines, to those mechanical aids by which the produce of the soil is developed. Count Gasparin, in his *Cours d'Agriculture*, presents an analysis and classification of agricultural implements, according to the nature of the operations which they are destined to perform. Descriptive works and treatises on the subject of different implements have been published from time to time. The aggregate value of this manufacturing industry, we have, however, not seen estimated with

any precision. The quantity of implements in use, and the wear and tear on them, must be large. Mr. McQueen, in 1835, drawing his deductions from the report of the Agricultural Committee of 1833, calculated the dead stock, chiefly implements, carts, machinery, &c., at £162 for a farm of 100 acres, and the wear-and-tear thereon at £44 per annum. Mr. Braithwaite Poole, in his Statistics of British Commerce for 1850, stated the quantity of agricultural implements

conveyed through the kingdom yearly, at 1,450 tons, worth £72,500. But this is necessarily a very vague and insufficient estimate, and applies only to those sent by railway. Still, adding this to the value of the implements and carts and machinery exported, it gives a total value of upwards of £3,000,000. Of carts and waggons there are said to be upwards of 300,000 in use in Great Britain and Ireland, which at an average value of £15 each, represent a stock of £4,500,000 in the country.

THE LEADING FEATURES OF THE IMPLEMENT DEPARTMENT OF THE CANTERBURY SHOW.

The show-yard of the Royal Agricultural Society, which has so recently concluded its meeting at Canterbury, although presenting perhaps in a less degree than usual, new phases of mechanical novelty, was more than ordinarily suggestive of practical deductions. What we shall be spared then, in the noticing of novelties, we shall have to give in another, and let us hope a not less useful direction. Nor is this comparative absence of implemental novelty to be much regretted; for in truth, of late years, we have observed, not without regret, a striving after novelty, for novelty's sake apparently, more than from a real desire to make such novelty of practical and easily available utility. However arising, we do not pretend to say; but certainly in some quarters the feeling seemed to exist that it was necessary for their business reputation to bring out something new. This, however, it is necessary to state, was more noticeable amongst a certain class of makers who had not gained the repute and position of the magnates of the trade. To revel in the intricacies of mechanical movements and in the niceties of constructive details, is of comparatively easy attainment; but to reduce the number of movements and machines by which a given amount of work is to be done, is the work of a higher order of mechanical geniuses. Mechanical ingenuity is no real, or rather it is not the *only* test of practical ability. To do the most work with the fewest number of machines, and these of the simplest possible character, is the real work of the agricultural engineer. We are progressing most favourably in this the truly philosophical direction, but, as before said, not seldom have we witnessed attempts to go in the very opposite. In this respect the Canterbury show presented some oddly absurd inventions, to serve at once as an example and a warning, in connection with the point on which we are dilating. Nor are implement makers alone to be blamed for this; for in truth they are often compelled by the existence of a bad system of farming to resort to this wrong position. Some of our machines and implements are but made necessary by the requirements of a bad system of farming; improve this, and you lessen the mechanical aids required. So much truth is there in this, that we go unhesitatingly with those who hold that the higher the degree of culture, the fewer will be the machines needed. All true progress in mechanical improvement tends to simplification. And in no branch is this so much de-

manded as in agriculture. The very processes in which she is so busily engaged, and the material on which she operates demand simplicity of parts, strength of construction, and ease of operation. In hastening the arrival of the time when multiplicity will give way to a few, but these the most effective of implements, engineers and agriculturists have a task to perform. We use the term agriculturists in the widest sense, as including landlords and owners of the soil, as well as those engaged in the practical working of it. The one can mightily help the other. The engineer has, in certain departments, brought matters to that point that, if further progress is desired, he must be aided by those who have extended influence in the country districts, as the large farmers or the landed proprietors whom they can certainly interest, or, to put it in another way, whose "interest" they can certainly move, in the furtherance of those appliances destined to revolutionize agriculture. We refer here more especially to the extension of steam-cultivation.

Although public enthusiasm, or rather, to speak more correctly, the mode of giving public vent to it, has cooled down, steam-cultivation has taken a wide stride ahead since the last meeting of the Society at Warwick. During the twelve months which have intervened, so large an extent of work has been done as to justify all of us who expressed hopefully a good opinion of its capabilities, and that at a time when doing so subjected one to expressions of pity or contempt not the most flattering to one's nous or judgment. "A wet autumn," says an admirable authority on the subject, whom we are glad to quote in support of our own opinions long ago expressed, "may have been disadvantageous to the steam-cultivator, but a dripping summer has given full proof of its superiority to a horse-worked implement; the power to get forward with the tillage has enabled farmers to be hoeing and singling turnips, while their neighbours with the horse system are scarcely able to sow. . . . It is clearly established, by the experience of the past year, that crops on the steam-ploughed land are less dependent than others upon the vicissitudes of the weather. The more deeply-worked soil, untrodden by horses, and tilled in good time, is found to be moist when other land is suffering from drought; the corn is stout and flourishing, while ordinarily-managed crops are flaccid and weak—the difference of produce in favour of steam-tillage being

fairly reckoned as at least eight bushels per acre. . . . In working, it is found that there is not only a saving of cost in each operation as compared with horse-work, but there is a further saving in the number of operations, owing to the greater efficiency of the steam-tillage." This last point, so well put, is corroborative of what we have often stated as almost axiomatic in the science of agricultural mechanism—that the more perfect the culture the less the number of processes and machines required to carry it on. In a series of papers which we contributed some years ago to this Journal, we expressed our belief that, if deep culture and an untrodden soil could be secured, that not only would the crops be more valuable, and the harvest more easily depended upon, but that many of the processes now required—with, of course, the mechanism by which they were carried out—would be entirely superseded. And now steam has proved beyond a doubt that by its aid this deep culture and this untrodden soil can be secured at a practically economical rate, and, where so secured, that the simplification of labour by its means is being already attained.

One immense advantage obtained by the use of steam power for ploughing, over that of horses, is the wider range of its applicability. Thus, while the limit of the draught of horse-power per furrow may be set down at its extremest point at 7 cwt., but in many soils only at 5 cwt., the limit of the draught of the steam-plough per furrow may be set down at from 25 to 35 cwt., according to soil. The horse-power may be applied in any way; but the 7 or the 5 cwt. draught is all that can be possibly obtained. True, with six horses a draught of 10 cwt. may be obtained; but, as it cannot be sustained for any practically working-period, it may be put out of the field of consideration or discussion. With the higher draught of the steam-plough, we have a wide range of working capability; five times as great, in point of fact, as that given by the plough. "This point"—the wide margin available between the 5 or 7 cwt. of the horse and the 25 or 35 cwt. of the steam-plough—is therefore," as we have elsewhere remarked, "of the utmost importance to be remembered in discussing the probabilities of steam ploughing." We may here be permitted to give some statements (from our "Year Book of Agricultural Facts"), founded upon "facts," kindly provided us by Mr. Fowler, which we have reason to know have been highly-estimated by practical men as containing information of a valuable nature in connection with steam-ploughing. We, of course, need scarcely say here, that the facts are deduced from a very wide range of experience in the field-use of Mr. Fowler's system of steam-cultivation. The working draught being placed at 25 cwt. per furrow, and the speed 300 lineal feet per minute—this practice having shown to be the best and most economical working speed—the daily expenses of working the plough are found to be 50s. a-day of ten hours, or 5s. an hour.

Under these conditions, two acres per furrow are ploughed in ten hours, and, as a four-furrow plough is used, eight acres is the extent ploughed per day. This four-furrow plough is worked at a cost of 6s. 3d. per

acre, or, to put it in a form easily remembered, one shilling per cwt. draught per acre. The wire-ropes are provided and maintained at a cost of 1s. 3d. per acre ploughed. For the most economical way in which to work the rope, and for other practical points connected with the subject, we refer the reader to the "Year Book of Agricultural Facts," p. 12.

Able and full reports of the trials of the steam ploughs at Canterbury having been given some time ago in the pages of this Journal, we are here spared the necessity of going further into their details. Without wishing to draw invidious comparisons, we may be permitted, however, to state, that Mr. Fowler's apparatus still showed, or rather maintained, what it has always showed, that business-like capability which has secured its success, and high confidence in it to the agricultural public in its powers. One great secret of Mr. Fowler's success is, that whatever may be his exertions in one season to improve his apparatus, and however much these may be approved of, he does not remain satisfied, but makes as strenuous endeavours at improvement in the next. *Excelsior!* is evidently his motto. At the same time the praise of perseverance must not be withheld from other competitors in the race of fame. Mr. Smith—shall we say the rival and the opponent? nay, rather let us call them, "of steam-culture the brothers two, with somewhat diverse tempers it is true,"—was not present at Canterbury, having, like others, nameless here, seceded from the Society's Shows; so of him and his capitally-working apparatus we have nothing here to say; but Messrs. Chandler and Oliver exhibited and showed, by what they have done and are doing, that they do not leave the gift or grace of perseverance to be cultivated by others alone.

The apparatus of Messrs. Chandler and Oliver has some peculiarities worthy of notice. It is in some respects of somewhat similar aspect to the plough of Mr. Fowler; it is a balanced apparatus like his, but the ploughs at each end of the apparatus are carried in independent frames, one of these frames being placed on one side, and one on the other, of a rocking shaft, placed in the centre of the apparatus. The balancing of these two frames is secured by rods or chains passing to the central shaft from the outer extremities. The inner ends of the frames—that is, those nearest the central shaft—are provided with racks, actuated by pinions, these worked by handles placed outside on the ends of their shafts. By these racks and pinions the frames can be raised from, or lowered to, the ground, the one rising as the other descends. This arrangement ensures a much shorter length of plough carriage or frame than required in Mr. Fowler's apparatus. For in Messrs. Chandler and Oliver's machine the plough can be brought nearer to the centre, while in Mr. Fowler's the ploughs must be set on the beam at such a distance as to enable one set of ploughs to clear the ground when the one end of the carriage is rising, and the other set of ploughs to enter it when the other end of the plough carriage is falling.

Steam cultivation—using this term in preference to that which has a more limited signification—namely,

steam ploughing, for steam has shown itself capable of carrying out a wider variety of cultural operations than ploughing only—has now reached that stage of progress in which its capabilities can be practically estimated. Taken out of the region of speculative mechanism, it has shown itself ready for the widest possible applications, and its further extension rests mainly with the owners and tenants of large properties—more, indeed, with the landlord than with the tenant. For every day's experience proves the absolute necessity of previous preparation of the lands on which the steam cultivating apparatus is to try its power; and much, if not all, of this preparation must be done by the landlord. All authorities without exception, so far as we know of, agree as to the necessity of this preparation. Much as steam has done in the field, it has yet wonders greater far to show us; but more can only be displayed when its operations are carried on in a widely extended scale, and over large tracts of land. The farmer has done his part wonderfully: he cannot, in this matter of steam cultivation at all events, be charged with apathy, and indifference as to its practical extension. He has been the first to hail with pleasure its advent—the first to avail himself of its aid; and the marvellously short time which it has taken to make steam culture an accomplished fact is greatly owing to the enlightened and liberal view which the farmer has taken of the whole subject. Indeed, it seems but yesterday when we, in common with others with abler pens, and possessed of greater knowledge, were explaining as a new thing, almost speculative in all its details, and drawing, through the medium of the press, the attention of farmers to the subject; when, behold its value is everywhere admitted, and its use in the field widely extended. Usually is it the case that new things have to withstand a large amount of prejudiced contempt, and then are to be advocated for a long time ere they become extended. But steam cultivation has in great measure been an exception to this rule; practical men have actually out-stripped theorists in the matter; and enthusiasts, usually chargeable with over-exaggeration in their estimate of benefits derivable from any new thing, have in this case been left behind by the generally more sober matter-of-fact men of practice. A striking refutation, all this, of the too-often-reiterated statement that farmers are the slowest of the slow—the first to sneer at, the last to adopt improvements. Not so is it in many departments of agriculture, certainly not so in this one we are now describing. So rapidly, indeed, has the power of steam been accepted as practically available in the field, as it has shown itself to be useful in the farm buildings, that to a great extent in some districts is the occupation of the ploughboy gone. Literally the smoke from many steam-engines hangs in clouds over the green fields along which the steam plough is dragged with a power greater and more steady than that of a dozen horses. Already has the day-dream of the enthusiast on steam culture in part been realized; for “o'er the lea” on which the “ploughman homeward plods his weary way” is heard the scream of the steam whistle, and is seen the wave of the signal flag. A revolution in culture has been fairly

and fully inaugurated. Anticipating future from its past triumphs, we see in imagination the steam-engine—pioneer of true progress—placing itself amid, and rapidly bringing tracts of the dreariest deserts into smiling fields, rich with the fairest of fertility, changing wide expanses of shifting sea-sand, over which the storm winds career, or the gentle breezes blow, into “fresh fields, and pastures new.” From level plain to undulating hill-slopes, we see it gradually extending its triumphs, till along the mountain sides, now yielding scanty herbage for a few scattered flocks, or places over which the goats scramble, will be seen wide expanses—gladdening the heart and refreshing the eye—of the waving corn, the greenest of pastures, or the richest of meadows.

“Blessings on Science and her handmaid *Steam!*
They make Utopia only half a dream,
And show the fervour of capacious souls,
Who watch the ball of progress as it rolls:
That all as yet completed, as begun,
Is but the dawning that precedes the sun.”

R. S. B.

MANCHESTER AND LIVERPOOL AGRICULTURAL SOCIETY.

The Meeting was held at Bolton, on Wednesday and Thursday, Sept. 12 and 13, under very improved management to that which characterized the conduct of the Liverpool Show of last autumn. As usual, however, the prize-lists ran into almost endless divisions, and as a consequence but few of the classes were well-filled. It would be utterly impossible to follow out these ramifications; but Mr. Ambley's Prince Talleyrand was the best Shorthorn bull; Mr. Sutcliffe's Alma the Second the first two-year old, and Mr. Jonathan Peel's bull calf the pick of four in the entry. Mr. Atherton was first amongst the cows, as well as the two-year-old heifers, and Mr. Jonathan Peel first and second with the yearlings. Mr. Marshall Heaton sent Blaze, the prize cart stallion; Mr. Ashcroft the best dray horse; and Mr. Dagyer Sir Harry, the superior of the two thorough-bred ones. Mr. Llewellyn Lloyd had the best Southdown; Mr. H. Smith, jun., the prize Shropshire, and Sir R. Gerard the finest Cotswold. The Leicester prize was withheld, and the sheep show altogether indifferent. Mr. Harrison, of Heaton Norris, had the best boars of both a large and a small breed; Mr. Birch, of Selson, the first large sow, and Mr. Wainman as good a small one. There was an almost infinite succession of other classes for tenant-farmers and dealers, with the entries, as in the open ranks, averaging two, three, and four in competition. In fact, the meeting, as we said last year, wants “pulling together,” and its strength combined instead of scattered. The farmers of Lancashire are quite good to facing all England on their own ground; while at present any honours they may take are by the conditions and divisions almost entirely shorn of their due value. Richmond and Chaudler, Ruston and Proctor of Lincoln, Crosskill of Beverley, Ashby of Stamford, Pickley and Sims, and many other county manufacturers contributed to a very good exhibition of implements.

FARMING ECONOMIES.

THE CONSUMPTION OF ROOT CROPS BY LIVE STOCK.

DEAR SIR, — Believing that unprofitable mistakes are commonly committed in this matter, I beg to offer a few remarks that may tend to correct them. The question appears to hinge upon what proportion water should bear to the dry food consumed. Turnips contain 90 to 92 per cent. of water; mangel, 88 per cent.; grass, 75 per cent. If we wish to keep a horse in good condition we give him 20 to 25lbs. of dry food, and 40 to 50lbs. of water daily; but if we feed our sheep or bullocks entirely on turnips, we compel them to take 9lbs. or pints of water with every pound or pint of dry food; or, as a sheep will consume 20lbs. of roots daily, we compel it to take nearly two gallons of water with its 2lbs. of dry food. A bullock consuming 150lbs. of turnips daily would be compelled to take 13½ gallons of water with 15lbs. of dry food. The consequence of this treatment is to tax very unduly the urinary organs, and prevent the accumulation of fat and muscle. This is had enough in mild weather, with a tolerably high temperature: but with such a winter as we have passed through, with turnips at a freezing or very low temperature, let us imagine what an absorption of caloric must be taken from the stomach and system of the sheep which has to raise to the digestive temperature, or, in fact, to warm two gallons of cold water or ice some forty to fifty degrees. Can we wonder at the laxative scouring of sheep or bullocks, and the consequent inflammation or death? And cannot farmers now understand why my live stock losses are so small compared with theirs, when I avoid such treatments? Need we be surprised that our stock thrive so much better as the spring advances, when the temperature of the atmosphere and of the roots is so considerably raised, and when the latter have lost a large percentage of their moisture? What would be the condition of our carriage horse, and what would the groom say, if we compelled each horse to drink eighteen gallons of water with his 20lbs. of hay and oats? and yet this is how we treat our sheep and beasts when they have only turnips. Our canine friends in the North give plenty of straw to their bullocks, and yet, for want of carrying fine cut straw-chaff and rapecake to their hill-sheep during the past severe winter, thousands of them have perished that might have been cheaply saved. It is a great mistake not to give to hill-sheep rapecake: at present prices it would pay in the mutton, independently of the profit gained by fertilized and improved pasturage.

Let us see what a lesson nature teaches us in this matter. Grass, during the vernal and growing season, contains 25 per cent. of dry matter; and the 75 per cent. of water it contains is at a temperature which I can imagine to be considerably raised by the rays of a May or June sun. Farmers have a saying that sheep thrive much better on roast meat than boiled, meaning that the diminished percentage of moisture and increased temperature of the food in the hot months, abstract little caloric from the internal animal system; whilst the exterior surface of their bodies being surrounded by a summer temperature, makes no demand upon their food to keep up the natural animal warmth. Farmers know quite well that there is diminished quality in grass when the summer has departed, and there is an absence of heat and light; and most people know the evil results when animals consume

green food with the hoar frost upon it, or when very wet from rains.

Nature has indicated that we should make hay while the sun shines, as a provision for winter, and that the grass having lost sixty-five per cent. of water by drying, we must make up the deficiency by providing our animals with drink. Nature has taught them the proper quantity to take; and a wise farmer would in cold weather take care that the temperature of the water should be warm, and thus our live stock would fatten with a smaller quantity of food. Farm or other horses would much less often die from gripes and inflammation if, when they came in heated from their work, they were allowed to drink warm water, instead of being walked into a horse-pond, or allowed to drink water many degrees below the temperature of their stomachs. Our London brewers understand this. A small steam-pipe passes through their water-tanks, keeping the water always at a proper warmth. The horses drink when they please, without risk of injury. Bullocks ought to be treated in the same way. The pulping of roots and mixing them with cut straw have soon come into favour with farmers, because it diminishes the disproportionate quantity of water which the animals are compelled to take in their roots when they have no dry food. Sheep should always have one pound of clover or grass-hay, or some cut straw, and one pound of rapecake, when on turnips, in cold or wet weather. This would diminish the consumption of turnips, and restore a proper equilibrium between the dry food and water, and would add fertility to the soil. This would bring a better price for the turnips consumed. If no hay is given, fine cut straw will answer admirably, and you will find that your straw thus applied will realize a much better price than when merely used as bedding. It is interesting to see how well the animals discriminate in their use of straw or cut chaff. A wet or cold day will cause them to eat it in larger quantities. When grasses are saturated with rain, a little dry food is most acceptable to animals, and they will thrive much better upon it.

In conclusion, a wise farmer will so limit his consumption of roots by each animal, that the water contained in them should approximate to the quantity he would give to an animal eating dry food. Four gallons, or 40lbs. of water per day would be a full allowance for a bullock, and this quantity would be contained in 45lbs. of roots. Probably a bushel of roots, weighing 50lbs., would be a fair average quantity for a full-sized bullock, and a proportionate quantity for sheep.

Great objection and considerable disbelief have been expressed by my farming friends at my small annual loss of stock, estimated at 1s. per acre; but if they carry out the principles laid down in this communication, with the addition of good winter and summer shelter for stock, they will find my allowance for loss very ample. It is really fearful and melancholy to witness the losses arising from ignorance or mismanagement. I see it around me too constantly. A sudden and full supply of succulent mangel, young and watery tares, or a draught of cold water to a heated animal, produce laxity or flatulence, constipation, inflammation, or death. It is highly desirable that the root-cutting house should have a high temperature. As my horses consume many mangels,

the roots are piled in the stable a few hours, and thus during the winter season attain a temperature more suitable to the stomachs of the animals. The cut roots for the bullocks are mixed with the warm steamed chaff. A wise farmer will never forget this golden maxim, that one pound of coal, which costs less than half a farthing, contains more carbon than many times its value in food; therefore he will use coal instead of food to give animal heat, and lay on fat cheaply.

The time will come when all our bullockries will be heated with warm water or steam pipes in cold weather. See how

particular our groom is to keep his horses warmly clad in cold weather, and how nicely he regulates the ventilation and temperature. Should not this show us the right way? I often think so, when I see on a bleak winter's day unsheltered animals eating grass or turnips, the air and the food being at a temperature scarcely above the freezing point.

Surely the farmer who permits this can know nothing of the heat-forming theory, or he would not waste his food in creating an artificial furnace with so costly a combustive element as provender. Yours, &c., J. J. MECHL.

PRINCIPLES OF MANURING.

LAWES AND LIEBIG'S CONTROVERSY ON THE PRINCIPLES OF MANURING POPULARLY EXPLAINED—
THE ROTHAMSTED EXPERIMENTS WITH SPECIAL MANURES IN TURNIP-GROWING DESCRIBED AND EXAMINED.

The history of the introduction and spread of turnip-husbandry in this country admits of a very concise recital. It dates back to the time of the Commonwealth, and was borrowed from the Flemings; the original theatre of its naturalization being the county of Norfolk. To Sir Richard Weston—one of Cromwell's foreign diplomatists, who on retiring from public life settled in that county—is generally attributed the merit of having successfully inculcated its value as an immense addition to the farmers' resources; and, indeed, to the Norfolk farmer in particular it was a peculiar boon, since at that period the soil of that district consisted of a weak sandy loam, little qualified to raise an abundant produce of cattle provender of any kind. As yet, the old system of three corn crops and a bare fallow prevailed in Norfolk, as throughout England generally; the cultivation of clover or artificial grasses having then obtained no footing. And how of live-stock in those days? In Norfolk each farm consisted of a portion devoted to corn-growing exclusively, and of a much more extensive track of open down-land used as a sheep-walk; and there, as over the entire kingdom, the grand difficulty was the maintenance of the animals of the farm during winter. For lack of succulent food the dairy cow became dry for several months. Stall-fed beef or fat mutton was a luxury which even the rich could not command beyond Christmas; and the only endeavour of the farmer in days antecedent to the introduction of roots and clover was, not to keep his beasts and sheep in good condition, but to preserve them from disease and death induced by actual starvation. At first the cultivation of roots was of course confined to the arable part of the farm, but in Norfolk portions of the Downs came in process of time to be broken up, in order to extend the area of tillage; meanwhile a conviction of the value of cultivated clover as a cattle food had been gaining ground, and in the course of ninety or one hundred years after Weston's successful advocacy of turnip husbandry, very great progress had been made in the county here particularized, in converting the sheep-runs into tillage land, and in subjecting the thus largely

extended arable farms to that quadrennial routine of management which since has become prevalent in all the well-farmed districts of England, under the name of "the Norfolk four-course rotation."

Still confining these introductory remarks to the history of the new system as it evolved itself in its original birth-place, it has been remarked by all intelligent observers that an unequivocal change in the texture of the Norfolk soil has ever since been going on; and which in few words may be described as consisting of a gradual conversion of the sandy loam which characterized the district, into a vegetable soil of more compact texture and of greater capacity to retain moisture. To what was this due? Undoubtedly to the vast amount of organic matter abstracted year after year from the atmosphere by the bulky green crops, and by the straw of the cereals, and deposited in the soil every fourth year, in ten, fifteen, or twenty tons of farm-yard dung to the acre. For very many years the term "four-course rotation" expressed the beau-ideal of both theoretic and actual husbandry; but of late years, as is but too well known, its supposed infallibility has been rudely assailed by the alarming fact, that out of the four ordinary members of rotation—turnips, barley, clover, and wheat—the first three have manifested widespread symptoms of chronic degeneration and disease. Anbury and rot destroy the turnips. The barley sends up a feeble straw and unprolific head. The clover refuses to grow at all. How is this, seeing that tillage and dunging have alike been increasing both in amount and efficiency for more than three half-centuries? Now in answer, we remark that whilst a large application to the soil of the contents of the dung-court is plain evidence that a corresponding large amount of *adventitious organic matter* has been accumulated in the staple, it no less conclusively testifies that a proportional amount of indigenous *mineral or inorganic matter* has been *with-drawn* in the waggon loads of corn and droves of fatted animals sent to market. Thus, at the outset of this system a duplex alteration in the constituency of the soil was initiated, and for long its continuance was pro-

gressively beneficial. Arrived, however, at a certain condition of *organic repletion* on the one hand, and of *inorganic depletion* on the other, its capacity to support in health and vigour the same vegetation which formerly it did, at last failed; and hence a scant and morbid yield was the consequence.

Such, briefly expressed, is the aspect in which rotation husbandry has presented itself of late years to reflective minds, not only in Norfolk, which we have selected merely as affording the best illustration of these comments, but throughout all the other best-farmed districts of England. Such, also, are the circumstances under which has sprung up the enormously extended practice of extraneous manuring, *general* or *special*: general, as where all the alienated substances contained in the marketed produce are sought to be replaced in the soil; special, as where restitution is made of only some of the withdrawn elements, or where manurial stimulants, themselves perhaps in nutritious, are administered.

It is this important subject of special manuring which has so largely occupied the experimental enterprize of Messrs. Lawes and Gilbert, at Rothamsted. In our prior notices, we explained the nature and result of their trials in the cultivation of wheat and barley with various substances external to the farm, and both general and special in their character. Experiments in grass and clover, conducted in the same way, will be related and examined in a subsequent paper. The present article is devoted to a series of observations suggested by trials made by the same indefatigable experimentalists in the special manuring of turnips. The ground in which these were conducted is called Barn Field, part of the Rothamsted farm, and its quality is described in the experimental report, as "a somewhat heavy loam, not well adapted for turnips." Respecting cultural treatment, connected either with the working of the land or its condition of cleanness, or the reverse, during the trials, the report is altogether silent, except that, incidentally, it appears that the seed and manure were deposited in drills, and that more or less injury to the germinating plants was caused by commingling the seed and manure together. The experimental plots were between twenty and thirty in number. The endurance of the trials was ten successive years, from 1843 to 1852 inclusive; but the experimentalists' conclusions, which we are about to examine, were formed and promulgated at the termination of the third year, and we are not aware that anything has ever been reported of the remaining seven. Prior to the institution of the trials, the field had grown wheat, clover, and wheat in succession, and during their continuance the turnip produce was wholly carted off the land. Each year the number of plants reaching maturity were counted, and the average weight of each bulb produced on each different plot determined. Finally, a most elaborate series of analytical experiments was resorted to, to ascertain what chemical differences existed amongst the products of the different plots, and whether the

diversity was correlative with the several manures put in trial.

The leading conclusion arrived at, on the termination of this triennial investigation, and announced to the world through the pages of the *Royal Agricultural Journal*, vol. viii. (1847), was that the factitious compound, superphosphate of lime, was to be regarded as specifically appropriate to the healthful and abundant produce of the turnip plant.

But here it may be surmised by the reader, that surely these experimentalists possessed data for this declaration of opinion, of a much more comprehensive kind than could possibly be afforded by a body of trials which, however elaborately, and carefully conducted, gave only the result of a highly exceptional case of successive annual cultivation, and were performed, not in several localities, on various kinds of soils and for a considerable number of years, but merely for three years, in one single small field, and on land admittedly ill fitted for the growth of turnips. In point of fact, however, beyond these narrow and anomalous limits, the experimentalists sought no data from external sources, but on their own circumscribed area of observation deemed themselves warranted in asserting, virtually, that although the turnip plant requires for the formation of its tissues a large supply of organic nutriment of which superphosphate of lime contains none, and a no less essential though smaller proportion of inorganic elements, eight in number, of which superphosphate contains only four, nevertheless, in all soils and climates, at least in those of England, its use as a manure is peculiarly beneficial to that tribe of the botanical order of cruciferous plants to which the turnip belongs. It may be added, that for reasons not explained, that most perfect of all commercial manures, Peruvian guano, had no place amongst the manurials put in trial. Those which besides superphosphate of lime underwent investigation, are set forth in the following table.

TABLE I., showing the various manurial substances employed in the Rothamsted experiments in turnip growing.

1. Mineral manures containing *no* phosphoric acid; viz., the carbonates of potash and soda, common salt, magnesian limestone, and sulphate of lime.
2. Mineral manures containing phosphoric acid; namely, the phosphate of potash and soda, and phosphate of lime in its mineral condition, or as bones, and used both in its natural state, or decomposed by acids into superphosphate.
3. Organic substances; so called, because containing nitrogen, as nitrate of soda, and sulphate and phosphate of ammonia.
4. Carbonaceous substances, and to which only ought the term organic to be applied, viz., yeast, train oil, rape-cake, and farm-yard manure.

Finally, these various substances were exhibited in intermixed prescriptions; but in three instances, farm-yard dung, rape-cake, and superphosphate of lime, were experimented with separately, and their results in each of the three reported years separately registered. The following table furnishes a brief conspectus of the entire series of trials:

TABLE II.

	YEARLY PRODUCE.											
	1843.			1844.			1845.			Average annual produce.		
	T.	C.	Q.	T.	C.	Q.	T.	C.	Q.	T.	C.	Q.
1. Yield per acre from the continuously unmanured plot (No. 2)	4	3	3	2	4	1	0	13	2	2	7	0
2. Yield per acre from the plot (No. 1) manured with 12 tons of farmyard dung yearly	9	9	2	10	15	1	17	0	3	12	8	2
3. Yield per acre from the plot (No. 3) manured with 6½ cwt., 7 cwt., and 8 cwt. rapecake in each year severally	8	4	3	0	13	0	4	16	0	4	11	1
4. Yield per acre from the plot (No. 22) manured with 4½ cwt., 5 cwt., and 11 cwt. superphosphate of lime each year severally	12	3	2	7	14	3	12	13	3	10	17	1
5. Yield per acre from the plots (Nos. 10, 11, 12, 14, 15, 16, 18, 19, 21) in which phosphatic, calcareous, and alkaline salts were used in larger proportion than in the plots contained in the next subdivision, but no nitrogenous salts	—	—	—	—	—	—	—	—	—	10	8	0
6. Yield per acre from plots (Nos. 4, 5, 6, 7, 8, 9, 13, 17, 22) in which nitrogenous salts were used, as well as the other substances enumerated in the last group, but in less proportion	—	—	—	—	—	—	—	—	—	8	7	0

Of these groups, the third falls to be thrown aside as inconclusive, owing to the seed having been too seriously injured in germination from the caustic effects of the rape-cake, to admit of a fair conclusion; and as our limits preclude us from dilating on all the other members of the series, Nos. 2 and 4 shall be selected for examination as most fraught with instruction. These two shall be now taken up seriatim.

1st, then, of the experiment of farmyard manure. Now, if the ordinary manurial circumstances be considered for a moment, of a farm managed, for example, under the common four-course rotation, it may be asserted that a moderately remunerative yield will be obtained without the employment of any extraneous dressings, provided the land receives adequate tillage, and green crops be grown, and stock kept sufficient to afford a quadrennial dunging from the court-yard, applied to the roots of each course, of from 15 to 20 tons per acre. Now here, be it observed, the 20 tons of manurial matter (assuming the larger quantity for the sake

of round numbers) has to supply nutriment not merely to the turnip crop, but to the other three members of rotation also; and hence these 20 tons may be regarded as equivalent to an annual dunging of indigenous origin over the whole farm at the acreable rate of 5 tons. But when, next, the experimental instance before us is examined, it cannot but be deemed utterly beyond the bounds of practical instruction; since, in reality, it was as if, in actual husbandry, the farmer, in addition to his own internal supply of 5 tons to the acre, over head of his farm, were to purchase enough from his neighbour to raise the annual application to 12 tons over head—or, in other words, as if he were to expend 48 tons in each acre of his roots, in place of 20. Than this immoderate manurial experiment no proceeding of the kind could be more anomalous, as is palpably demonstrated in the following Table, where, chemically, it is shown that the nutriment yearly deposited in the soil in the three experimental years far exceeded in quantity those withdrawn in the crops.

TABLE III., showing approximately the chemical composition in lbs. of 12 tons of turnips (besides leaf), being the average yearly produce of the experimental plot manured with farmyard dung; and of 12 tons of dung, being the quantity of manure employed.

	Water.	Organic elements exclusive of nitrogen.	Nitrogen.	Silica.	Potash and Soda.	Lime and Magnesia.	Oxide of Iron.	Chlorine.	Phosphoric acid.	Sulphuric acid.	Carbonic acid.
Chemical composition of 12 tons of turnips & 2 tons leaf	28112	2866	44	26	126	64	6	22	30	40	24
Chemical composition of 12 tons of farmyard dung	17576	6480	156	1620	168	312	48	84	220	84	132
Excess of constituency in the dung	—	3614	112	1594	42	248	42	62	190	44	108

Within the entire compass of argument directed by the experimentalists on this anomalous trial, whether with reference to its substantive bearings, or to its fitness as a standard of comparison by which to test the other trials, we have failed to discover any instructive

element whatsoever, and therefore to comment further on it would be to no purpose.

2nd. Of the experiments with superphosphate of lime applied alone, consecutively, during the three reported years, 1843, '4, and '5.

Here some preliminary remark must be submitted. In our prior strictures on the wheat and barley experimental series, it was shown that the specific virtue claimed by the experimentalists for nitrogenous manures in promoting the growth of these cereals, was in their affording an abnormal supply of nitrogen, which passing through the roots into the organs of the plants, and from the plants into the atmosphere, performed an important, though unexplained, and indeed understood, function in its transit. But now, in respect of superphosphate of lime, the evidence of its excellence as a turnip manure is based on the alleged fact that although itself little or not at all alimentary in its nature, it plays a reactionary part in the soil, ever, in the opinion of the experimentalists, abounding, but in a state of dormant crudity, with all the elements required in turnip vegetation. Through the instrumentality of this decompositive substance those unavailable nutrients are converted into activity to a greater or less extent, proportionate (within certain limits) with the quantity of this manurial re-agent employed in the process. In support of this hypothesis, the experimentalists have cited no direct evidence, but there seems no reason to deny it. Nay, more: we willingly admit that the agricultural journals contain many experimental instances where superphosphate of lime has shown itself unequivocally successful in producing increased crops of turnips, cultivated under the usual conditions of rotation husbandry. But to this admission falls to be added the important qualification, that the books do not record probably as many instances where the manure had no effect; for it is well known that experimentalists in practical agriculture too often forget that a negative result may be as important as a positive one, and are actuated by a false feeling of shame in not sending what in very inaccurate language is called their *failures* to the press. But to return to the supposed action of phosphoric acid, and of superphosphate of lime, in the soil; what the dormant substances are, which this re-agent more especially attacks, is not surmised by these investigators; but at any rate, it is beyond all conception that it forms fresh chemical unions with, and imparts nutritive qualities to, *all* the chemical elements in the soil, carbonaceous, nitrogenous, siliceous, alkaline, calcareous, ferruginous, chloric, and sulphurous, which in various groups of combination form the crude organic or inorganic components of cultivated land. In other words there are, no doubt, various or many substances in the soil with which phosphoric acid plays no part as a manurial re-agent.

Let us, then, suppose the very probable case that there are many soils deficient in elements on which phosphoric acid acts, and which abound in those towards which it is inoperative; is it not plain that the exhibition of superphosphate of lime, or any other phosphate salt, in such instances would be entirely futile? Thus, to cite a very apposite case:—In 1855, Mr. T. D. Acland cropped five experimental plots in one and the same field, on Killerton home farm, with swede turnips, applying no manure of any kind to the ground, which till 1851 had been out on lease, and poorly farmed. It had borne in

the four years antecedent to 1855, turnips, barley, clover, and wheat in rotation, receiving no manurial treatment with any of these crops save a moderate dressing of guano with the roots. In point of soil, the field was a deep free loam, of very good quality. In the same close were other twenty plots, also in swedes, and these were managed, culturally, like the five unmanured plots, but dressed with superphosphate of lime in various quantities. In 1856, all the plots were in wheat, and in 1857 a second time in swedes, and while the twenty subdivisions, superphosphated in 1856, again were manured with this substance, the unmanured five still continued so. In 1858 the crop again was wheat, and in 1859 mangolds, the unmanurial and manurial treatment being still the same. The following table exhibits the results as respects the turnip produce:

TABLE IV.

		PRODUCE.							
		1855.		1857.		1859.		Yearly Average.	
		Swedes.		Swedes.		Mangolds.			
		Tons	Cwt	Tons	Cwt	Tons	Cwt	Tons	Cwt
Average yearly yield per acre of the five unmanured plots . . .		12	5	11	5	13	8	12	6
Average yearly yield per acre of the twenty phosphated plots, ..		12	5	10	9	15	3	12	12

Than this, is it possible to conceive a clearer case of palpable failure of superphosphate of lime as a manure in root husbandry? Did Mr. Acland, on the strength of this beautiful, because simple, apt, and practical series of trials, promulgate a manurial theory against the use of phosphatic manures, and address it to every English farmer, whether tilling soils alike or unlike to the Killerton soil, or enjoying climates similar or dissimilar to that of South Devon? By no means; but on the contrary, we find him in his concise but perspicuous reports modestly speaking of them as if they were mere mites cast by him into the general treasury of agricultural knowledge, without attempting to elevate them as guiding lights in the actual business of husbandry. Contrasted with the Rothamsted trials, the respective characters of the two, considered in their bearing on turnip cultivation, stand thus: In one the investigation was conducted on a soil every way well adapted for the growth of this root: in the other it was not. In one, the trials had a thorough analogy to the prevailing policy of economic farming: the others had none. If the Rothamsted instance afforded any evidence in favour of phosphatic manuring, *a fortiori*, the Killerton experiments bore better testimony of their futility. If the Rothamsted soil be typical of much land throughout England—of which, however, there is no proof—so, doubtless, the staple in which the Acland experiments were performed may be taken as representing in its idiosyncrasy a no less prevalent class of soils.

But although every unprejudiced mind will readily

concur in the conclusions we have thus deduced, it is nevertheless true, that the great majority of English farmers, in the full, but probably very fallacious belief of the invariable efficacy of phosphatic manuring on the turnip field, have given to it a very general use in that periodical division of the farm. It may be added, however, that in Scotland, where a much more complete body of practical evidence has been collected, to determine the comparative merits of extraneous manures, than has yet been acquired in this country, a decided preference has been given to guano over any form of phosphatic fertilizer, in root as well as cereal husbandry.

But be that as it may, the great preponderance of practice anywhere is not on the employment of phosphates alone, but in supplement of farm-yard dung. Let us then reason for a moment on the chemical action, and consequent economical results, that necessarily must ensue from that combination. In doing this, we will agree with the Rothamsted experimentalists that the part played by phosphoric acid, adventitiously intermingled with the soil in manure, is chiefly or entirely that of a re-agent; that in the exercise of this property, it reduces substances existing in the staple in a state unabsorbable or unassimilable by the organs of plants, into the condition of available nutriment. With these experimentalists we shall also concur that the phosphatic re-agent itself contributes little or no alimentary ingredient; and having conceded these postulates in Rothamsted argument, we would next, in the way of preliminary illustration, remark what indeed is known to every one, that vitriol, spirit of salt, or aquafortis employed to decompose bone or mineral phosphate into superphosphate, adds no substantive fertilizing element to the mass, but only renders more immediate the designed reactionary function of the phosphoric acid when commingled with the crude constituency of the ground. So in like manner analogy teaches us that the application of the manure to the soil, how great soever its quantity, adds nothing, or at best but little, to the normal vegetative element, and only converts more or less of what before was present therein, but dormant, into what by the reaction becomes active, and hence available as plant food. But if these propositions be true, does it not necessarily follow that that which we do, when in tilling roots we use a phosphatic manure in supplement to dung from the court-yard is, to extract from the soil, and possibly in still greater proportion from the more tractible elements of the stercoraceous dressing, and to forestall for the turnips more or less nutriment, which if not forestalled would have contributed its fertilizing effect to the subsequent barley and other crops of the rotation? The farmer, no more than the school-boy, can both eat his cake and keep his cake. Assuming, therefore, that the wide-spread use of phosphatic manure in England has been greatly to increase the acreable produce of roots, this important circumstance has, nevertheless, been overlooked, alike in practice and experiment, in computing the benefit, that although to Rothamsted advocacy may be due the favour into which superphosphate of lime has risen in the southern division of the island,

neither the investigations in fact, nor the reasonings in argument, of this school exclude the intuitive conviction which must arise in every considerate mind, that what the turnips or mangolds may gain through its use, the following and more important cereal crops will lose, and that industrially there is and can be no real advantage in the expedient. Looking at the relative interests of landlord and tenant in the prevailing use of manurial stimulants, Liebig has applied the expressive term "spoliation" to the practice, and to this category phosphatic manure belongs. As between a phosphated root crop and the after greatly more valuable straw crop members of the course, the expedient may be characterized as *suicidally* spoliative. But what gives peculiar force to these conclusions is the circumstance that in a series of experiments forming the text of part of an article by these experimental authors, in vol. xviii. of the English Agricultural Journal (1858), they receive a very striking confirmation. The trials now to be cited were entitled "Experiments with barley in four-course rotations, commencing with roots differently manured, the same manure being employed on the same land for the roots of the three successive courses of each rotation." The rotations themselves were three in number, and from Nos. 1 and 2 of the series is constructed the following table :

TABLE V.

	AVERAGE YEARLY PRODUCE.			
	Turnips.	Barley.	Clover.	Wheat.
	Tons.	Bushels		
Rotation No. 1, each course entirely unmanured, and the turnips carted off.				
1st course of four years, 1848-'51	4	41½	Not reported.	Not reported.
2nd do., 1852-'55				
3rd do., 1856-'59				
Rotation No. 2, each course commencing with superphosphate of lime alone for the root crop.				
1st course of four years, 1848-'51	13½	30½		
2nd do., 1852-'55				
3rd do., 1856-'59				
Inferiority of the barley produce in the superphosphated series compared with the unmanured series		11		

Is it possible for any one, perusing with attention the significant figures of this simple table, to disassociate the less yield and the manure used, from each other as effect and cause, or to withstand the persuasion that the excitement of phosphatic stimulant is surely followed by a stage of collapse exactly proportioned to the degree of induced excitation? For more than ten years Rothamsted has not ceased to insist on the pretensions of this substance as a manure peculiarly, we might almost use the term physiologically, adapted to the nurture in

health and growth of the turnip plant. What oats are to the horse, superphosphate of lime, if we are to believe in their teaching, is to this root. Nevertheless, coincident with this oft urged doctrine, and with the wide-spread use of the so-advocated manure, the turnip crops throughout the length and breadth of the land have progressed from bad to worse in morbid degeneracy. Most probable it is, that when the science of husbandry is more studied and better known, improved methods of cultivation adequate to stay this lamentable visitation will be discovered. In the meantime, from which agricultural school shall we seek instruction in remedial practice? Shall it be from that one, whose precepts, deduced from the general laws of vegetative nature, are

to store the earth with those nutriments which plants after their kind most affect, in like manner as we fill the cribs of our beasts each with an appropriate food containing *all* the elements required by the animal to form the various parts of its structure, and then replenish them when they are empty; or, shall we prefer to draw instruction from teachers whose arguments resting on the narrow basis of unindustrial, contradicted and self-contradicting experiments, performed on one single description of land, in one given climate, and for a few seasons, inculcate the reliance on certain innutritious and stimulative manurial specifics, as alike efficient to promote fertility in all soils, in all climates, and without decrement for ever?

THE CHICAGO BEEF AND PORK TRADE.

Increasing importance attaches to the Chicago beef and pork trade every year. This is owing to the increasing dependence of the country upon other countries for supplies of food. This, in turn, arises from the improving condition of the working classes, which seems to advance more rapidly than the supply of cattle. From the great abundance of the western harvest of the present season, a more than usual number of Chicago hogs and cattle will be fed and slaughtered; and the quality of the meat is expected to be very fine. The way that an abundant western harvest operates is this: The farmer fails to get as much wheat and corn to market as he wished to do; and he drives from the prairie to his cattle-yard as many cattle and hogs as can be spared, and feeds them. This being done by one and all, the result is obvious; and the improved condition of the country (the United States), compared with the last year or two, is such, that there will be no lack of capital to employ in slaughtering, and no disposition to allow a single well-conditioned animal to remain unsold. This speculative demand—for such it may be termed—would seem to point to a higher consequent range of prices; but experience shows that prices in England are in the main determined by the demand in England, without reference to the buying price abroad.

A large supply of Chicago packed beef, the major portion of which will reach the English market, usually operates in the following manner: It is offered at a lower price than English beef; and being generally preferable for shipping purposes and exportation, it is bought more freely, and English beef less freely. It will, in fact, take the place of English beef to a more than usual extent, for shipping purposes; and the demand for English beef being diminished, more of it will remain for home consumption, and the tendency of prices will be lower. None but those familiar with the wants of shipping can form an idea of the great demand for fresh beef for ship use at the beginning of long voyages, when packed beef is indifferent in quality, or scarce and dear, and the comparatively decreased demand when packed beef is plentiful and good.

Chicago pork usually reaches England in the form of

shoulders and hams and bacon, it being too fat for shipping purposes. The hams and shoulders enter largely into consumption in Ireland, and the bacon forms the bulk of the not-mild article in the London and country ham and butter shops, notwithstanding assurances to the contrary. Not unfrequently it will pass for mild, the meat having been well fed, and the curing conducted by Englishmen acquainted with the most approved method. An unusually large supply of these different pork products, as they are termed, will have precisely the same effect as an increase in the supply of shipping beef. They will invite increased consumption, and lead to the supply of live animals going further. Hence the importance which attaches to the Chicago beef and pork trade. A short supply of western-fed hogs and cattle leads to an increased demand for live cattle in the English markets, and prices rule high; while a full supply leads to a decreased demand, and to moderate prices. For the past two or three years western supplies have been deficient, and the invariable result has followed; and this season, when the supplies will be large, there is every reason to believe that prices before long will decline.

No attempt has yet been made to bring western beef and pork to the English market in an unsalted state, but recent successful experiments with prairie chickens and other game give some hope of an early trial being made. The game experiment has so far succeeded that birds shot on the prairies of Illinois in December have been sold, in prime condition, by London game-dealers in February—eight weeks after being killed. They are sent from Chicago to New York in a frozen state, and subsequently packed on board the Atlantic steamboats in the neighbourhood of ice; and when received in London, they appear to be still as fit for keeping as our own moor-fowl. Of course game is more easily preserved than beef or pork; but, considering the hard frozen state of American meat in the winter, and the facilities that exist for preservation during a short steam voyage, it appears not altogether improbable that by-and-bye regular supplies will be received. Should such a trade be opened, the breeding of cattle would be

largely stimulated in the western states, the only demand at present being for packing purposes and the eastern markets; and a new market would be found for the wholesome cuttings of the packing houses, which at present are, to a large extent, boiled in the manufacture of coarse waggon grease and glue.

There are two packing seasons, namely, the packing season proper and the summer packing. Summer packing is carried on to a comparatively limited extent, and confined to beef. The demand arises in New York, from the exhaustion of the stock of winter beef by exportation or otherwise, and proceeds chiefly from the Newfoundland fishermen of the British provinces. The packing process, with the thermometer at 120 degrees in the shade, is simple and effective, and shows how, in an extremity, we ourselves could be provided with large quantities of animal food in a fresh and wholesome state. The cattle are bought over-night, driven to the Chicago slaughter-houses, killed and cut up, and packed in barrels with crushed ice, and sent off by railway to New York in the morning. On arriving in New York the beef is salted into other barrels, and it keeps well throughout the summer. No statistics of the trade have been collected, as it is not engaged in to any great extent by any firm, nor by those who engage in winter packing. The trade, nevertheless, has always been considered highly profitable.

Winter packing begins with the cold weather in November, and is usually more active during the opening month than during the other months of the season. This, in the first place, is to be attributed to the premium price always paid for newly-packed meat in every market; and, secondly, to the contract practice which usually fixes the number of hogs and cattle that each firm is to pack. Thus, packing once begun, is actively proceeded with, and towards the middle of February there is little usually remaining to be done. The cattle

and live hogs are supplied daily in large droves, and are driven from the drove-yards to the packing-houses, where killing and dressing are expedited by appliances unknown in Europe. In some of these establishments several thousand hogs and cattle can be killed and cut up in a single day. The receipts of hogs at Chicago for the present season, based upon the ascertained number received in 1856 and 1857, are estimated at 500,000, of the average dressed weight of 260lbs.; and the estimated receipts of fat cattle at 100,000, of the average-dressed weight of 600lbs. A large part of that supply will find its way to Liverpool soon after Christmas, and the Chicago supply promises to be largely exceeded by that of Louisville and Cincinnati, and largely supplemented by the numerous minor packing towns.

Thus, the abundant harvest of the United States does not alone promise cheaper bread, but—what is scarcely less prized by the masses—cheaper beef. The impossibility of moving the large western crops to the seaboard until next summer will lead to the fattening of all the lean hogs and cattle that can be spared; and in whatever form the carcasses come to England, their presence cannot long remain unfelt. They will increase the stock of food, and, in conformity to a well-known law, the price will be such that the demand will be stimulated to absorb the increased supply. In other words, beef will be cheaper. Whether beef and pork should continue to be received from the Western States in the salted state alone, is not unworthy of the consideration of those generally who cater for the public. The summer ice-packing to supply the wants of the Newfoundland fishermen at a low price, and the carrying of game in a fresh state to this country, show that it is perhaps possible to open up an entirely new branch of trade, which would be mutually advantageous to the American farmers and to the English consuming classes.

FARMING WITHOUT THE PLOUGH.

Arthur Young, visiting the farm of Mr. Duckett, at Esher, in Surrey, in 1788, describes his scuffler "made like a Kentish nidget, with which two horses will do six acres;" adding that he has gained six crops with only four ploughings, viz., 1. Clover ley trench-ploughed for wheat; 2. The wheat-stubble horse-hoed for an after-crop of turnips; 3. One ploughing for peas; 4. Before the peas are cut, turnip-seed sown broadcast over them; 5. One ploughing for barley; 6. The barley stubble trench-ploughed for peas again, and turnips may again be sown over them. Mr. Duckett laid great stress on the use of the "shim" for cleaning bean stubbles; and thus drilled wheat on a bean stubble without any ploughing at all, "except one land for a comparison; and it is remarkable that the wheat is better after the shim than after the plough. He accounts for it by observing that wheat upon whole land lies dry—the rain does not equally insinuate itself. For

many years Mr. Duckett kept a farm of more than five hundred acres always cropped, never fallowed, and most of his products far superior to what were found in the best cultivated districts on similar friable loamy land. The trench-plough going two-furrows deep, was the implement by which the result was principally brought about. Young says, "I have seen it work ten inches deep, or on the contrary, only five or six. The use of this tool is incredible; to put one crop in immediately upon the back of another, could not be done without it. I have seen him plough-in rye that was six feet high, and directly get a crop of turnips. He has also invented a tool which he calls a *miner*, for working deep beneath the furrow, to loosen the soil for carrots, without bringing up the dead under-stratum, and for attacking the roots of thistles deep in the ground." It is, indeed, interesting to go back thus nearly a century to find an incipient "Cotgreave" and subsoiler, and an illustration

of the rapid succession of crops which the steam plough is to give us the power of producing. How pitifully slow have been improvements in husbandry!

In the year 1791 Mr. Duckett constructed a new "horse-hoe" (or rather a grubbing implement or scarifier) "entirely of iron." It consisted of two common plough-shares, that worked, according as they were winged, from 20 to 24 inches' breadth of ground; and so strongly made that it could be worked at any depth with four horses. This implement (much resembling that which made such good work for Mr. Fowler at Warwick) was for working pea, bean, and other stubbles, to prepare them for ploughing; and also so effectually as to put in crops of rye, tares, and turnips without any ploughing at all. The operation for this latter purpose was done by going first *just below the couch, in order not to cut the bunches in pieces*; then strong coarse harrows, and afterwards finer ones, cleaned the rows across the field, and thus made the loamy sand fit for drilling. Mr. Duckett scarified a clover ley; and, carting off the roots, &c., drilled the wheat without any ploughing. "Bad husbandry!" said Young; "the roots of the clover are the food of the wheat." "No;" replied he, "wheat on this light soil is apt to be root-fallen; but in this method, it has a firm soil to strike into." "Great talents and great husbandry!" exclaims Young. "It is in the application of uncommon practices to peculiar demands that genius is shown."

As an example of autumn cultivation on tenacious clay land, Young describes Mr. Arbuthnot's mode of tilling bean stubbles for wheat with the Isle of Thanet "shim," a transverse knife 3 feet long and 6 inches broad, set dipping at an angle of 45 degrees. "This cuts the surface of the field about 2½ or 3 inches deep, through stubble weeds and everything; after which it is harrowed till every bit of trumpery is got out; and then the shocks of bean-sheaves are moved, and that part served the same. Few other instruments will effect this: *the plough buries* so that no harrows will get it up again; but by keeping all upon the surface it is easily destroyed." This management was pursued with increasing profit for several years, until the gentleman left his farm in 1797.

The following passage is an interesting one in the history of agricultural inventions; and the reader will be able to draw his own lessons from it in reference to present practice:

In 1804 Thos. Estcourt, Esq., M.P. for Cricklade, and a member of the Board of Agriculture, published in the "Annals" a description of a new scuffler—"An instrument, lately invented by a tenant of mine, Mr. Robert Emerson, which acts as a scuffler or tillage-scarifier. I saw it at work last Thursday (in August) in a clover ley, which had been much trod by driving a herd of forty cows over it backward and forward twice a day for the last six weeks to some meadows that lay beyond it. It cut the land throughout about three inches deep, and six feet in width every length; and did the work so clean that on moving away the loosened soil we found it underneath as smooth as a boarded

floor. On going over the same ground a second time it cut about six inches in depth from the surface; the width, of course, the same as before. It was worked by five horses with ease; and one, if not two of the horses, might very well have been spared the last time of the two. After the second time the land was as fine as it was possible to make a garden, without drag or harrow. It will, and usually does, go over five acres of unbroken stubble or clover-ley at the above depth in seven hours, and without the least apparent distress to the cattle, and without turning a hair. It requires no holding; and the only objection one of the workmen has to using it is that 'he looks like a fool, following it without anything to do.' It turns at the end of the land as short and as safe as a crane-necked chariot, without help from the ploughman. It very seldom chokes with muck or rubbish; and if it does, a strike with the paddle clears it. Mr. Emerson, the inventor, *put in his turnip crop this year without the assistance of plough, drag, or harrow* (the land was light and rather stony), by going over it three times with this instrument. I never saw land in better order; and this crop is now very regular and promising. The last time it went over this turnip land was chiefly for the purpose of covering the manure, which being very rotten, it performed very effectually. How far this may be called a new invention, however, is more than I or he can determine; but I have never yet seen or heard of any one like it. I should also mention, that the depth it is to go may be regulated at pleasure, and the whole instrument may be so raised off the ground, except the wheels, as to convey it without difficulty from one place to another to any distance. Its strength is such as to bid defiance to ill-usage, except a sledge-hammer is used. I cannot yet say what the price of it will be, as only one has been made, which has been so frequently altered, to remedy different defects which were found out from time to time in its use, that no estimate from it can be formed of the expense. The inventor is a sensible, plain, honest man, in the occupation of a considerable farm, and was formerly in my service as my steward and bailiff. And if it proves to be so generally useful as it promises, I think he should be remunerated for the time, thought, and money it has cost him (and I know he has been incessantly employed on it for the last two years), by a patent or some other way."

In July, 1806, Mr. Estcourt wrote some additional particulars: "The following anecdote you will esteem a strong proof of the merits of Mr. Robert Emerson's scuffler. I lent that which he made for me in September last to a tenant, who at Michaelmas last entered on a farm of mine, he being then unprovided with a team of horses. He borrowed at the same time one team each from two neighbouring farmers, which, with their ploughs, were all employed together to prepare a bean stubble for sowing wheat. These two farmers happened both to meet on the ground to see how their teams went on with the work, and were so struck with the superior work of my team with the scuffler, that they instantly agreed to request Mr. Emerson to make one for their joint use. He did so: they have worked it all the

spring, and last Wednesday I saw it at work in a field of one of them, ploughing a piece of vetches fed off with sheep, to prepare for turnips. The work was excellent. The owner of it was so delighted with it, that he immediately went and offered the maker, Mr. Emerson, a present of five guineas (though he had before paid for the instrument), as a mark of his approbation, which Mr. Emerson very properly declined to accept. The great merit of this instrument appears to me to be, independent of the great reduction of the expense of tillage by rendering a plough unnecessary, that it makes land much finer than any plough can do, even with the assistance of drags and harrows; and though I have not studied it sufficient to be certain why it should have that effect, I have a firm belief of the fact. I put in a

crop of wheat with it in September last; the land was worked twice over with it: it was then with a double mouldboard plough thrown into three-feet ridges, one acre in the whole; and for experiment half of it was drilled with two rows of seed in each ridge, and the other half dibbled with two rows on each ridge, nine inches from hole to hole. It would be difficult for any person to say at present which will be the best crop, but they are both remarkably fine. The drilled part took half a bushel of seed—the dibbled three quarts only. The wheat is now in blossom, and is above six feet high throughout." Here, then, was another early instance of the Woolston practice of cleaning with a grubber, and then ridging with the double-mouldboard plough, though for a wheat instead of a bean crop.

AN HISTORICAL MEMOIR OF ROYER.

[TRANSLATED FROM THE "JOURNAL D'AGRICULTURE PRATIQUE."]

The man whose life and works I have to relate died at the age of thirty-six years; but, in the course of so rapid a career, he has had time to attach his name to many useful projects which have for the most part been since realized. He has sown what other heads have reaped. Such is too often the destiny of the agriculturist. For him, more than for any other class, labour is long and life is short, and it is so much the more a duty of those who survive to recall services too soon interrupted, too soon forgotten, while, in the meantime, our turn comes to disappear, leaving also our enterprises incomplete and our designs unfinished.

Charles Edward Royer was born at Paris on the 2nd January, 1811, of a family not in affluent circumstances. His first advances in life were made under difficulties, and he owes everything to himself and his perseverance in labour in regard to the honourable station he occupied. While still a child, he entered the Museum of Natural History as gardener's pupil, under the auspices of our colleague M. Pepin. There he was recommended to another of our colleagues, M. Vilmorin the elder, who at first took him into his house as private secretary; but, having soon discovered his quick intelligence, placed him in the situation of steward over his estate of the Barres, near Nogent-sur-Vernisson. It was on this domain, which is justly celebrated for the works executed by M. Vilmorin, and especially his admirable plantations, that Royer made his first campaign, and he could not have gone to a better school. His accounts, kept with remarkable correctness, displayed at that time the taste for statistics which were so brilliantly developed in him afterwards.

He quitted the Barres in 1836, to become manager of the Posting-house at Nogent. A short time after, a meeting having been held at Grignon to establish a chair of rural economy, he competed for, and obtained it, being then in his twenty-fifth year.

The course which he adopted at Grignon has never been published, but is said to exist in manuscript. All those who have heard it agree in saying that the young

professor distinguished himself by a rare expansion of mind and an abundant facility of elocution. He was then at that age at which the understanding possesses all its sap—we might almost say all its intoxication, and at which we are so happy to learn and so happy to teach. Impatient to know and to communicate everything, he threw into the rather confused frame-work of his lessons the fruits of his immense reading; and not content with the vigils which the preparation of his course imposed upon him, he simultaneously pursued the study of several languages, undertook even to learn medicine, and acquired the diploma of doctor. This severe work was not without its influence upon his health, and probably laid the foundation of his premature death.

His first work, "*The Cultivator's Catechism for the Arrondissement of Montargis*," procured for him in 1839 one of the gold medals of our society. Encouraged by this reward, he published the following year "*A Theoretic and Practical Treatise of Rural Accounts*," and left Grignon to take in Paris the direction of an agricultural journal (*The Moniteur of Property*), which he held for four years. He wrote in this journal a great number of articles on economic questions in their relation with agriculture, and thus prepared himself for his great work, entitled "*Economic Notes on the Administration of the Agricultural Riches and Statistics of France*." This book, published in 1845, is the first that established his reputation, and it requires of us a moment's consideration.

The Grand Agricultural Statistic had just been finished by the Government. Royer formed the happy idea of republishing in one volume, of a form more convenient, the straggling figures in the four large volumes of the official publication, adding to it his own observations. He then passes in review every species of animals and every cultivation, from those which annually create milliards in value, as winter and spring cereals, to those which occupy only a few hectares, as woad and saffron; and, after having exposed on each subject the given numbers which he borrowed from the official

statistics, he discussed them, often rectified them, and extracted from them instruction for the future. It was the first time that the inventory of our agricultural wealth had been arranged with so much care and detail. The public mind was arrested, and we recognized at the same time in the author a deep acquaintance with every department of practical agriculture, and a just appreciation of the progress to be accomplished.

Unfortunately, one defect is mixed with these admirable qualities. That defect, which is excusable in a young writer who for the first time enters upon so grand a subject, is exaggeration. No number is too great for Royer, no affirmation sufficiently dogmatic. All statistical calculations appear to him erroneous, all administrative measures ill-conceived, all laws in need of revision, all agricultural processes of alteration. There is always much to say about human things, and those who erect themselves into censors have only too often reason on their side; but everything must not be blamed at once. In Royer's estimation, French agriculture is *disorganized*, and he thinks of nothing less than *organizing* it anew—a great error, which has been so much abused that it ought now to be obsolete, at least for some time. That there were many views to correct, many gaps to fill up in our agriculture, no one can deny; but that an industry, which, even according to Royer's calculation, produces more than 1,000,000,000 fr. (or £40,000,000) per annum, can be disorganized, it is impossible to admit. What, also, does he mean by this *organization*, which, according to him, should provide a remedy for all the evils which it indicates? Some measures of detail, of a utility sometimes questionable, and which in every case would scarcely deserve so ambitious a qualification.

That in which Royer was also deficient was close economic study. We see that he has read the masters of that science, but he has not sufficiently reflected upon them. Everything about him bears the character of feverish precipitation, and it might be said that he felt time was about to fail him. For want of analytical convictions on political economy, he hesitates, stammers, contradicts himself, and what is the most certain mark of slender knowledge, he expects at every turn to discover something that no one has seen before him. It is not thus that the most scientific minds proceed; without attaching a blind faith to the labours of their predecessors, they respect and study them, and enlighten themselves at their lamp, in order to penetrate deeper into the obscurities, and do not attempt to contradict them until they are very certain of their facts. This method—the only rational one, where it concerns the sciences in themselves—becomes still more necessary, if it be possible, in relation to sciences applied. It is there especially that it is easy to deceive ourselves, if we have not recourse every moment to principles. So likewise, as we cannot properly understand agricultural chemistry, agricultural botany, or agricultural mechanics, without being in the first instance a chemist, a botanist, or a mechanic, neither can we properly understand rural economy without first being an economist.

In order to put agriculture in its proper place, that

is, in the first rank of national employments, it is by no means necessary to suppose, as did Royer, a constant antagonism between the manufacturing and agricultural interests. Both are responsible; only the interests of agriculture are the greatest, turns over the largest capitals, and provides for the most pressing wants. Royer appears to think that this truth is unknown by economists, when, on the contrary, it is the economists who first combated the errors of the *mercantile system*, and who raised agricultural labour from the degradation in which ancient prejudices kept it. If we read all the books of the founders of the sciences in the eighteenth century, we shall find that it is of agriculture they most exaggerate the importance. The first agricultural society founded in France, that of Rennes, which preceded ours by some years, has had for its principal promoters, Gournay, the friend of Quesny, and Turgot, the original author of the famous maxim "*Laissez faire, laissez passer.*" When Royer declaimed against all special favour granted to manufactures and commerce, to the detriment of agriculture, he only quoted those economists from whom he professed to separate himself. He borrowed from them without suspecting it, even to that citation of Sully, which forms the epigraph of his book, and which they have before him demonstrated: "*Everything flourishes in a state where agriculture prospers.*"

Undoubtedly, he separated himself in some respects from the economic theory, when he demanded in its turn for agriculture what he calls a system of *direct encouragement*; but even there he approaches nearer to it than he is aware. Political economy has no objection to the establishment of *consultative chambers of agriculture*; on the contrary, it is one of its principles that all interests should be freely represented and defended: and if it had anything to object to, in the proposed institution, it was that epithet of *consultative*, which appeared to it too modest. The expositions, the meetings, the special schools have nothing whatever to disgust it; on the contrary, it would be easy to prove that these various means of instruction and propagation have, like the agricultural societies, sprung into existence under its auspices. Relief from the public charges which press upon the soil is one of the most habitual of its themes. See, however, to what the practical part of the ideas of Royer is reduced. We must do him the justice to state that he has not much deceived himself as to the efficiency of the duties called *protective*; and if he sometimes appears to demand them, it is only in words. What is there in his programme to retrench, in order to render it quite in conformity with the economic theory? A tendency, rather vague than clearly expressed, to a kind of *direction* of agriculture by the State, which is as chimerical as it is dangerous, and which he himself severely qualifies whilst allowing himself to go into it.

Nothing, therefore, justifies this pretension of a separate political economy, distinct from the body of general doctrine known under that name. With a modern writer, M. de Villeneuve-Bargemont, Royer gives this new school the title of *Christian*, as if all economic doctrine was not Christian! as if it was not the applica-

tion, by an order of particular ideas, of the great law of universal responsibility promulgated in the Gospel! Is it not also a sad abuse of the most sacred words, thus to mix them up with questions which are habitually decided by the simple laws of arithmetic? What, for example, has the great name of Christianity to do with the question, whether it is right or not to give a bounty on the exportation of agricultural produce; the only question being to ascertain whether it is not receiving with one hand what we give with the other, with the addition of much expense and abuse? I have often regretted, for my part, that the title of "political arithmetic" given two hundred years ago by Sir William Petty to the study of the social numbers, has not been adopted; that name had the defect of not taking account of all the aspects of the science, but it summed up perfectly what it has of a practical character in its first elements.

The strictness displayed by Royer, in its purely agricultural appreciations, does not appear to be much more justified. He condemns without pity all practice of culture that is not conformable to his ideal. His judgments are almost always well founded in point of theory, but he does not take sufficient account of circumstances, too often more powerful than ideas. The province of capital and markets, in the phenomena of production, has not in his estimation sufficient importance. How can we blame the cultivator, who has only insufficient markets and capital, for resting attached to practices undoubtedly defective, but appropriate to his wants and resources? Why make a crime of his poverty as well as his ignorance? A proprietor of the centre of France one day asked his métayer why he did not sow clover? "I would do so, sir," replied the métayer, "but I cannot eat it"—a profound, though naive reply, which hits the true point of the difficulty. Necessity speaks, and we must obey, and provide for the most imperious wants of the present, before thinking of preparing by skillful progress for the wealth of the future.

Nor is it exactly correct that our agriculture in the aggregate is a system of routine. It has made great progress for a century past, and if it has not done more it is not its fault. Speaking only of cattle, which Royer justly places in the first rank of agricultural interests, we can affirm that our production has quadrupled in the last hundred years; is that remaining stationary? True, our rural wealth may still double or quadruple itself; and the generous soil of this country, more and more fertile by the union of experience and science, could find, without impoverishing itself, a continually increasing population. The greater part of the advice of Royer is calculated to promote this brilliant future, and his book is a mine of useful indications, on which the most experienced practitioner may depend. It is only to be regretted that the enthusiasm of his imagination figures to him as easily and quickly practicable, what requires always much time. There are few theatrical opportunities in agriculture, and exaggerated expectations can only lead to bitter disappointments. The generality of agricultural writers have fallen into this seducing illusion. The first of all, Arthur

Young, has done more; he has attempted to carry into practice the ardour of his own mind, and he miscarried—a great example which it is necessary to bear in mind.

In other respects, Royer himself has given in one of his writings a justly esteemed formula of agricultural progression, which sums up in one view the obstacles to be overcome and the results to be obtained. The productive scale of the soil is divided into six stages of fertility: the first, called "*of the forests*," is that in which the earth, in a wild state, produces nothing but wood; the second, or "*pasturage*," is applied to a commencement of fertility, which furnishes pastures and meadows capable of irrigation; the third, or "*forage land*," is indicative of the accession of artificial grasses; the fourth, or "*cereal*," is that in which the fertility, increased by manure, gives the return of wheat at 20 hectolitres at least to the hectare; the fifth, or "*industrial*," is that in which the progressive use of manures renders the most exhausting cultures possible; the sixth and last, or "*gardening*," constitutes the *maximum* of human industry applied to the cultivation of the soil. That luminous formula contains in itself alone a complete treatise on rural economy. Its only defect is the want of a more definite idea of the economic conditions of production. We can, in fact, pass from one period to another only in proportion as new markets are opened. The increasing use of manures is the means and not the first cause of rural progress.

About the same time that the *Economic Notes* appeared, the indefatigable Royer undertook the translation of the great work of David Law, Professor of Agriculture at the University of Edinburgh, upon *domestic animals*. This publication was the first that had made known in France, with any details, the improved breeds of England; Royer has, therefore, the honour of having initiated amongst us this profitable career. The notes with which he has accompanied his translation exhibit the same defects as his statistics, but the subject was then so new, that it was, perhaps, allowable to exaggerate a little in order to popularise it. Even now, after fifteen years' experience, the ideas are not completely settled, and the introduction of the English breeds has its fanatical detractors as well as its warm partisans. Time will do justice between the exaggerations of both parties, but the national agriculture will ever owe a debt of peculiar gratitude to the useful precursor who has revealed to it so original an order of ideas. Our Society, always attentive, has decreed to this translation a gold medal, with the bust of Oliver de Serres.

In the mean time the reputation of Royer was extended by these multiplied works; our Society admitted him into the number of its members at the end of 1845, and the Government appointed him to undertake the functions of Inspector-General of Agriculture. It was in that capacity that he published, in 1845 and 1847, his two last works, and those which have exercised over subsequent facts the most direct influence, and which have unfortunately remained the last. Two great questions had for fifteen years already pre-occupied every

man justly attached to the first of national interests, those of the credit-foncier, and of agricultural instruction. The Council-General of Agriculture, and the to-be regretted assembly known under the title of *The Central Congress*, had on many occasions called the attention of the Government to these two subjects. The new inspector was directed to go and study them in Germany. Royer set out in 1844, and went over the Grand Duchy of Baden, Wurtemberg, Bavaria, Prussia, Hanover, and Belgium, and returned from this journey with two long reports, which were successively printed at the royal press, by order of the Minister of Agriculture and Commerce.

The first treats of the institutions of *Credit-foncier* in Germany and Belgium. It is composed chiefly of official documents, and has only served better to make known in France the ingenious mechanism of these institutions. M. Wolowski, who has, at a later period, had the merit of naturalizing them amongst us, after a long argumentation, has thenceforth awarded full justice in the *Journal of the Economists* to assistance he derived from Royer; and the opinion of a judge so competent is a sufficient eulogy. Established in 1852, the French Society of *Credit-foncier* has not yet realized, and probably will never realize, the unreflecting expectations its appearance has raised; but its work is proceeding to the extent of possibility, and it has already lent to real property more than 100,000,000 francs at a moderate interest, and with provision for partial repayment. This first benefit is still but little felt upon the enormous mass of our landed debt; but we cannot do everything. Besides, the establishment of this Society has called forth important inquiries into the constitution of property, and the general conditions of credit, which have had the double advantage of dissipating many illusions, and unravelling useful truths. In contributing to lay the foundation of this laborious edifice, Royer has not thrown away his time.

His second report was entitled "*German Agriculture, its organization, schools, manners, and more recent practice.*" This great work places in a proper light the rare qualities of that spirit of investigation he possessed, in this instance, without anything to regret; time, study, and reflection having allayed his first ardour. The word *agricultural organization* is, however, too exclusively employed to designate the administration in its connection with agriculture, which constitutes only the least part of what may be called by that name; but the author has not neglected the most essential basis of true agricultural organization—the state of property and cultivation, the civil laws, manners, communications, imposts, &c. We love to traverse with him the rich province of Lower Suabia, which is reckoned amongst the thickest populated and best cultivated parts of Europe, with their villages, which touch each other, their excellent roads bordered with fruit trees, their vineyards, planted on terraces to the summits of the mountains, their fields subdivided to infinity; and the still richer fields of Saxony, where the house of the simplest peasant is well built, elegant, and well kept in repair, which is

not always the case elsewhere with those of the most wealthy proprietors; and Bavaria, much less prosperous; and the German kingdoms, Prussia—which presents so many agricultural contrasts, from the fertile shores of the Moselle and the Rhine, to the frozen banks of the Niemen.

In the first class of studies which occupy, on the way, the judicious traveller, may be placed agricultural instruction. Such was the true end of his mission, and in the midst of the interesting objects which claimed his attention, he never loses sight of it. Germany is in some respects the classic country of agricultural instruction. It is to M. de Fellenberg that we generally attribute the honour of having created the first institute of this kind, at Hofwyl, in the Canton of Soleure, in Switzerland, about the year 1800. At the same period, Thaër established another in Prussia, and obtained from it such results, that in 1806, in the midst even of the disasters of the campaign of Jena, the Government instituted, under his direction, the public school of Mœglin, in order to repair, as soon as possible, in peace, the misfortunes caused by war. In 1818, when peace had finally returned to Europe, a man equally illustrious with Thaër—Schwig—organized in Wurtemberg the Agricultural and Forester Institute of Hohenheim, which was soon imitated in Saxony, Bavaria, and most of the other German states. Hofwyl had ceased to exist in 1844, but Mœglin, Hohenheim, and the other German schools which rose around these two models, presented a vast field of observation.

Ten years after Royer, I visited the most important of these establishments—Hohenheim, and have been able to testify to the exactness of the details given by him in his report, and which were in general still true, in spite of the inevitable changes effected by time in such institutions. That little kingdom of Wurtemberg, which has not much more than a thirtieth part of the surface of France, supports thus for forty years one of the largest agricultural and forester institutes in existence, and students resort thither from all parts of Germany. Royer gave an account also of the secondary institutions which, in the same kingdom, complete the system—the two farm-schools of Elwangen and Hachsenhausen, the course of rural economy at the University of Tubingue, the Veterinary College of Stuttgart, and, above all, the celebrated Dairy, and Stud, still more noted, founded and directed by the King of Wurtemberg in person. Such are the various means of information accumulated on one single spot; but it is necessity which compels it. So dense is the population round Hohenheim, that the soil is scarcely able to support it, and daily new agricultural accessions can alone retain upon their native territory thousands who are ready to emigrate from it.

Royer passes afterwards in review the other agricultural institutions of Germany—Mœglin, in Prussia; Schleissheim, in Bavaria; Tharaut, in Saxony, &c. Partisan as he was on the subject of agricultural instruction, he speaks at once both of its strength and weakness, and criticises more often than he approves. The period of enthusiastic exaggeration had gone by

with him, and he judges from henceforth more coolly, and with a more certain and practised glance. His conclusions are not always the most clear, and allowance must be made, for we see that he sincerely searches after truth. He appears to me, however, to have perfectly described the true nature of professional instruction in the following, which I copy verbatim from page 338: "It is beyond dispute that in all professions, practice alone forms good practitioners. In the best organized schools—medical, agricultural, or otherwise—we learn little except to learn; that is to say, the knowledge acquired disposes to observation, forms the judgment, and enables the intelligent pupil to classify the facts, to analyze them, and to deduce the consequences with greater correctness. To demand more or better of professional schools is to ask for the impossible; and the best of them—those which produced the most useful results—are those which have the good sense to comprise in the study of the sciences the greatest number of generalities, and compelling the students to examine into them as much as possible."

These excellent words embrace, in my opinion, all the best arguments on this delicate subject. Agricultural instruction should still less pretend to form good cultivators or skilful proprietors, than men qualified to become such. This is not the case with all—very far from it; but it is open to all. Nothing can be substituted, either in agriculture or the arts, of application for real practice, that which is exercised at our own risks and perils, and of which we ought to face all the difficulties and bear all the consequences. But we ought to be more or less prepared for this formidable trial, and it is the task of instruction to prepare us for it. At once insufficient and necessary, it cannot do more, and it ought not to do less; and the best system to effect it consists less in pre-occupying ourselves too soon about the immediate application, than, as Royer has well said: "*in entering upon the study of the most general sciences, and examining into them as much as possible.*" It is always the question of Voltaire, between the adjective and substantive. In all science applicable the substantive is the science, the adjective is the application.

This definition of professional instruction is applicable especially to that which constituted the mission of Royer, as regards its principal object—the higher branches of instruction. The Government had already provided for the diffusion of practical teaching by the institution of farming-schools, and it was engaged in taking one more step, and found for the higher classes the superior school of agricultural sciences. Those who by birth were destined to become hereafter the principal proprietors of the soil, as well as those who by their talents and tastes looked forward to becoming administrators of large estates or agricultural engineers, could take no part, in a country where all instruction was furnished at the expense of the state, like the Chinese and Japanese, in a course of study appropriated to the most useful professions. This inconceivable hiatus could not long exist. Royer insisted urgently, in reference to Saxony, on the social and political, as well as the agricultural utility, of a numerous class of proprietors cultivating their own domains, and habituating themselves from their childhood in finding pleasure and profit in it. "The study of the physical and natural sciences occupy in Saxony," said he, "a large place in the life of men of leisure. An acquaintance with these creates in them a great taste for rural life. In their estima-

tion man is no longer isolated, nature no longer dumb: minerals, vegetables, and animals, all become a perpetually varied subject of observation and study." This management of the superior classes exercises a happy and powerful influence over the rest of the nation. Comfort, intelligence, and politeness are more than anywhere else diffused throughout all ranks of the rural population.

On his return from this journey, so well executed, Royer received the cross of the Legion of Honour, and would doubtless have pursued his career with increasing renown, if a jealous destiny had not come to arrest him in the midst of his labours. He died on the 25th June, 1847, at the instant in which his last volume was published. Some months after, the Government, which had charged itself with these various studies, disappeared itself before a revolution; but the project which it had elaborated survived it. The new Government resumed with warmth that of agricultural instruction; and under the auspices of an excellent man, whose recent loss we have to deplore, M. Tourrit, the law of the 3rd October, 1848, was passed, and the National Agricultural Institute of Versailles was established. It was one of the most cherished projects of Royer, and received its realization; but he was no longer there to take part in it. In his personal absence, his book was put largely in requisition for the new organization. Must we congratulate or pity him? If he has not had the happiness of seeing created in France superior agricultural education on the principles he had laid down, neither had he the mortification of seeing it suppressed four years after when the French successor of Thier and Schvez, M. de Gasparin, had accepted the superintendence of it.

Fortunately, gentlemen, the art that we cultivate is a great school of patience. When the ploughman trusts the seed to the soil which he has prepared for it, he knows beforehand how many enemies threaten it, and may wrest from him in a day the fruit of his labour. The frost, drought, moisture, hail, wind, birds, insects, parasitic plants, a thousand dangers at once, attend the precious germ, from the hour which precedes its springing, to that which follows its maturity. The husbandman knows this, and is not discouraged. When he is stricken by one of these scourges, he begins again, certain that sooner or later God will bless his labour. It is even so with useful inventions; their lot is frequently to succumb, but they raise themselves by their own forces, and always end by making their way.

LEONCE DE LAVERGNE,

Member of the Institute, and of the
Central Society of Agriculture.

PROLIFIC BARLEY AND WHEAT.

TO THE EDITOR OF THE MARK-LANE EXPRESS.

SIR,—I see in your last week's publication that Mr. John Steed has favoured you with a sample of what he calls *his new barley*. If it is really a *new* kind as represented, it is an acquisition, and I am delighted he has produced such as I cannot, and what supersedes any I ever heard of. I have *two* prolific varieties (not *new*), winter and spring, which I cannot but think are as prolific as any extant. I enclose you produce of one ear of each. The winter variety was sown in September, on the Lois-Weedon plan, viz., on only one moiety of the land, and some of it I sowed in spring, and

I enclose you produce of an ear from that; this, however, was sown all over the entire plot as usual, both plots produced many ears with 80 grains, but 70 to 72 was the rule. It is a coarser variety, as per sample, however, and not so heavy, and not so fit for malting purposes as the common kinds of barley, of which I also enclose you an ear's produce (31 grains), for you to compare, but this is not extraordinary. Common barley generally produces only about one-third as much as the two prolific kinds I am writing of, say 25 to 30 grains in an ear, and I have known great prizes offered for one with 10; but three times as much, sir, for any sort to produce, I think, is important to take notice of. My plot I planted this year of the winter kind, sown in September, on the Lois-Weedon principle, and cut and thrashed in July, when it stood 1 foot high, and as right up as a dart, after having mastered all inclemency of weather, even to a plant, since it was sown, and produced equal to 9 qrs. 5 bush. 2 pks. 2 qts. per acre, by correct calculation; thus, as 19½ pts. is to 20 yds, so is 6,410 yds. or 1 acre, the plot being 10 square yards, and the produce 19½ pints, and note, on only half the entire breadth of 20 yards, the other half being fallowed. Another plot of this winter kind sown in spring, over the entire surface, just 1 square yards, which was cut in August, produced exactly 5 pints, which may be calculated by the same rule of three, which every school-boy ought to understand, and that produce I leave for tyros in agriculture to calculate for themselves. Each grain planted before winter on half the land, produced on an average about 30 fine ears, say 2,000-fold, planted at 9 inches by 12 inches. That sown in spring at the same distance all over the plot, averaged only about 20 ears, or 1,500-fold, and the stubble is standing on common ploughed land, which had been only once dry, and not manured, for inspection of the incredulous. My other 70 to 80-grained is the Peruvian, of which I also send you the produce of one ear (80 grains), not adapted for winter or autumn sowing, it being of tender habit; but it is extraordinarily heavy and nutritious for feeding; nearly as heavy as wheat, but, I believe, not much more productive as to measure than the common kinds, it being much smaller, and, perhaps, not more lucrative, as it, like the winter kind, will not do for malting; neither do I desire that they should, nor do I hope our friend Mr. Steed's will, as I am an advocate for growing more food than for producing more self-destructive strong drink. If acceptable, I will shortly send you several varieties of wheat, entire ears, with nearly 100 grains in each, and stubs of 50 ears on one plant. I have grown in former years 80 ears from a single grain; but as wheat did not tiller so well last winter, on account of the sudden and severe frosts in October, I failed to produce such specimens this year. I have this year sent one ear of my "selected prolific red wheat" to the *Agricultural Review* office, in Dublin, which contained 126 plump grains 6 to 7 set. My agricultural neighbours write that they are satisfied if they can grow 6 qrs. of wheat per acre, whilst many others, even the greatest part farmers, do not grow 4 qrs. I, for one, however, am not satisfied, and I think justly so, simply for the reason that I know by repeated experiments in divers years and seasons, most of the land is capable, by perfect culture, of producing more.

ABRAHAM HADBY,

Maldon, Sept. 12. Seedgrower and Merchant, Essex.

AGRICULTURAL STATISTICS OF IRELAND
FOR THE YEARS 1859 AND 1860.

ABSTRACT OF CEREAL CROPS.

	1859.		1860.		Increase. Decrease.	
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
Wheat.....	464,175	469,642	5,467	—	—	—
Oats.....	1,982,662	1,961,384	—	21,278	—	—
Barley.....	177,894	180,964	3,070	—	—	—
Bere and Rye..	13,198	12,822	—	376	—	—
Beans and Peas	14,851	12,745	—	2,106	—	—
Total	2,652,780	2,637,557	8,537	23,760	Decrease in Cereal Crops in 1860 :—15,223 Acres.	

ABSTRACT OF GREEN CROPS.

	1859.		1860.		Increase. Decrease.	
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
Potatoes.....	1,200,347	1,171,837	—	28,510	—	—
Turnips.....	322,137	318,691	—	3,446	—	—
Mangel Wurzel & Beet Root..	27,054	32,060	5,006	—	—	—
Cabbage.....	31,680	22,749	—	8,931	—	—
Carrots, Parsnips, & other Green Crops.....	21,971	21,630	—	358	—	—
Vetches & Rape	33,243	40,533	7,290	—	—	—
Total	1,636,432	1,607,433	12,296	41,245	Decrease on Green Crops in 1860 :—28,949 Acres.	

GENERAL SUMMARY.

	Acres.
Increase on Meadow and Clover in 1860.....	157,375
Decrease in Cereal Crops.....	15,223
Do. Green Crops.....	28,919
Do. Flax.....	7,536
Total increase in the extent of land under crops in 1860	105,365

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

	1859.	1860.
Wheat.....	464,175	469,642
Oats.....	1,982,662	1,961,384
Barley.....	177,894	180,964
Bere and Rye.....	13,198	12,822
Beans and Peas.....	14,851	12,745
Potatoes.....	1,200,347	1,171,837
Turnips.....	322,137	318,691
Mangel and Beet Root.....	27,054	32,060
Cabbage.....	31,680	22,749
Carrots, Parsnips, and other Green Crops	21,971	21,613
Vetches and Rape.....	33,243	40,533
Flax.....	136,282	128,444
Meadow and Clover.....	1,437,111	1,594,486

RETURN OF LIVE STOCK.

	Horses.	Cattle.	Sheep.	Pigs.
1859.....	629,075	3,815,598	3,592,804	1,265,751
1860.....	620,938	3,599,235	3,537,846	1,268,590
Decrease.	8,137	216,363	54,958	2,839

WILLIAM DONNELLY,

Agricultural Statistics Office,
September 10, 1860.

Registrar-General.

THE DEVON SALES, &c.

In consequence of Mr. George Turner's quitting his Barton farm, a very large draught from his stock of Devons, Leicesters, and Essex pigs were brought to the hammer by Mr. Hussey, Tuesday, Sept. 18. Considering the prevalence of the harvest, which kept a great many away, the attendance was exceedingly good. Omnibuses and cabs were labelled, in Exeter, "To the Barton Sale;" and any one might have fancied, when the concourse filed along "the Devon lanes," that some great festival was on foot. The Hon. Col. Hood attended, with Mr. Brebner, on behalf of Prince Albert, and added seven more of "the juicy red line" to those which he has already purchased from Turner and Quartly's store. His Royal Highness's herd of Devons, on the Norfolk farm, at present consists of thirty cows, with bulls and young stock; while the Flemish farm is devoted to the Herefords; and the Home farm to the shorthorns, of which there are nearly three hundred. There was a strong muster of the neighbouring gentry, while Lords Falmouth and Emlyn, and Sir Laurence Palk, were represented by their bailiffs, who bought extensively; and Cornwall, Somersetshire, and Devonshire contributed not a few of their leading breeders. After lunch, Mr. Hussey mounted his horse-drawn waggon, in front of the first sheep-pen. A more cheerful practitioner, of the good old top-boot school, it is not possible to conceive; and after pronouncing the "God save the Queen" at the end of the conditions, he made them "keep their eye on the Corporal" to some purpose, for nearly four hours. The 200 ewes fetched £1,008 2s. 6d.; and 70 ewe-lambs and 21 rams and ram-lambs, all of which were in mere store condition, brought up the sheep-total to £1,262 19s. 6d. The best price, 35 gs., was given by Mr. Davis, of Cornwall, for the royal prize pen of five shearing ewes; and the pen of local-prize fame went, for £32 10s., to Mr. Corner, of Long Forth, Somerset—a well-known sheep and Devon prize-taker. The best pen of flock-ewes reached £35, which was bid by Mr. Potter, of Thorverton, near Exeter; and Somersetshire, Cornwall, and Worcestershire took off the three best rams, after some spirited biddings, at eighteen, fifteen, and ten guineas.

When this part of the sale was over, an adjournment was made to the Devon ring; and thirty-three females and five bulls, composing about half of Mr. Turner's entire herd, were put up. The well-known Beeswing was bought in for 48 gs., Prince Frederick for 95 gs., and Great Western for 37 gs. The other two-year-old heifers averaged about £24 apiece, the highest price (30 gs.) being given by the Prince Consort for Honeydew, by Feruk Khan (413).

Beeswing's dam, Olga (53 gs.), with her calf at her side, was the highest lot among the fifteen dairy-cows. Lord Falmouth secured Cloth of Gold, and Bloomer to bear her company. Bloomer is by Earl of Exeter (38), Mr. John Quartly's prize-bull at Windsor; and so

are Daphne and Nemophila, the former of which was secured for the Prince, and the latter for Mr. Morton, of Crediton. Considering that several of them were not very young, their juvenile bloom did no small credit to their keep.

The biddings for the yearling heifers by Napoleon (259) and Clarendon (358) were slack; but Prince Frederick brought up the average very considerably for the heifer-calves, which were all by him; and three of them made 20 gs. Owing, as in Beeswing's case, to the belief that Mr. Turner intended to keep the great and good Prince Frederick, the biddings for him were rather languid. His son Great Western, from Vaudine, being also bought in, the second-best bull-calf price (16 gs.) was given by the Prince Consort for Count Strogonoff, from Bloomer.

The improved Essex breed held its own gallantly among the pigs, as the seven boars and five sows made £82 9s. The highest price was 10½ gs. for a two-year-and-ten-months boar, and 13½ gs. for a sow.

Mr. Turner intends to remove shortly to his own farm at Bowly, near Exeter, near which his father first laid the foundation of the family name for Devons and Leicesters.

MR. JOHN QUARTLY'S SALE.

After a very dull fair at Barnstaple, arising principally from a lack of keep in the country, the cracks of the Devon cattle world drew up to head-quarters at Molland, on Thursday, Sept. 20. As compared with Mr. Turner's sale, the company was a mere fragment; but nearly all those who did come meant business in earnest. The Prince Consort was represented by Mr. Brebner, who purchased four lots; and Viscount Falmouth by Mr. Herriot, of whose trio, after the sale, the Chester and Warwick Royal prize-winner Duke of Chester, very unexpectedly formed one. Among the other buyers from Cornwall, were Anstey, Palmer, and Sobey; Warren and James Hole did duty for Dorset and Somersetshire; and George Turner, the Halses, Merston, and Ridsen on behalf of the county.

After some rounds and rumps of beef—choice enough to melt the heart of any Shorthorn or Hereford man—had been done full justice to, time was called by Mr. Ellis in the field behind the house, and the first lot—"a cow by the name of Brown"—entered the ring. Her remarkably fine and massive stamp soon secured an opening bid at 20 gs.; Mr. Turner was "in" at 26, and fought her up to 36½, when Mr. Sobey bore her off at a guinea more. She was only highly commended at Canterbury, but her great grand-dam Pretty Maid (366) was the Royal Bristol prize cow. Her dam Beauty, whose twelve summers had sat very lightly on her, became Mr. Hole's for 28 gs., and then the Prince's agent showed his hand at 24 gs. for

Peace and Plenty. Mr. James Quartly, however, would not hear of his "purchasing Peace at any price" like that, and opposed him so stoutly on behalf of the West Molland herd, that Mr. Brebner did not get her under 40 gs. She was, like all the others, only in store condition, but her Earl of Exeter and Famous blood was undeniable, with its close double cross of Pretty Maid. Mr. James Quartly also bid 10 gs. for the next lot, Picture, a daughter of Earl of Exeter and Beauty; but Mr. Anstey (on his right) "covered" him instantly with another guinea, and won. Flower, a combination of three Royal prize bulls, and Pretty Maid, and Curly to boot, kept the bidders busy. 51 gs. was Mr. Philip Halse's "closer." Mr. Brebner then nibbled at Daisys, a very even cow, with a nice forequarter, though rather bare in flesh; but Mr. Anstey would not be denied a thirty-guinea dip into the blood of old Baronet. The sixteen cows averaged very nearly 29 gs., and the two-year-old heifers—a couple of which were not in calf—as nearly touched twenty-three. Dairy Maid went to Windsor at 25 gs., and Mr. Brebner also fought hard for a very snug daughter of Sultan and Beauty; but Mr. Robert Smith, of Emmett's Grange, who bid for Mr. Turner, carried her off at 37 gs. The four heifer yearlings averaged 25½ gs.; a very good one, by Sultan, from Dairy Maid, contributing thirty-four.

The gay, short-legged Duke of Chester was the next to show; but in spite of his elegant outline and beautiful touch, the biddings hung most dreadfully, and 35 gs. was all that Mr. Ellis could make out of him. His rare-topped son from Tulip was only a guinea behind, and it would have taken a few more guineas to separate him and Mr. Risden. Five out of the six bull calves were sold, and the 35 lots made up a total of 882 gs., which put the average a little beyond 25 gs. Not a single lot was bought in; but Mr. John Quartly still retains about a score of females, including the Chester royal cow Pink, and the Windsor royal heifer Playful. A large assortment of horses, colts, and Exmoor ponies followed, one of which—a Galloway, great grandson of old Beeswing, through her eldest son Old Port, by Sir Hercules—made 30gs., as Mr. James Hole liked his action far too much to leave him; and Mr. Herriot seemed pretty nearly in the same mind. The weather was fine, with the exception of an hour in the afternoon.

SALE OF MR. THOMAS ELLMAN'S BEDDING-HAM FLOCK.—The cause of this sale was, that the proprietor had to resign the tenancy of a large portion of downland upon which the flock fed. The sheep were descended pure from the great breeder and originator of the improvements of the Southdown sheep, the late Mr. J. Ellman; and Mr. Thomas Ellman has adhered to the experience of his respected parent. He has derived the blood from the Glynde flock: by excellent judgment, talent, and perseverance, he had carried forward improvements in the sheep; so that for purity, symmetry, and constitution, they could not be surpassed. The *Shearing Ewes* were sold at 75s. to Mr. Mason, 80s. to Mr. Jonas Webb, 75s. to Mr. Woodhouse, 65s. to Mr. Woodhouse, 65s. to Mr. Rigden, 75s. to Mr. Woodhouse, 60s. to Sir Thomas Sebright, 60s. to Mr. Weller, 55s. to Mr. Weller, 60s. to Sir Thomas Sebright, 55s. and 65s. to ditto, 60s., 50s.,

50s., and 60s. to Mr. Weller, 55s. to Mr. Verrall, Swanborough, 55s., and 50s. to Mr. Weller. *Four-tooth Ewes*—65s. to Mr. Mason, 60s. to Mr. Morris, 58s. to Sir John V. Shelley, 62s. to Mr. Hart, 58s. to Mr. Morris, 56s. to Mr. Weller, 56s. to Mr. Waters, 51s. to Sir J. V. Shelley, 56s. to Mr. Weller, 58s. to Sir J. V. Shelley, 56s. to Mr. Filder, 51s. to Mr. Mason, 55s. to Mr. Filder. *Six-tooth Ewes*.—75s. to Mr. Filder, 77s. to Mr. Woodhouse, 66s. to Mr. Martin, 65s. to Mr. Woodhouse, 55s. to Mr. Weller, 60s. to Mr. Martin, 58s. to Mr. Selby, 62s. to Mr. Filder, 51s. to Mr. Verrall, 50s. and 51s. to Mr. Weller, 56s. to Sir John V. Shelley, 50s. to Mr. Hayward, 50s. to Mr. Woodhouse, 48s. to Mr. Wood, 51s. to Mr. Woodhouse, 52s. to Mr. Weller, 56s. to Mr. Shoemsmith. *Full-mouthed Ewes*.—64s. to Mr. Morris, 100s. to Mr. Rigden, 66s. and 72s. to Mr. Woodhouse, 62s. to Mr. Boys, 58s. to Mr. Ashford, 62s. to Mr. Stenning. The other lots in this class realized from 47s. to 58s. The aged ewes fetched from 46s. to 50s., and the ewe lambs ranged from 29s. to 30s. The latter were not at first submitted, as Mr. Ellman stated that they had done so badly that he did not think they would do him credit, but if any one called for them they would be brought forward. They were called for by some gentlemen present, and, after the sale of rams, they were submitted by the auctioneer. The rams were sold to Sir Thomas Sebright for 22 guineas, and 15½ gs., Mr. Hart £10, to Mr. Shoemsmith for 15½ gs., to Mr. Wood at 10 gs. Ram lambs to Sir Thomas Sebright 16 gs., to Mr. Arkcoll at £6 and 5 gs., Mr. Mason at 7 gs., 6 gs., and 5 gs., to Mr. Arkcoll at 7 gs. and £8 15s., to Mr. Baghurst at 5 gs. Several others were sold at 12 gs., £9 15s., and £11 15s., £5 5s.; and yearlings at 15 gs., 11 gs., and other prices to parties whose names we did not catch. Among the company present were Sir Thomas Sebright, Bart., Captain Valentine for the Duke of Rutland, Mr. Woods for Lord Walsingham, Mr. John Ellman, Mr. Jonas Webb, Mr. Woodhouse, Mr. Lugar, Mr. Rigden, Mr. John Shoemsmith, Mr. Mason, Mr. E. Cane, Mr. Thomas Stapley, Mr. Brown, Mr. Madgwick, Mr. Smith, Mr. W. Tanner, Mr. Turner, Mr. Gorringe, Mr. Saxby, Mr. Filder, Mr. R. H. Ellman, Mr. F. Webster, Mr. Thomas Arkcoll, Mr. Hart, Mr. Farncombe, Mr. Catt, Mr. Scott Hayward, Mr. Verrall (Swanboro'), Mr. Woodhams, Mr. Ellis, Mr. Pagden. Before the sale the sheep were closely examined by the company, who pronounced them to be excellent, and in far better condition than could have been expected, after considering the difficulties of the past season.

GREAT SALE OF SHEEP.—Mr. Preece's great sale of sheep at The Flash, near Shrewsbury, took place on Tuesday, Sept. 18, when the rams belonging to the Rev. C. P. Peter brought 10 to 14 guineas, Mr. Pembrey of Stanwardine 7 to 11 guineas, Mr. John Maddox of Harley 7 to 24 guineas, A. H. Minor, Esq., of Astley House, 6 to 12 guineas, the Right Hon. Lord Wenlock of Burton Manor, Much Wenlock, 10 to 28 guineas, Mr. George Adney of Harley (the well-known veteran breeder of true Shropshires) 8 to 33 guineas, Mr. W. P. Claridge of Pitchford Park 6 to 10 guineas, Mr. R. R. Lander of Evelith, Shiffnal, 7 to 16 guineas, Mr. Henry Matthews of Montford, Salop, 8 to 30 guineas, Mr. P. W. Bowen of Shrawardine Castle 7 to 10 guineas, Mr. Mansell of Adcott Hall nearly 10 guineas each, Messrs. Crane of Forton and Shrawardine from 7 to 19 guineas; Mr. Everall's of Micklewood also fetched very good prices. Mr. Preece's rams let at 10 guineas each. The ewes belonging to Mr. Pembrey realized £2 10s. to £33s. each, to Mr. Minor's fetched 2 guineas and a half each, those of Lord Wenlock averaged £2 15s. each, Mr. George Adney £2 18s., Lord Berwick (cross-breeds) nearly £2, Mr. George Crane of Benhall 2½ guineas, Mr. Thomas of Ediston about £2, Mr. W. P. Claridge £2, 10s., Mr. P. W. Bowen of Shrawardine Castle £2 10s. Mr. Maddox of Harley from £2 to £3 3s., Mr. Lee of Brompton £2 8s., Mr. Plimley of Alderbury £2 12s 6d. Amongst the buyers were the Right Hon. the Earl of Powis, the Right Hon. Lord Wenlock, the Right Hon. the Earl of Denbigh, Sir Robert Peel, Bart., Sir W. W. Wynne, Bart., the Hon. Robert Curzon, Capt. De Winton, &c.

CALENDAR OF AGRICULTURE.

This is the general month of sowing wheat. Plough with a seed furrow the fallowed lands that have been dunged and limed. Steep the seed grain in stale urine or in a very strong solution of common salt; skim off the light grains, and encrust the seed with hot lime to dry the grains for being sown. Sow immediately by the hand in broadcast or by the drill machine. On wet lands draw the water furrows without delay, open the cross cuts by the spade, and make clear passages for the water into the side ditches. Put gates and fences in repair, and shut up the sown fields for the winter.

Prepare, by fallowing, the lands intended to be sown with early green crops the next year.

Raise potatoes from the ground in dry weather by the plough or hand fork; pull and carry the haulm to the dung yards. Carry the potatoes to a dry place, form the heaps longitudinally about four feet high, cover with turf and earth, and thatch with straw. Secure mangel wurzel, carrots, and parsnips, in a similar way, and remove from clayey loams the crops of Swedish turnips, to get the land sown with wheat. Give the tops of Swedish turnips and of beet root to cattle and sheep—moderately at one time, to prevent hoving. Plant potatoes with farmyard dung on fallowed lands. Drill the ground widely and deeply, to protect the sets from frost.

Put the rams to the ewes, one to fifty, and place each lot in a separate field. Give them turnip tops and of beet, which will much increase the salacity. All aged, unsightly, and ill-shaped animals, and bad thrivers, and those ewes that missed last year, are rejected for the purpose of breeding, and the places supplied with the same number drawn from the ewe lambs that are now eighteen months old. Much care and discrimination must be exercised in assorting qualities for the purpose of propagation. Mark the rams on the brisket with red paint or black pigment, which will mark the ewes on the rump, and enable the shepherd to place marks on the ewes regularly as they are impregnated. This mark being affixed every fortnight, will be found very useful in spring, in drawing the ewes for lambing, and in preventing any lambs being

dropped unknown and unseen. Ewes must be got into good condition for the tugging season.

Sheep are smeared with some liquid ointment during this month, to kill vermin, and to prevent rubbing and tearing off the fleece. Tobacco liquor is much used, mixed with a small quantity of the spirit of tar. But the most approved practice now adopted is to dip the animals in Biggs' Composition dissolved in water for a few minutes' immersion, and then drying the animals on bare clean ground. It kills all vermin, and very much promotes the growth of the wool.

The lambs will require the assistance of artificial food in the end of this month, as the grass will begin to fail. If the turnip lands be dry and warm, confine the animals on spaces of the crop divided by hurdles or flakes, and give fresh spaces as the others are consumed. But if the lands be wet and poachy, cart the turnips daily for the lambs to a dry lea or stubble field, and cut off the roots on the field where the turnips grow. The sheep intended to be fattened will require turnips in a similar way.

The bullocks that are foremost in condition must be tied up in stalls singly, or placed in yards two or four together, and amply fed with turnips, with the tops and roots cut away. Give the tops to the keeping ewes or to the young cattle. The latter must be placed in yards six or eight together, and carefully fed and well littered.

Feed milch cows with cabbages and tops of turnips, and of beet root. Give hay and straw in chaff; or steam the roots and chaff in mixture. Juicy food is indispensable for the secretion of milk.

Begin to fatten hogs for bacon, use steamed food of roots and meals mixed, and finish with hard corn.

Get the manure pit in readiness; fill it with earthy and vegetable matters in order to absorb the urinary liquid, and clear out all the culverts that lead from the cattle yards to the tank. The absorption of urine by earthy substances is much the best use of the liquid matters. Tanks should be roofed over, as the exclusion of light is found to promote putrefaction,

CALENDAR OF GARDENING.

KITCHEN GARDEN.

Cape broccoli requires early care, and as each head is cut, the stump and leaves ought to be removed: these when dry should be burned, for the sake of the ashes. Spring broccoli plants should now be sloped down, the heads to the north, and earth brought up nearly to the leaves, or if in trenches, the stems ought to be landed up.

Beet root and carrots are partially dug up and stored in sand, for early use,

Cauliflowers in frames, or under glasses, must have abundance of air.

Finish the planting of cabbages as soon as possible.

Tie up some good plants of endive for blanching, and draw fine earth about the stems. Keep the winter spinach clear from weeds. Sow small salads once more; also a few mazagan beans.

Asparagus beds should be brought into winter order, not waiting for the ripening of the seeds.

Cut the haulm down to two or three inches, dig trenches a foot deep on each side, and spread the earth over the beds or rows; place the haulm in the trenches, spread salt over it, and fill the trenches level with dung and leaves. Seakale may be treated in the same way, returning all leaves to the soil, and deeply buried. Rhubarb and artichokes are assisted in this way, omitting the salt: the trenches become most valuable soil.

Potatoes: Raise and store; dry the second early, and all kinds of which the haulm is yellow.

Dress and clean all the quarters; mix manures, and ridge-dig beds of heavy soil. Observe any disease in potatoes, and remove all infection.

FRUIT DEPARTMENT.

Trees and shrubs, deciduous and evergreens, are safely planted between the middle and end of the month, on grounds drained and deeply trenched. Place manure over the soil, but not mixed with it, as top-dressing answers best.

Gather and store apples and keeping pears, the latter in a warmer room than apples.

FLOWER GARDEN.

Place auriculas in airy frames; camellias and heaths in a cool, dry, and well-ventilated pit or greenhouse; pelargoniums, cacti, and the succulent plants, in a house with a full south aspect. Neatness in every department is always to be observed.

AGRICULTURAL INTELLIGENCE, FAIRS, &c.

BLANDFORD SHEEP FAIR.—This fair was held on Saturday, for the first time in the new fair-field, recently purchased by the Corporation. There was a large supply of sheep, about 7,000 being penned, and a good many horses and cattle. Business was, however, dull. Ewes sold from 34s. to 40s.; lambs, 27s.; for some few fat lambs 33s. was offered and refused. A pen of half-fat ewes realized 48s. About 10 tons of cheese were pitched in the market. Best cheese was very scarce, and high prices were refused, several lots being taken back unsold. Some blues sold at 52s. per cwt. Heavy and light cart-horses were more plentiful than usual, and the better sorts changed hands at high prices. Hacks were scarce, especially those of a superior character. There were about 50 beasts driven into the fair, and though the demand was not brisk, the prices realized were quite up to those quoted.

BOSTON FOAL FAIR.—The annual foal fair was held on Saturday last. There was a large show of animals, but trade was remarkably slow, and prices were fully 25 per cent. lower than those of last year. The show of beasts was also large. Fatted ones realized 7s. 6d. to 8s. per stone. Storea were difficult to quit. In the sheep department, which was well supplied, trade was not very brisk. Wethers sold from 40s. to 50s., and breeding ewes from 35s. to 45s. per head.

CARLISLE LATTER FAIR came off on Wednesday. The arrivals of sheep were completed by 11 o'clock. A goodly number of buyers put in their appearance at an early hour of the market, and no sooner was the price asked than it became the general opinion that holders would give way, and, in fact, must give way before many purchases could be made. It proved to be the case after an elapse of an hour or so. The stern resolution of buyers not to purchase is evinced by the fact above stated, that not a lamb was disposed of till after eleven o'clock, at which time holders had lowered a figure, and a few sales were effected for:—Half-breda, 20s. 6d. to 21s. 6d.; two lots of Cheviots were disposed of at 14s. 6d. to 16s. 3d. respectively; other lots of the same breed brought more money, but the correct figure did not transpire. Cheviots—of which some prime lots were exhibited, bringing 17s. 6d. to 18s. a-head—showed a decrease of 3,000 or 4,000 head, while in crosses there was a diminution of more than 1,500 from the first fair. The number of lambs did not appear to be so small to the casual observer, as several lots of Cheviot ewes were exhibited, which took up the place of the missing animals. There was an increase of nearly 400 head of Cheviot ewes over last fair, and the prices were from 2s. to 3s. a-head lower, but with rather better inquiry, although a few lots were left unsold. On the whole the sheep market was a slow selling one, and prices were against the sellers. Of the animals sold up to the latest point the following are about the current rates: Half-breda, tops, 20s. 6d. to 21s., ditto seconds, 19s. to 20s.; Cheviots, tops, 15s. 6d. to 16s. 6d., ditto seconds, 11s. to 14s.; crosses, 15s. 3d. to 18s. 6d.; Cheviot ewes, 22s. to 25s. 6d. a-head. The attendance of buyers was by no means as numerous as on the previous fair, and their operations were of a

more limited character. Shorthorned beasts, on the average, from £7 10s. to 18s. 10s.; ditto yearlings, £4 10s. to £5; Galloway heifers and bullocks, £8 5s. to £16 10s.; ditto yearlings, £4 to £4 10s.; milk cows, £10 to £17 10s.; calving cows and heifers, £18 10s. to £18; gold cows, £8 to £14; one Ayrshire cow sold for £12 10s.; a few cross-bred yearlings went for £4 15s. a-head; Highlanders, £6 to £7 5s.; Irish heifers, £6 to £14 10s.; ditto bullocks, of which some good animals were offered, brought, in a few cases, from £10 to £11 10s., but generally speaking they were a dull sale; Irish yearlings, £2 to £3 5s. The number of cattle, on the whole, was 2,000 increase over last fair. The Northumberland buyers were not so numerous this fair; the southern counties were well represented, as were also the northern; an average number were also from the local districts, but they were not so numerous as is usually the case at this market. The horse market was well attuned with horses of various kinds, and what we may deem a large show was on offer. There was a large show of cart colts and fillies, and good animals too, but they met with little attention. We heard of a few sales being effected for the latter at from £18 to £20 each. An average supply of light husbandry and secondary cart-horses were in the market, but very few changed hands. A few private bargains were made out of market for cart-horses, the prices ranging from £20 to £28. Ponies were a poor show and not much inquired for. The market was of short duration, closing one of the duller markets ever held in Carlisle. About six cart-loads of young pigs were exposed for sale, and met a fair demand, at from 16s. 6d. to 22s. a-head. A clearance was effected.

DRIFIELD FAIR.—Owing chiefly to the backward state of the turnip crops, the demand for ewes, shearlings, and lambs was very slow. Sellers, however, were stiff in their demands, and towards the close of the fair buyers had to amend their morning's biddings, where sales were made. Many sheep at the close remained unsold. The number of beasts and horses on sale was limited.

DUNSE SHEEP TRYST, Sept. 18.—The supply of sheep and lambs was larger than last year. The demand was limited, and sales dull. Prices may be quoted as follows: bred ewes 42s. to 46s., half-bred ewes 23s. to 36s., lambs, according to quality, 12s. to 24s. Mutton 7½d. to 8d. per lb. There were a considerable number of Irish and other lean grazing cattle in the market, but few sales made, and prices low.

FINDON FAIR.—This fair was held last Friday. There were 10,000 sheep penned. Ewes sold from 30s. to 40s., and lambs averaged 24s. A lot belonging to Mr. Tusler, Edburton, sold for 32s., which we have not included in taking the average, as it would raise it unduly. Mr. G. Hand's ewes fetched 36s. per head. There was a much larger show of beasts than usual; young steers fetched £7, and others about £16. There was a great number of horses (about 300), but half of them Irish colts. There was a large attendance, but

it was considered a very dull fair, there being so few buyers, and but little changed hands.

HOLBEACH FAIR.—There was a large show of horses and foals, but a good deal of difficulty was experienced in disposing of them at all satisfactorily, and many remained unsold. Mr. Turnbull, the father of the fair, was present as usual, hale and hearty as ever: indeed he appears like "heart of oak," equally proof against wet and dry.

HOWDEN GREAT HORSE FAIR.—This fair commenced on Monday last, when there was an unusually large attendance of buyers, and a superabundant supply of horses. The day was wet and uncomfortable, and it was extremely difficult to effect sales, except with first-class horses, which were picked up the moment they entered the town. £80 appeared to be the top price for good coach-horses, but it is said as much as £400 was given for two hunters. On Tuesday the weather was beautiful, and the number of horses that came into the town was larger than has been seen for many years, reminding us of the appearance of the town in former times. Every stable in the place was full, strings of horses wandered about the streets, unable to find accommodation. This was the best day for business, but the sellers complained that they could get nothing for their horses, and the dealers declared they could find none worth buying. Both Wednesday and Thursday were busy days, but the show appeared to draw to a close on the evening of Thursday, when the principal dealers took their departure. Dealers from all parts of the country attended the show this year, and they appeared disposed to give a good price for first-class horses, but a large portion of those brought were not of that high quality required at Howden fair, and we believe many went back unsold.

LOUTH SEPTEMBER FAIR.—The supply of stock of all descriptions on Friday last was much larger than usual, of sheep in particular a very large number was penned. Buyers, however, were either scarce or shy, as a comparatively small amount of business was transacted at lower rates. A few lots of lambs changed hands at from 2s. to 2s. per head. There was a large show of horses, of which only a few were sold.

MOFFAT TUP FAIR.—The number of tups shown in the pens was about 200 to 300 below the number of previous years. There were 670 Cheviot rams, 132 Leicester rams, 70 blackfaced rams—total, 881. In addition to those shown in the pens, there were 50 Leicesters sold by auction, and 20 Cheviots—making in all, 690 Cheviots, and 182 Leicesters, or 951 in all. With a few exceptions the rams were not equal in condition to former years, first-rate animals being rather scarce, the greater proportion being of an ordinary description. The sheep did not look so well as they otherwise would have done, owing to the drenching rain. Little business was done till after ten o'clock; and, except for the best kinds, the demand was very dull, the rain having also a considerable effect in depressing business. Owing to the great deficiency of breeding ewes this season, there are fewer rams required for hill stocks; and not only from this cause is there less demand for tups, but from the heavy losses flockmasters have sustained they were not disposed to give what are called "fancy prices" for any animals which they actually required. Prices were for the better class of tups 20s. to 30s. below those of last year; while inferior were 20 to 30 per cent. depreciated in value—indeed, in many cases for shearing rams prices were offered not much higher than for good wedder lambs. A large proportion of the inferior animals were driven off unsold. For Leicester rams there was a better enquiry, as also for Cheviots, but far from brisk. Very few blackfaced tups changed owners.

MORETON-IN-MARSH.—This fair was abundantly supplied with all kinds of stock, which met a ready sale. Beef 7½d. to 8d., mutton 7d. to 7½d. per lb.

NORTHAMPTON ANNUAL CHEESE AND STOCK FAIR was held on Wednesday last, which was scantily supplied with the former article, and liberally with the latter. The show of North Wales Kents was large, and such as were useful and good sold well, and not much lower in price; the same may be said of other breeds; but middling and inferior animals were decidedly lower, and a large number of all kinds were sold. The Market-square contained a very large number of store sheep, especially barren ewes, the sale for which was flat; good young ewes, however, were sought after, and made good prices, while inferior and old ones hung on hand, and

could not all be sold. Good store lambs were not very plentiful, and such were readily sold at good prices. In the fat market beef was in large supply, with a heavy trade; customers not very plentiful, and not eager to buy, excepting at lower prices; and from 6d. to 7d. per lb. were the general figures, but several were taken back unsold. The supply of mutton was equal to the demand, making from 6d. to 7d. per lb., and very little made anything more. The horse fair was well supplied with all descriptions; good ones could be readily sold at good prices; but it was hard work to get quit of any other sort, even at a bad price.

PARTNEY SHEEP AND BEAST FAIR AND RAM SALES, Sept. 18.—There was a large show of sheep, but trade ruled dull, and during the early part of the day only few sales were effected, holders being unwilling to submit to reduced rates. As time passed on business became more active, and at a reduction of 2s. to 3s. per head many lots were sold. Lambs were worse to sell than drapery or store sheep of any other kind, and at the close of the fair many lots of lambs remained unsold. The ram sales, as usual, attracted great attention. At the beast fair on Wednesday there was a smaller show than is usual at the September fair. The fineness of the day probably induced many persons to keep back their stock in consequence of the urgency of harvest operations. The best bullocks sold readily, at an advance from last fair of 1l per head. Stores were rather a slow trade, but before the fair closed a good clearance was effected, at about late rates.

POOLEY FAIR.—This old-established fair was held at Pooley on Monday last. It was originally a fair chiefly for Fell sheep, but cross-breeds have now been introduced. There was also a quantity of cattle and horses shown. The business done was considerable, it being what is called in cattle-dealing parlance a selling market.

READING FAIR.—There was a large supply of all sorts of horses, but, as the harvest is very backward, the attendance of farmers was small. The demand for horses for London heavy-work was pretty good, and the best animals were taken off at £55 to £60, but the second class sorts made only from £40 to £45. Fine cart-horses were but little inquired after, and sold at £40 to £50; useful nags were cheaper than at previous fairs, realizing only from £20 to £25. Carriage-horses were short in number, and prices were £60 and upwards. Cart colts, two and three years old, £25 to £30. There was a large supply of horned cattle, and Irish heifers and steers were unusually numerous. Cows in full milk sold well at at £18 to £21; inferior sorts, £10 to £18; heifers in calf, £11 to £13; barren cows, £10 to £16. For the Irish cattle there was literally no inquiry, and the herds were driven away unsold. For English bulls, full age and size, there appeared to be a slow trade; two-year-old animals made from £6 to £8, and yearlings £5 to £7; steers, £11 to £13.

TEWKESBURY FAIR was largely attended. The supply of stock, especially sheep, was unusually large, there being nearly 3,000 of the latter penned. Messrs. Weaver and Moore's catalogue contained 1,300 sheep (of which 800 were fat) and 92 head of cattle, which realized upwards of £3,200. Messrs. Thomas and Son also had upwards of 900 sheep and 60 head of cattle. Mutton realized from 6½d. to 7½d., and beef 6d. to 7d. per lb. A small demand for store stock.

WALTHAM HORSE FAIR, Sept. 18.—There was a large show, and the trade very brisk, especially for useful colts, which realized high prices—from £30 to £40 each; but inferior kinds met with a slow sale, and many were turned out unsold. First-class riding and harness hacks were much sought after, and readily bought up at good prices.

WALTHAM CATTLE FAIR, Sept. 19.—There was a large show of beasts. The trade for stores was not brisk, and those sold did not realize so much by £1 to £2 per head as at some recent fairs. Fat beasts made 6d. to 1s. per stone less money.

WORCESTER GREAT FAIR.—The annual fair held at Worcester, on the 19th September, was not so well attended as usual. Farmers asked full prices for fat stock, and a good deal was driven home unsold, the butchers buying sparingly. There are no new hops yet picked; old hops were not very abundant, and prices are still higher. The frost of last week having been followed by heavy rain has done a great deal more injury than was expected, and the estimated duty has gone down to £30,000, with no backers; and the Worcester duty is put as low as £2,500 to £3,000. Present rates of

Worcester hops: 1859, £12 to £13; 1858, very scarce, and 1857, £8 to £9. There are more of the growth of 1855 than any other year in the market.

WREXHAM FAIR was largely attended by both buyers and sellers, and an unusually large quantity of stock brought to market, particularly horses. Calves and in-calf cows obtained fair average prices, and a good number changed hands. Fat cattle were a little on the decline. Sheep and pigs were plentiful and cheap, especially the latter. Horses, too, were cheap.

IRISH FAIRS.—At BANAGHER, although sellers expected better prices in consequence of the immense loss in sheep from the severity of the winter and spring, still the fair, on the whole, may be termed a good one. The supply was something more than 1,000 less than in 1859, but upwards of 100 sheep more were sold to-day, as will be seen from the following official account kindly furnished by the collector of tolls: 1860, sold 9,518, unsold 5,094, total 14,612; 1859, sold 9,391, unsold 6,266, total on green 15,657. It is asserted that good, full-sized wethers were about 2s. over last year's prices; hogget ewes and lambs were somewhat under. The latter were not in very good demand. In this department sales were not brisk, and a reduction of nearly 3s. a head on the prices obtained at recent neighbouring fairs was submitted to. All good two-year-old ewes sold well, particularly in the morning; but before mid-day the demand slackened, and, consequently, lower rates had to be submitted to. The fair, with the exception of the morning sale, was rather a slow one. The horse fair (second day).—It was stated by some who have resorted to the fair for several years, that the supply was unusually large, whilst by others it was contended that the supply, although very large, was somewhat under last year; but be this as it may, the supply far exceeded the demand. A general dulness prevailed throughout the day. A good number of English, Scotch, and Irish dealers were present, and effected some purchases; still, expectations were not realized, and it is admitted on all hands that it was a dull fair. First-class horses were in good demand, and not to be had at any price; and where the necessity was urgent, large prices were given for what may be termed second-class. The demand for colts was not so good as usual at this fair; large, well-shaped colts were, however, in request, and well trained hunters went from £80 to £100; average rates from £50 to £80; colts, £25 to £50, and some higher. If good harness horses were to be had, high prices would have been realized. Carriage horses were also in request. Several harness horses brought about £25. There was no demand for horses for agricultural purposes or low-priced animals. The cattle fair (third day).—The good lots which were well finished sold early in the morning, at 56s. to 63s. per cwt.; but as the day advanced unfinished cattle were a great drag, and very few were sold, and two-year-olds went fully 10s. a head under last year's prices; one-year-olds and weanlings being difficult of sale. A large number of lots were turned out unsold.

PRICES OF BUTTER, CHEESE, HAMS, & C.

BUTTER, per cwt.	s.	d.	CHEESE, per cwt.	s.	d.
Friesland	104t	0112	Cheshire	new	70 to 80
Jersey	90	96	Cheddar	.....	74 86
Dorset	106	114	Double Gloucester	.....	68 74
Carlou	100	110	HAMS	.....	—
Waterford	100	108	York	.....	86 94
Cork	96	108	Cumberland	.....	86 94
Limerick	98	102	Irish	.....	76 84
Sligo	98	106	BACON: Wiltshire, dried	78	80
FRESH, per doz. 11s. 0d. to 14s. 0d.			Irish, green	.....	74 76

ENGLISH BUTTER MARKET.

LONDON, MONDAY, Sept. 24.—A flatness has come over our trade, and prices cannot be maintained.

Dorset, fine	114s. to 116s. per cwt.
Devon	106s. to 108s. " "
Fresh	12s. to 14s. per doz.

BELFAST, (Thursday last).—Butter: Shipping price, 95s. to 106s. per cwt.; firkins and crocks, 10d. to 10½d. per lb. Bacon, 64s. to 69s.; Hama, prime 78s. to 86s., second quality 60s. to 66s. per cwt. Prime meat Pork, 92s. 6d. per brl.; Beef, refined 120s. to 130s. per tierce; no Lards in the markets.

CORK BUTTER EXCHANGE, (Saturday last).—The supplies of butter in our market this week were more than the average during the harvest months, being about 2,200 firkins daily. A slight improvement on the London market (where there is an inquiry for fine descriptions of Irish) caused a

good demand here. Hence the arrivals are mostly brought up, and prices continue remarkably steady, with an upward tendency. During the week firsts rose 106s. to 107s., and thirds from 95s. to 96s. These were the only changes in prices that occurred for the week. Butter buyers are beginning to hold on speculation, although it seems likely that supplies will be large for some time.

NORTHAMPTON CHEESE FAIR.—There was a small show of cheese, prices averaging £4 per cwt. There was little business done, and most of the cheese exhibited was not of first-rate quality.

SHREWSBURY CHEESE FAIR.—Skim cheese from 30s. to 40s., second quality from 50s. to 65s.; best cheese from 65s. to 70s. At the cheese mart, Howard-street, best cheese from 65s. to 75s. At the Circus market, best cheese from 70s. to 75s.; middling from 60s. to 65s.; skims, from 30s. to 35s.

GLASGOW CHEESE MARKET, (Wednesday last).—A good supply, with a slow trade, a considerable quantity being left over unsold. There were 7 tons passed the weigh-house scales, and 7 carts in the bazaar. Low qualities may be quoted lower. Prime old, 69s. to 73s., new 53s. to 59s, skim, 25s to 28s. per cwt.

HOP MARKET.

LONDON, September 24.—A better market; prices same as last week.

WORCESTER, (Saturday last).—The first pocket of new hops has appeared at market to-day, of very inferior quality, which sold at £14. Our fair on Wednesday passed off very well, considering the absence of new samples, and a good business was done in the finest yearling and old hops, at full rates; the reports come, if possible, worse from the plantations; the hops on the poles appear to diminish daily; the grower of the above new pocket stated that had he picked them last week he should have had one-third more in weight. Duty stands at £3,000.

MAIDSTONE, Sept. 20.—Our returns to-day are from nearly thirty parishes in the district, and they are in point of fact mere repetition. Here and there a likely-looking piece is found, but generally speaking there is no improvement whatever. The cold damp days, followed by frosts at nights, have had the effect of retarding what little growth there was in them. In many parishes picking has commenced, but they come down exceeding light, and the hoppers sadly complain. The duty still stands at £45,000.

HOPS.—The first importation of continental hops of the growth of 1860 arrived on Tuesday last, consigned to Messrs. Woolton, and have been sold for brewing purposes at £14 14s. per cwt., duty paid. The quality and flavour are believed to be excellent, and the curing appears to be as perfect as that of British hops. In consequence of the small crop this season in England, and the excessive prices expected, a large importation of foreign will take place, their strength and condition having been tested by consumers in 1851, the last year in which any considerable imports took place. On the 1st of January next the Customs' duty on foreign hops falls from 45s. to 20s. per cwt., being only 6s. per cwt. in excess of the excise chargeable on British hops of this year's growth.

POTATO MARKETS.

BOROUGH AND SPITALFIELDS.

LONDON, MONDAY, Sept. 24.—Moderate supplies of Potatoes continue to reach us costwise and by land-carriage. Generally speaking the demand rules steady, as follows:

Kent and Essex Regents	105s. to 160s. per ton.
York	110s. to 160s. "
Scotch	100s. to 120s. "
Bedfords	120s. to 150s. "

COUNTRY POTATO MARKETS.—YORK, Sept. 15: Potatoes 9d. to 11d. per peck, and 3s. to 3s. 8d. per bush. MALTON, Sept. 15: Potatoes lower; table sorts 3s. 3d. to 3s. 6d., and small ones 1s. to 1s. 6d. KNARESBRO', Sept. 19: Potatoes 10d. to 1s. per 21 lbs. SELBY, Sept. 17: Potatoes 3d. to 10d. per 21 lbs. LEEDS, Sept. 18: Potatoes 10d. to 11d. wholesale, and 11d. to 12d. retail per 21 lbs. RICHMOND, Sept. 15: Potatoes 1s. 6d. to 2s. per bush. SHEFFIELD, Sept. 18: Potatoes sell at from 9s. to 12s. per 18 stones. MANCHESTER, Sept. 18: Potatoes 8s. to 12s. per 252 lbs.

AGRICULTURAL REPORTS.

GENERAL AGRICULTURAL REPORT FOR
SEPTEMBER.

During the early part of the month, the weather throughout the United Kingdom was somewhat favourable for harvest work, and large quantities of wheat and other kinds of produce were secured in our leading districts in middling condition. Since then, however, numerous changes have taken place; large quantities of rain have fallen; and the cutting and carrying of wheat have progressed slowly. It follows, therefore, that, for this advanced period of the year, there is still what may be termed a considerable amount of produce in the fields, and in reference to which considerable anxiety prevails. With regard to the actual yield of the wheats hitherto secured, a considerable difference of opinion prevails, from the fact—a most unusual one in September—that an adequate quantity has not yet been thrashed out to form a correct criterion of the value of the crops as to quantity. Our impression is that, with some few exceptions, the aggregate growth is a deficient one, even though we hear of five and even six quarters to the acre having been produced upon well-farmed lands. Further, we believe that for poor condition, the crop has seldom turned out worse. This must be apparent on examining the samples of both red and white parcels offered for sale during the last two or three weeks. The bulk of them have proved wholly unfit for millers' purposes, without a very large admixture of dry foreign, and in numerous instances samples previously purchased have been returned by the millers from want of condition. This state of things has, of course, created comparative firmness in the demand for good and fine samples, and an advance in the quotations of from 2s. to 4s. per qr. Low and damp qualities, however, have moved off heavily, and prices have had a drooping tendency. For some time consumption must chiefly fall upon our importations from abroad; very little English wheat will be brought forward; and the quotations will, possibly, continue to harden. It seems, therefore, that we have not reached the highest range of price as regards good wheat, and that very large importations from abroad will be necessary to meet consumption. At the present time the supplies in warehouse are large; but we believe that they will all be required, and that there is, consequently, every prospect of good bread ruling higher.

With respect to the production of barley, we may observe that the quantity grown is in excess of last year; but in almost every county, although the grain is somewhat large, the quality of the sample is deficient. Malting parcels, therefore, will be high in price during the winter, and we shall require all the barley that we can possibly import to meet the demand, which is likely to be very large. The oat crop is turning out well as to the yield per acre; but so small is the quantity of oats grown in this country, compared with the consumption, that even an increased yield will have very little influence upon the quotations, which still show considerable firmness, even though we have had enormous importations from abroad. Both beans and peas are turning out large crops, even on the most badly-farmed lands; but, as yet, owing to the prevailing rains, very few have made their appearance for sale. The flour trade has been in a healthy state, even though very large quantities of foreign produce have reached us. The continental harvests appear to have turned out somewhat productive; but, judging from most accounts at hand, the yield of the wheat crop is not much in excess of 1859. There is, however, a fair surplus quantity of old wheat on hand, and for which the demand, on English account, has continued steady, at full quotations. Advices from the United States are to the effect that the yield of wheat, maize, and all other kinds of produce is unusually large, and of very superior quality; hence, heavy shipments have continued to be made to England, without having any important influence upon the currencies. The stocks appear to be very large, and before there can be any absolute loss upon sales of grain in our

markets, a heavy rise must take place in the United States, which, by the way, we do not anticipate. The arrivals from that quarter, however, will be of essential benefit in keeping prices at a moderately low range here for some time, though it is evident that anything approaching positively low currencies, except, indeed, for very damp parcels, cannot reasonably be looked forward to.

A somewhat different state of things to that which we have here described has been apparent in Scotland. There harvest work has not been impeded to the extent that it has in England. Large quantities of wheat have been secured in fair, though not to say fine, condition, and the supplies in the fields are by no means extensive. The yield is represented as nearly, or quite, equal to last season, both as to quantity and quality, and the growth of barley and oats is described as very large. Apparently, therefore, we shall be in a position to draw somewhat largely upon the resources of Scotland for some time. This circumstance, added to extensive importations from abroad, will tend to dispel much of the uneasiness which now prevails as regards the future.

Our advices from Ireland are of a mixed character. The weather has certainly been very unpropitious for the ingathering of the crops; the grain has, consequently been carried in damp condition, and prices have tended upwards, notwithstanding that large supplies of grain have come to hand from the westward.

It now becomes necessary that we should say a few words in reference to the potato crop. By many persons it is contended that it is very deficient, and that disease is more prevalent than in 1859. Our impression, is that there is some error of judgment here. No doubt heavy losses have been sustained; but the actual quantity of potatoes grown is unquestionably larger than last season. If, therefore, we allow a fair margin for loss, say fully one-third of the entire crop, taking the country generally, we arrive at the conclusion that there is no absolute scarcity; still, we are of opinion that really fine samples will be high in price during the winter months. The produce of the crop in Scotland is not only very large, but likewise fine in quality; indeed it is generally admitted that the growth has never been excelled. This is an important matter for reflection, because we may rest assured that heavy shipments of potatoes will continue to be made from Scotland, and thus interfere with the value of English qualities, however good they may be. The continental crop does not appear to be a large one, but most accounts agree that it is nearly sufficient for home consumption. From that quarter therefore we are not likely to draw supplies.

The wool trade has continued in a healthy state. The late large quantities of colonial disposed of at public sale have passed into consumption, and there has been an improved demand for English qualities, both for home use and consumption, at extreme rates. As the stocks of woollen goods in the manufacturing districts are still limited, and as the woollen trade is decidedly steady, wool is likely to maintain its present value for some time.

The fruit crop has been very abundant in this country, but deficient on the Continent; hence, prices of all kinds of fruit have ruled low.

Although the quantity of hay secured has been large, good and fine qualities have continued scarce, and in request, at comparatively high rates. Inferior kinds, however, have met a dull enquiry. The value of straw has been well supported.

The growth of hops this year is an entire failure. The duty has consequently been done as low as £35,000. Last year at this period it was backed at £285,000. One or two new pockets have been disposed of at £18 18s. to £21; and about 50 pockets of new foreign, in middling condition, have been on offer at £11 to £14 per cwt. The market continues very excited, and prices have rapidly advanced. We believe, however, that there is still a large quantity of last year's hops yet unsold.

REVIEW OF THE CATTLE TRADE DURING THE PAST MONTH.

However unfavourable may have been the present season for our cereal crops, the damage sustained by excessive moisture being extensive, it has certainly proved satisfactory as regards the production of live stock. The fears that were at one time entertained that we should have great scarcity at almost famine prices during the winter months seem to have been dispelled. Both beasts and sheep have rapidly increased in weight, and improved in condition, and the currencies have become comparatively moderate. The abundant supplies of pasture food, the enormous growth of hay, though the quality is by no means prime and the heavy turnip crop, seem to point to a more reasonable state of things than has been experienced since the commencement of the year. The butchers and consumers are, therefore, in an improved position, since the former are not now compelled to invest additional amount of capital in the purchase of stock or dead meat, and the latter have the advantage secured to them of an improved joint at a moderate price. The fall in the quotations during the month just concluded, however, is considered by the graziers as a source of evil; but they must bear in mind that very high prices invariably lead to a rapid falling off in the consumption, and, eventually, to fluctuations in value, which deprive them of those profits to which they look forward with much anxiety. We say anxiety, because it too frequently happens that they purchase store stock considerably above reasonable quotations, and because they enter upon a system of speculation, the result of which it is difficult to foresee. Well, then, we appear to have passed the highest range in price; but the question to consider is, What will be that range during the first three months of 1861? In that period we must of necessity be chiefly dependent upon home supplies; the importations from the Continent will nearly cease, and we shall, consequently, draw largely upon stall-fed animals. It seems, therefore, to follow that future prices will be governed not so much by the available number of beasts and sheep in the United Kingdom (which we believe is comparatively small), but by the increased weight of each particular breed and cross. We ourselves have from time to time referred to this important feature in the production, and to some extent we have condemned a system of forcing stock for sale irrespective of its actual value to the consumers. At the same time, however, we have admitted the truth of the observation that it has paid the producers remarkably well. On this point, indeed, there can be no difference of opinion, but it is patent to all who have narrowly watched the operations of our graziers during the past three or four years, that the system has been otherwise than satisfactory to the consumers of beef and mutton. This is the view taken by a writer in the last number of the Journal of the Royal Agricultural Society of England, but to which exception has been taken by a portion of the press. In support of the doctrine that early maturity is the one thing necessary to meet consumption, we are told that "though the proportion of fat to lean meat may be somewhat greater than in the older pure Scots, it will be found that the consumable meat is also greater," and further that "instead of keeping his beasts four or five years, the grazier sells them *fat* at two and a-half or three years old." An additional argument is used to the effect that one year in four is saved by early maturity, and the question is asked, "Why should not a farmer force an animal which he can render marketable at an early age, when by doing so he makes a profit upon rearing and feeding it, and has room for another on which to repeat the process? This is not prematurely forcing the stock for sale." The admissions here made are sufficient in themselves to prove what we consider the unsoundness of the principle laid down. We have here the admitted fact that crossing leads to a larger proportion of fat to lean, when compared with a more natural system. How, then, are we to contend that there is more consumable meat? True, the numbers of stock may exhibit an apparent increase; but the very reverse is the case, since everyone must acknowledge that the supplies now in the hands of the graziers and feeders are much smaller than consumption justifies. The writer—though perfectly correct in his conclusions as regards particular breeds, and the power on the part of wealthy graziers to withhold stock until perfectly

ripe for market: in other words, sufficiently *fat* for sale—has fallen into a great error, in reference to the country generally. A few isolated instances of rapid production and good prices are not applicable in a general sense. On various occasions we have seen stock disposed of in the Metropolitan Cattle Market of enormous weight and perfectly fat—the offspring of the new system; but those animals, few in number, have formed serious exceptions, when the total supplies are taken into account. Take, for example, the exhibition of 5,000 beasts and 25,000 sheep on any given day during the whole of the present year: what proportion has been really prime consumable meat? Certainly not more than 500 of the former, and less than 4,000 of the latter. And what have these contained? A large admixture of fat in the carcase, and a trifling quantity internally. The butcher, therefore, has frequently paid enormously high prices for animals which have yielded fully two-thirds less internal fat than he could reasonably have calculated upon under the old, but now apparently much condemned system. To keep pace with it, however, every grazier is anxious to secure an immediate profit. Stock of all kinds—too frequently in wretched condition—is prematurely disposed of, and prices are kept at an unnatural range. Be it observed, we care but little about numbers in any particular market; we want more meat and less fat—we require that which is useful for general consumption, not that which is rejected as refuse. When it can be proved conclusively, by the state of our markets, that we are receiving our usual proportion of consumable food—viewed in respect to numbers, which we are certainly not receiving now—we shall be prepared to admit that the premises here laid down are singularly incorrect, but not before. Hides, skins, and offal are very useful commodities; but we apprehend that the production of such should not be the principal aim of our breeders. Let them rather strive to produce two-thirds really consumable stock, compared with the aggregate numbers disposed of, and we shall then have reached a period when consumers will more fully appreciate the value of production.

Notwithstanding that the weather has been changeable, and that the pastures have continued in a damp state, both beasts and sheep have fared remarkably well. The general health of the stock has been good, and very few losses have been experienced in any of our leading districts. The supply of food for winter use is now very large, so that no scarcity can be apprehended; we, however, have our misgivings in reference to the quality of the root crops. They are very abundant; but we fear that the want of a temperature sufficiently high to develop their usual properties will operate against the crops, as regards their nutritive or fattening properties.

The importations of foreign stock into London have continued on a liberal scale, but, with the exception of those from Holland, both beasts and sheep have come to hand in very poor condition. This must be evident, as regards sheep, when we state that the arrivals from Germany (about 20,000 head) have been disposed of at from 18s. to 21s. each. Some of those from the Low Countries have realized 63s. each. The arrivals have been as under:

IMPORTS INTO LONDON IN SEPTEMBER.

	HEAD.			
Beasts	8,120
Sheep	36,381
Lambs	1,089
Calves	2,200
Pigs	3,188
Total	50,928

COMPARISON OF IMPORTS.

	Beasts.	Sheep.	Lambs.	Calves.	Pigs.
1855.....	7,161	22,744	613	1,646	2,266
1856.....	7,084	20,605	3,000	2,772	1,559
1857.....	7,346	24,090	198	1,953	20,67
1858.....	5,999	25,488	717	2,785	2,472
1859.....	6,966	37,783	1,358	1,744	1,895

The total supplies of stock offered for sale have been as follows:

	HEAD.			
Beasts	27,080
Cows	500
Sheep and lambs	144,450
Calves	3,309
Pigs	2,922

COMPARISON OF SUPPLIES.

Sept.	Beasts.	Cows.	Sheep.	Calves.	Pigs.
1855.....	24,667	540	152,120	2,477	3,921
1856.....	24,002	485	132,014	2,452	2,800
1857.....	25,734	532	127,715	2,220	2,585
1858.....	27,446	533	131,150	3,210	4,281
1859.....	24,560	514	145,430	1,891	2,771

The arrivals of beasts from Lincolnshire, Leicestershire, and Northamptonshire have amounted to 12,000 shorthorns and crosses; from other parts of England, 3,300 of various breeds; from Scotland, 6 Scots and crosses; and from Ireland, 1,614 oxen and heifers. The numbers of beasts in the stalls in Scotland are represented as very large for the time of year; hence, we may look forward to increased arrivals during the next three months: we hear that most of the animals will not be forwarded otherwise than in good saleable condition.

Beef has been disposed of at from 2s. 8d. to 4s. 8d.; mutton, 3s. 4d. to 5s. 4d.; veal, 4s. to 5s. 4d.; and pork, 4s. to 5s. 2d. per 5lbs. to sink the oil: the trade during the last week of the month closing at reduced rates upon those just quoted.

COMPARISON OF PRICES.

	Sept., 1855.				Sept., 1856.						
	s.	d.	s.	d.	s.	d.	s.	d.			
Beef, from	3	4	to	5	0	....	3	0	to	4	10
Mutton	3	4	to	5	0	....	3	8	to	5	2
Veal	3	10	to	5	2	....	3	6	to	4	10
Pork	3	6	to	4	6	....	3	6	to	4	8

	Sept., 1857.				Sept., 1858.				Sept., 1859.								
	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.					
Beef, from	3	2	to	5	0	....	2	10	to	5	0	....	2	10	to	4	10
Mutton ..	3	4	to	5	6	....	3	0	to	5	0	....	3	8	to	5	2
Veal	3	4	to	5	2	....	3	8	to	5	0	....	3	4	to	4	8
Pork	3	4	to	5	2	....	3	0	to	4	6	....	3	6	to	4	6

Increased supplies of meat having been on offer in Newgate and Lesdenhall markets, the trade has ruled heavy, and the quotations had a downward tendency. Beef has sold at from 2s. 6d. to 4s. 4d.; mutton, 3s. 2d. to 4s. 6d.; veal, 4s. 4d. to 4s. 8d.; pork, 4s. 4d. to 5s. 4d. per 5lbs. by the carcase.

DERBYSHIRE.

We have completed one of the most tedious hay harvests we ever remember, having lasted in the hands of many farmers ten weeks—an early beginning with a late conclusion. A little has been gathered well, and much in bad condition. Small mowings and small gatherings are certainly the wise part of the affair. One large holder had cut down 50 acres, and had hardly a ton of good secured well. As a necessary consequence it must command a good price during the winter months. Our corn harvest is proceeding in the south of the county, and slowly so in the northern parts. In the western districts a good deal of corn will never be ripe, and must be cut to make what it will. The aspect of the county is good, as far as grass is concerned, and we have a fair quantity of fog in our pastures. Weeds are everywhere in advance of labour, and the effect of the cold wet summer is everywhere to be seen. The fallow fields are very little better for the summer rest and stirring. In addition to this, autumn cleaning of land seems out of the question, the weather being against it, and the tedious harvest absorbing all labour. The potato crop is deficient, and only good on the best dry soils. Turnips are light in the bulb, and have wanted more warmth. The same may be said of mangold wurtzel, which will be inferior: there is plenty of top, but small bottoms. And thus we go on grumbling, and think we have a right to do so, as much as other classes of the community; and the adage is fully confirmed that dry summers beg no bread, and wet ones entail misery. Fat stock continues to realize high prices, and, should trade continue good, is likely to do so. Lean stock is becoming more difficult of sale. Our corn markets keep well up, and depressing news from the metropolis has very little influence on the holders of old corn; they say, "We will hold on." And so they do; and fortunate indeed it is for the country that the quantity on hand is very ample, and that though one of the worst summers has nearly passed away, we still get a good supply of old wheat at a reasonable price. Our labour market has

given way a little, and fortunate it is that it is so, or the disasters of an unfavourable harvest would have been greater; we can now get men for money, which has not been the case of late. The reaping machine is gradually being introduced in all our leading districts, and is well spoken of. In a neighbouring county (Notts.) the number has been still greater. We have heard of 20s. per acre being given for the cutting of wheat by hand. With such a crop we suppose the reaper would be at fault, but they are powerful aids in the lighter.—Sept. 13.

HEREFORDSHIRE.

We had last week some fine harvest weather, which enabled the farmers to get together a good deal of corn. But on Sunday rain again fell, and on Monday it was a perfect deluge. On Wednesday carrying was resumed, and should we be blessed with a fortnight of fine weather a vast breadth of land will in that time be cleared. The wheat crops are undoubtedly heavy in the ear, as well as good in the straw, and such as has already been thrashed out makes wonderfully good wheat. We have our fears that many persons have been premature in getting their ricks together, and in more than one instance have they been obliged to be taken to pieces. There is still much corn to be cut, and as it ripens slowly it will be long before the harvest is quite finished. Mangel wurtzels for the most part promise to be small, and the same may be said of swede turnips. Potatoes we regret to say are going badly, and we anticipate high prices before spring. Early-planted ones are the best: we do not mean early sorts, but such as were planted early. Those that were planted late will be scarce, with the expense of digging. The rain has brought up an abundant supply of grass, which will, if the winter is not severe, in a measure supply the deficiency in the root crops. Hay is with us very dear now, having been sold at £6 and £7 per ton. We have a great crop of apples, but the fruit is very small, and without flavour from want of sun, and we consequently anticipate the cider being of inferior quality. Meat still continues high: lean stock at the late markets have been selling tolerably well. Horses are down in value excepting first-class ones, which will always fetch remunerating prices. Strong pigs sell well, but small stores are somewhat lower.

SOUTH HERTFORDSHIRE.

The first fortnight in September was fine, and great use was made of it in cutting and carting a considerable breadth of corn. Many stacks of oats and wheat, hastily put together, have had to be moved—oats especially—from the straw being green, having heated extensively. We fear very little wheat has yet been carted in good order for grinding. We left some wheat in the fields thirteen days after it was cut, and then carted it, in fine condition for stacking, but not for thrashing. Our millers say that, if they were not to kiln-dry the new wheat, they could not use it. Since the 17th instant, the weather has again been most unfavourable for the harvest; and it is impossible to carry corn fit to bring to market for many months. Indeed, the showers are now so frequent that it is difficult to make any progress in cutting corn; for if it is tied up wet, it will never dry in the sheaf. In a drive round our neighbourhood the other day, we regretted to see a large quantity of corn yet in the fields, a considerable portion being uncut. The forward barley was most of it carried in the dry weather, in very good order. That which is now out is suffering much in colour and condition, whilst some is sprouting fast. Two or three more showery and warm days will do irreparable injury to the remaining barley. Spring wheat, being weak in the straw, is generally laid flat, and is sprouting extensively; but we do not yet find autumn wheats sprouting to any extent. Beans, on well-tilled lands, are a great crop of straw, and well podded. We have measured some nine feet long in the straw on land of light staple. The beans will be weeks before they are fit to stack, unless sun and wind combine to dry them. A few second cuts of clover were picked up before the weather changed for the worse, but many fields are now mowed, and will be of little value for fodder. The clover has not bloomed sufficiently well to produce seed. The cry of bad crops of roots is universal. One neighbour has stocked his mangolds with sheep, and another has ploughed

them up. A third farmer has ploughed up a considerable part of his crop of swedes, and there are many similar cases. All mite in describing the promise for mangolds and swedes very bad. We fancy the plants look fresher during this showery weather, but the season is too advanced to bring the root crops up to nearly an average weight. This untoward season must operate seriously against small farmers, and any whose necessities compel them to bring their corn to market early. Wheat must be sold at a considerable sacrifice, to allow for kiln-drying; and the only barley fit to thrash before Christmas will be that which was carted previous to the 15th, and thatched or otherwise protected at once. Grass-keeping is abundant, but the damp season makes the grass washy, and the stock does not thrive well.

The mortality in lambs continues. The bad promise for winter food causes store sheep to be lower in price than for some time past. All kinds of store beasts are also easier to buy. Many ingenious plans are suggested by writers in the *Times* for artificially drying corn in wet seasons, but unfortunately they will not pay to adopt. If by incurring additional expense we felt certain of a proportionate price for our wheat, we might be tempted to try some of the experiments suggested; but when we know that the harvest in the United States has been the finest ever known, well gathered, and that wheat can be poured into England from America for 45s. per qr., it would be folly for us to incur expenses for artificially drying our wheat at a probable cost to us, including the growth, of 60s. to 70s. per qr.—Sept. 22.

REVIEW OF THE CORN TRADE DURING THE PAST MONTH.

The opening of the past month was all that could be desired, and for a full fortnight harvest work proceeded at a rapid rate, the welcome sunshine reviving everybody's hopes, and hastening the maturity of the yet unripened pieces of corn; but in the third week the weather became broken, and closed with heavy rains and furious storms. The farmers' anxieties were thus renewed—partly in the southern and midland counties for the yet unsecured sheaves and second crop of grass, but more seriously in the northern counties, where the bulk of the harvest remained in the field; but again we hope a favouring Providence will intervene, and dissipate our fears. The samples of wheat yet to hand, though better than might have been expected, fall short of an average quality, and in many places the yield is equally bad; but no fair estimate can be made till this lingering season is brought to its termination. Potatoes in this country have not improved. Mangold is scarcely half grown; but the quantity of grass, consequent upon the rain, though of poor quality, may help farmers to get their live stock well through winter. Ireland, as we feared, has found the potato crop miserable, and maize has consequently risen fully 5s. per qr., and the demand must increase with the failure of the potatoes; while the corn crops there yet outstanding are in jeopardy.

During the fine weather, prices of wheat were rapidly receding, the value of old lessening them about 6s. per qr.; but half this has since been recovered by the return of wet. By the weekly averages the reverse would appear; but as at all times they may be made up two or three weeks after the real business done, so in cases of great and sudden fluctuations they do not indicate the sensitiveness of markets or their actual position. One thing is certain, that our stock of old English wheat is at the lowest point, the last weekly sales showing only 49,184 qrs. against 112,236 qrs. this time last year, when the inducement to send to market was 21s. per qr. more, and much of this small quantity reported was of the new crop. We must, therefore, be greatly dependent on foreign stores for mixing with the new wheat, which in its best samples only makes an inferior quality of flour. Weights, as yet, have greatly varied, some

parcels not being over 50lbs. per bushel, others reaching to 62lbs., and occasionally to 63lbs.; but till the bulk gets drier in stack, we take the average will rule between 57lbs. and 58lbs. per bushel. In Northern Germany the crops are mostly gathered; the yield is considered fair, but the weight and condition bad. It is the same in Belgium and Holland; but France shows great differences, from the extent of the country, being like ourselves, in the north, as to quality, but superior in the south, and heavy. Neither Italy nor Spain have any excess; but Southern Russia has both quality and quantity, as well as the United States; so our own deficiencies seem likely to be provided for; but we entertain no such views as some—that America could alone send 9,000,000 qrs. This would require 3,000 ships, of 600 tons each, to bring it; but it is possible we may, if prices suit, get one-third this quantity during the season. Egypt, too, is well off this year; but the quality of that country is more fit for Ireland than for England, as to the manufacture of flour. Great differences of value must therefore obtain for some time between new and old samples both here and abroad, and foreign factors have therefore been very firm in their demands for granaried samples, knowing that every quarter will soon come into use.

Prices abroad have been unsettled both by the fluctuations here and the state of the weather in the several countries; but the general tendency through Germany, as well as in Russia, has been towards decline; and though the United States till lately have had excited markets, the last European advices influenced some decline.

The following quotations are the most recent from the places named:—At Paris old wheat was, for good quality, 52s. to 55s., new to 52s.; red at Nantes 50s. to 51s.; red at Groningen, 61 to 62lbs., 60s. to 61s. per qr., new irregular. Baltic wheat at Antwerp, 61s. 6d.; old at Louvain, to 64s., new to 58s.; fine Brunswick at Bremen, 59s. 6d. per qr.; new at Hambro', 52 to 57lbs., 39s. to 55s. per 30+lbs.; fine old Saale and Holstein, 62lbs., to 65s. per qr. Wheat at Stettin was quoted 49s. to 56s. 6d.; at Dantzic, 57s. 6d. to 60s. 6d., new to 55s. per qr. Courish wheat at Riga was quoted 56s. 6d.; new Ghirka at Odessa, 62lbs., 43s. 6d.

per qr. Quotations at Galatz were 38s. per qr. for first quality, with only 36s. per qr. bid. Saïdi wheat at Alexandria, 37s. 6d.; Behara, 35s. per qr. Banat wheat at Trieste, 46s. 6d. for October delivery; wheat at Venice, 47s. per qr. Soft wheat at Algiers was 47s. 6d. per qr. White winter at Montreal, 47s. to 48s. per qr.; spring, 41s. 8d. per qr. of 480lbs. New York, by last advices, were 2 to 4 cents down, or 8d. to 1s. 4d. per qr., prices standing thus: winter red 46s., white Michigan 53s., Chicago spring to 42s. 4d., all per qr. of 480lbs.

The first Monday in London commenced on the back of a moderate English and heavy foreign supply of wheat. The show from the near counties during the morning was small, and for the first time a fair quantity of new samples appeared. The condition was bad, some samples not being worth over 48s., while a fine parcel of Talavera brought as much as 70s. per qr. This was the third day of fine weather, together with the sight of new samples, and the probability of a decided change in favour of harvest. The market was very heavy, and some old Kentish was sold at 3s. to 4s. per qr. reduction; but Essex factors preferred holding to accepting these rates. The business in foreign was of the same character, and very limited in extent. The general commencement of harvest occasioned very thin markets in the country, and supplies in proportion; but millers being well provided they were indisposed to increase their stocks in the doubtful aspect of the trade, and a general reduction was necessary to make sales. Hull, Birmingham, Spalding, Lynn, Newcastle, and Gloucester quoted a fall of 2s. to 3s. per qr.; Boston, St. Ives, Louth, and Bristol made the decline 3s. to 4s. per qr.; Liverpool gave way on Tuesday 3d. to 4d. per cental on American low quality, and Friday was marked by another decline of 3d. per cental; oats and maize also being cheaper. The weather having kept fine this day was also 2s. to 3s. cheaper for old wheat in London.

On the second Monday there was another heavy foreign supply, but the English arrivals were less. Very little old English was exhibited during the morning from the near counties, but there was a good quantity of new, mostly poor. There were a few samples of wheat, worth 60s. to 63s., but generally the top price was 58s. for white, and 56s. per qr. for red. The bad condition and inferior quality of the new crop brought more demand for old, which sold better than on Friday, but at the same decline, millers being obliged to supply their necessities from the good foreign, the decline in which was stopped by this circumstance. The continued occupation in harvest work made this almost a blank week in the country, but the large towns being influenced by the London reports were much in the same state for old samples, the value of new, with the continued fine weather and doubtful quality, being quite unsettled. Liverpool on Tuesday was hardly cheaper than on the previous market, and on Friday there was some revival, with prices unaltered. Spring corn was generally cheaper; but not maize. The Scotch and Irish markets were little altered.

On the third Monday there was about the same supply of English, but a diminution in foreign of

10,000 qrs. The samples received this morning from Kent and Essex were nearly all new. The Kentish stands were best supplied both in quality and quantity; but there were very few dry samples. These brought fully as much money, but the bulk was undisposed of, comprising much that was refused during the previous week, from the condition being worse than samples sold by. Old was again more in favour, and brought 1s. per qr. advance. Foreign factors were very firm, and would not sell without a similar improvement, more especially as the weather for the few previous days was broken, and this Monday was rainy. The markets in the country were only shortly supplied, partly from harvest labours, and partly from the exhaustion of old stocks. Good new wheat being scarce maintained its value, and old, at the following places, was 1s. to 2s. per qr. dearer, viz., Hull, Boston, Spalding, Norwich, Lincoln, Oxford, Newbury, and Stockton-on-Tees; but Birmingham was dull, and Gloucester and Bristol, with several other places, were only 1s. per qr. higher. Liverpool rather gained on the previous week's advance.

On the fourth Monday there was again plenty from abroad, with a moderate home supply. Kent on this morning sent up a fair quantity of new, but from Essex very little appeared. Really good samples, both old and new, as well as foreign descriptions, were then 1s. to 2s. per qr. dearer, with a fair demand. Through the remainder of the week the weather was wet, and prices tending upward.

The imports into London for the four weeks were 14,451 qrs. English and 122,369 qrs. foreign, against 25,728 qrs. English and 30,145 qrs. foreign for the same period last year. The imports throughout the kingdom for August last were 624,849 qrs. wheat, 565,897 cwts. flour.

The flour trade during the month has fluctuated with wheat. Norfolks commenced at 45s. per sack and closed at 43s. The rates of town-made, which at the commencement were 60s. per sack, gave way during the fine weather 3s., and have since remained at 57s. The imports of foreign sacks and barrels were about the same as in August, prices closing 1s. to 2s. less per sack and barrel. The imports for the four weeks were, in country qualities 49,430 sacks, in foreign 19,996 sacks, 66,531 brls., against 58,063 sacks country and 960 sacks and 1,981 brls. foreign for the same time last year, showing a large increase this season.

The arrivals of barley through the month have been unusually small; nevertheless, the fine and settled appearance of the weather on the second Monday lowered the rates 1s. per qr., but as almost nothing was subsequently imported, the following week recovered this decline, and the last Monday gained 6d. to 1s. more, making the increased value during the month 1s. per qr. The new barley as yet appearing in only moderate quantities, does not promise much as to its malting capabilities, though it is said there are fine samples. The best is worth about 42s. per qr., and from this the value recedes to 34s., or even less. On the Continent there appears but little quality or condition in the new crop, and here it is thought our own will hardly be fit for malting before November. Much still remains

COMPARATIVE AVERAGES—1860-59.

From last Friday's Gaz.	s. d.	From Gazette of 1859.	s. d.
Wheat..... 49,184 qrs.	62 11	Wheat..... 112,236 qrs.	41 11
Barley..... 1,614 ..	37 10	Barley..... 14,870 ..	35 3
Oats..... 5,453 ..	27 0	Oats..... 720 ..	21 7
Rye..... 58 ..	42 4	Rye..... 30 6	30 6
Beans..... 1,376 ..	50 1	Beans..... 4,865 ..	40 4
Peas..... 213 ..	38 7	Peas..... 1,462 ..	38 8

MONTHLY RETURN.

AN ACCOUNT SHEWING THE QUANTITIES OF CORN GRAIN, MEAL, AND FLOUR, IMPORTED INTO THE UNITED KINGDOM, AND ADMITTED TO HOME CONSUMPTION, IN THE MONTH OF AUGUST, 1860.

Species of Corn, Grain, Meal, and Flour.	Imported from foreign Countries.		Imported from British Possessions out of Europe		Total.
	qrs. bush.	qrs. bush.	qrs. bush.	qrs. bush.	
Wheat.....	605372 1	19477 4	624849 5		
Barley.....	186176 7	2 3	186179 2		
Oats.....	285072 4	4232 3	289304 7		
Rye.....	14705 0	—	14705 0		
Peas.....	14276 6	2232 1	16498 7		
Beans.....	36229 3	—	36229 3		
Maize or Indian Corn ..	256596 2	22 0	256518 2		
Buck Wheat.....	0 6	—	0 6		
Bere or Bigg.....	168 0	—	168 0		
Total of Corn and Grain	1398597 5	25957 3	1424555 0		
	cwts. qr. lb.	cwts. qr. lb.	cwts. qr. lb.		
Wheat Meal and Flour.....	522416 2 24	43450 1 24	565887 0 20		
Barley Meal.....					
Oat Meal.....	171 3 19	970 2 16	1142 2 7		
Rye Meal.....	129 0 0	—	129 0 0		
Pea Meal.....					
Bean Meal.....					
Indian Meal.....	19 1 0	—	19 1 0		
Buck Wheat Meal.....	1 0 0	—	1 0 0		
Total of Meal and Flour	522737 3 15	44451 0 12	567188 3 27		

PRICES OF SEEDS.

LONDON, MONDAY, Sept. 24.—The trade in seeds continues inactive, and with small inquiry for all qualities of red Cloverseed; white seed is still neglected, from the inferior quality of the samples on offer. Trefoils are firm, and fine qualities find buyers at full prices. New winter Tares were in scanty supply, and obtained extreme rates Canaryseed remains unaltered.

CUTLER & BARKER, Seed-factors.

BRITISH SEEDS.

MUSTARDSEED, per bush., brown.....	12s. to 16s.
CORIANDER, per cwt.....	14s. 16s.
CANARY, per qr.....	3s. 6s.
TREFOIL.....	18s. 25s.
TARES, winter, new, per bushel.....	13s. 14s.
LINSEED, per qr., sowing—s. to 64s. crushing.....	54s. to 58s.
LINSEED CAKES, per ton.....	£9 10s. to £10 10s.
RAPESEED, per qr.....	70s. to 76s.
RAPE CAKE, per ton.....	£5 10s. to £6 0s.

FOREIGN SEEDS, &c.

CLOVERSEED, red 44s. to 56s.....	white 61s. to 74s.
TREFOIL.....	17s. 52s.
HEMPSEED, small, —s. per qr.....	Dutch — 4s.
CORIANDER, per cwt.....	16s. 18s.
CARRAWAY ..	32s. — 38s.
LINSEED, per qr., Baltic 50s. to 52s.....	Bonbay 52s. 56s.
LINSEED CAKE, per ton.....	£9 10s. to £11 0s.
RAPESEED, Dutch.....	—s. to —s.
RAPE CAKE, per ton.....	£5 0s. to £6 0s.

COVENT GARDEN MARKET.

LONDON, SATURDAY, Sept. 22.—Foreign importations of Pears, Apples, Tomatoes, &c., continue to arrive. Peaches and Nectarines from open walls are now plentiful. Grapes abundant. Cob Nuts realise 1s. and Filberts 9d. to 1s. per lb. Peas are scarce. Potatoes are badly diseased. Some good Mushrooms may be obtained. Cut flowers chiefly consist of Orchids, Gardenias, Violets, Mignonette, Heaths, Geraniums, Lily of the Valley, and Roses.

FRUIT.

	s. d.	s. d.		s. d.	s. d.
Pineapples, per lb.....	3 0 to 4 0		Melons, each.....	2 3 to 4 0	
Grapes, per lb.....	2 0 5 0		Plums, per bushel.....	3 0 4 6	
Peaches, per doz.....	4 0 6 4		Pears, per doz.....	1 0 3 0	
Appricots, per doz.....	2 0 4 0		Apples, per doz.....	0 6 1 6	
Nectarines, per doz.....	1 0 3 0		Oranges per 100.....	10 0 20 0	
Cherries, per lb.....	1 0 3 0		Lemons, per 100.....	10 0 15 0	
Corrants, per quart.....	0 0 0 0		Strawberries, per lb.....	0 0 0 0	
Green Figs, per doz.....	3 0 4 0		Gooseberries, per quart.....	0 0 0 0	

VEGETABLES.

	s. d.	s. d.		s. d.	s. d.
French beans, per qr. do.....	0 9 1 0		Celery, per bundle.....	1 6 1 0	
Green Peas, per bush.....	2 0 3 0		Onions, per half-sieve.....	3 0 6 0	
Cauliflowers, each.....	0 1 0 6		Tomatoes, per doz.....	2 0 3 0	
Greens, p. doz bunches.....	2 6 3 0		Vegetable Marrows, doz.....	6 1 0 0	
Cabbages, per doz.....	1 0 2 0		Shallots, per lb.....	0 6 0 8	
Potatoes, per ton.....	105 0 160 0		Garlic, per lb.....	0 6 0 8	
Do. per bush.....	4 0 5 6		Lettuces, cab., per score.....	1 6 2 6	
Do. per cwt.....	5 0 8 0		Lettuces, Cos, per score.....	0 6 1 0	
Do. new, per cwt.....	0 0 0 0		Endive, per score.....	1 0 2 0	
Carrots, per bunch.....	4 0 6 6		Horseradish, per bundle.....	1 6 4 0	
Turnips, per bunch.....	0 5 0 7		Mushrooms, per pottle.....	2 0 3 0	
Spinach, per sieve.....	2 0 3 0		Parley, per 12 bunches.....	2 0 4 0	
Cumbers, each.....	0 6 1 0		Stewage, per bunch.....	0 3 4 0	
Artichokes, per doz.....	4 0 6 0		Radishes, turnip, per doz.....	0 0 0 0	
Beet, per dozen.....	1 6 2 0		Seakale, per punnet.....	0 0 0 0	
Rhubarb, per bundle.....	0 0 0 0		Asparagus, per bundle.....	0 0 0 0	

CHICORY.

LONDON, SATURDAY, Sept. 22.—Both English and foreign chicory, the supply of which is good, moves off steadily, on rather higher terms.
 ENGLISH, per ton £14 0 to £ 0 10
 ANTWERP..... £11 10 to £15 0
 HURLINGEN..... 14 0 15 0
 DACKUM..... 0 0 0 0
 BRUGES..... 14 0 15 0
 GIBERNSEY..... 0 0 0 0
 HAMBURG..... 14 10 15 0
 BELGIUM..... 14 10 15 0

WINES.

LONDON, FRIDAY, August 31.—In wines there has been a moderate business transacted, principally in ports of really good qualities, and we think such descriptions must attract more attention during the autumn. The latest accounts from Oporto are of a more favourable character, and give hopes, should the weather continue fine, that some fair wine may be made. Other descriptions without alteration.

	£	£
Port, very super. old, pr. pipe 60 70		
Good old.....	45 55	
Good young.....	36 40	
Common.....	25 30	
Red Wine, from Oporto.....	49 50	
London, Sundry white.....	25 30	
Do. rich.....	32 34	
Red.....	18 21	
Bordeaux.....	36 34	
Caravello.....	32 34	
Figuera.....	32 34	
Sherry, very superior, p. butt 70		
1st class.....	50 60	
2nd and 3rd do.....	35 45	
Fair useable qualities.....	24 32	
Common and indirect.....	12 20	
Mountain, London, Particular.....	—	
per pipe.....	50 60	
2nd quality.....	25 38	
Lower do.....	21 29	
Spanish, red, good, per tun.....	16 20	
Common and fair, (secure).....	14 14	
Clerets, 1st growths, per hhd.....	60 65	
2nd do.....	35 50	
3rd do.....	24 24	
Clarets—(continued.)		
Other qualities, per hhd.....	12 25	
Cargo.....	8 10	
Hermitage, rd. & wh., 1st growth.....	—	
Mas de you, per pipe.....	30 30	
French Red.....	18 22	
Common and fair.....	14 16	
Champagne, 1st quality, per doz.....	8 8	
Other qualities.....	8 8	
Sauterne, 1st quality.....	8 8	
Barsac, 1st quality.....	8 8	
Superior, per aum.....	43s. 6s.	
Other qualities.....	10 30	
1st quality.....	20 25	
2nd quality.....	10 16	
Madeira, E.L., 1st quality, per pipe.....	—	
West India, 1st quality.....	—	
Direct.....	45 75	
Common and fair.....	25 26	
Cap White, good.....	£10 £11 8s.	
Common and fair.....	£ 8 £ 9 s.	
Cape Red, good.....	12 13	
Common and fair.....	11 11	
Touraine, London Particular.....	36 36	
2nd quality.....	24 24	
MATTHEW CLARK & SONS.		

SPIRITS.

LONDON, SATURDAY, SEPT. 22.—The demand for rum continues somewhat active, at very full prices. Proof East India has realised 1s. 6d. to 1s. 7d., Lecwards, 1s. 7d. to 1s. 7½d. The stock is 39,700 puns, against 31,800 puns last year. Brandy moves off freely, at extreme rates. Plain German spirit is selling at 1s. 6d. to 1s. 8d. proof. English gin for export, 2s. 8d. to 2s. 10s.; British brandy, 3s. 10d. in hhd's.

RUM.

	s. d.	s. d.		s. d.	s. d.
E. India, proof per gal.....	1 6 to 1 7		Jamaica, 26 to 29 O.P. 3.....	7 3 9	
Lecwards, do.....	1 7 1 7½		" 32 36 ..	4 0 4 2	
" 10 to 20 O.P. 2.....	2 2 2 7		Better " 32 36 ..	4 2 4 8	
" 21 29 ..	3 4 2 2		Superior " 36 40 ..	5 0 5 2	
Demerara 30 34 ..	2 0 2 4		Superior " 36 40 ..	5 0 5 2	
" 24 40 ..	2 4 2 5		Superior " 36 40 ..	5 0 5 2	

BRANDY—COGNAC.

Vintage	Shipped by Martell.		Shipped by Hennessy.		Shipped by Otard.		Shipped by Vineyard Pro-prietors' Com.	
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
1857.....	11 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0
1858.....	9 8 9 11	9 8 9 11	9 6 9 11	9 6 9 11	9 6 9 11	9 6 9 11	9 6 9 11	9 6 9 11
1859.....	9 3 9 5	9 4 9 5	9 4 9 5	9 4 9 5	9 4 9 5	9 4 9 5	9 4 9 5	9 4 9 5
Hhd's. 24. per gallon higher. Puncheons scarce.								
Other Shippers.....								8 0 to 9 6
HOLLANDS, Geneva fine, for duty.....								2 6 to 2 9
Other qualities, to arrive and on the quay.....								2 2 to 2 4
BRITISH GIN, for exportation, proof.....								3 0 to 3 3
BRITISH SPIRITS.								
GIN, proof, cash.....								2 2 0 0

HAY MARKETS.

LONDON, SATURDAY, SEPT. 22.—SMITHFIELD.—Both hay and straw changed hands slowly, at our quotations.
 CUMBERLAND.—A slow trade.
 WHITECHAPEL.—Trade rather dull.
 At per load of 36 Tuns.
 MEADOW HAY..... 50s. to 115s. 50s. to 115s. 50s. to 132s.
 CLOVER..... 70s. 120s. 75s. 120s. 75s. 132s.
 STRAW..... 30s. 35s. 30s. 47s. 30s. 31s.

BREAD.

LONDON, FRIDAY, September 21. The PRICES in the METRO-
POLIS ARE, FOR
WHEATEN BREAD, per lbs. Loaf. . 8jd. to 9d.
HOUSEHOLD BREAD 6d. to 8d.

OIL MARKET.

OILS.		PITCH.	
Olive, Florence, } £114 0to £0 0 0	British (per cwt.) £0 6 0	0 6 3	
half-chests, } 1 3 0 0 0 0	Archebel	0 0 0	0 0 0
Lucca	Stobolm	0 10 3	0 0 0
Gullipoli (32 gals) 49 0 0 60 0 0	TURPENTINE.		
Spanish	English (per cwt.) £11 6	0 0 0	
Linsed (cwt.) .. 1 10 0 0 0 0	American	1 19 0	0 0 0
Rapp, Pale	Rough	0 8 6	0 8 9
Brown	TAR.		
Cud (tan)	American	£0 0 0	0 0 0
Seal, Pale	Archebel	1 1 6	1 2 0
Do. Brown, Yel. & Sc 30 0 0 33 0 0	Stockholm	1 3 0	1 6 0
Sperm	WHALEBONE.		
Head Matter	Greenland, full }	£395 0	£465 0
Southern	size (per ton) ..	1 3 0	1 6 0
Cocoa-nut (cwt.) .. 2 2 0 2 9 0	South Sea	365 0	370 0
Palm	RESIN.		
Yellow (per cwt.) £0 6 0 0 6 6			
Transparent			

LEADENHALL LEATHER MARKET

LONDON, SATURDAY, Sept. 22.—The transactions in leather this week have again been confined to bankrupts' effects, at about current rates. Raw hides have sold to a moderate extent, at full prices.

CROP HIDES.

ENGLISH		FOREIGN.	
lbs. lbs.	d. d.	lbs. lbs.	d. d.
28 to 35	15 to 15	14 16	15 21
36 40	14 18	17	16 23
40 45	15 17 1/2	21 24	17 25
43 50	16 18 1/2	25 28	18 27
50 55	17 20	29 32	19 28
56 60	18 21	33 36	20 30

BUTTS.

ENGLISH		FOREIGN.	
lbs. lbs.	d. d.	lbs. lbs.	d. d.
14 16	15 21	16 20	15 19
17	16 23	21 24	15 23
21 24	17 25	25 28	15 24
25 28	18 27	29 32	16 25
29 32	19 28	33 36	16 26
33 36	20 30	36 45	17 21
		41 50	18 25

HORSE HIDES.

ENGLISH		FOREIGN.	
lbs. lbs.	d. d.	lbs. lbs.	d. d.
English	19 to 18.. 11 to 13	16 20	15 19
Do. without butts 9	14.. 12 14	21 24	15 23
Spanish salted, 18	s.d. s.d.	25 28	15 24
without butts, } 6	9.. 10 0 15 0	29 32	16 25
per hide.		33 36	17 25
Do. do. do. 9	12.. 12 0 16 0	36 45	18 27
Do. do. do. inferior.. 8	10 0 10 0	41 50	19 28
Do. dry do. 6	8 8 8 0 13 0		
Do. do. do. 9	11.. 11 0 14 0		
Do. do. do. inferior.. 6	10 0 10 0		

CALF SKINS.

ENGLISH		FOREIGN.	
lbs. lbs.	d. d.	lbs. lbs.	d. d.
20 to 28	17 to 20	19 to 27	17 to 20
30 35	18 21	20 28	18 21
35 40	18 21	21 30	18 21
40 46	18 22	21 31	18 21
45 50	18 22	21 30	18 21
50 55	18 21	21 29	18 21
55 60	17 20	20 28	18 21
60 70	16 19	19 27	18 21
70 80	16 18	18 25	18 21
80 90	15 17	17 24	18 21
90 100	14 16	16 22	18 21
100 120	14 15	15 20	18 21

BRISTOL LEATHER FAIR.—A good supply of leather was brought, and a considerable amount of business was transacted; prices were, however, without any material alteration. Messrs. Hassell and Cogan, in their September circular, state: Dressing Leather: We have had a moderate inquiry for best saddler's hides, heavy harness hides, and common hides. Shaved hides, suited to best bridle work, have been taken freely, but the commoner descriptions have not been in demand. Skins of all averages have been in short supply, and have found buyers. We have had a good inquiry for kips, especially for those of prime quality. English and Spanish horse hides have been dull of sale. Basils have been in short supply, and have sold freely. Sole Leather: Some considerable sales of foreign butts have been effected, but only those of prime growth and of bark tannage can have realized prices at all remunerative to the manufacturer. Good heavy English butts have been scarce and much inquired for. We have a considerable stock of light butts, both English and foreign, of inferior quality. Some reduction having been submitted to on offal, we have cleared off some large parcels of foreign bellies; those particularly of good substance having been in request. The stock of butts generally held is by no means large for the season of the year; indeed, if we have only the ordinary demand, all the strong heavy leather that is to come forward will be found scarcely sufficient. Curried Leather: We have had a larger supply than usual of dressed leather, a good deal of which has been sold. Prime kip butts have been principally inquired for, but the secondary and inferior qualities could only be sold by making some concession in prices. Raw Goods: There have been three arrivals into this port since our last—the "Tutto per Meglio," from Monte Video, with 8,620 salted hides; the "Robinson," with 10,000 salted Rosaria hides, and the "Rovens" from Rio Grande, with 7,000 salted hides. We believe that there are very few, if any of these hides, now in first hands; some of our tanners who have been alarmed by the continued demand for the continent, having purchased rather largely. With about 250,000 hides in London and Liverpool at this moment, and at least 150,000 more to come, we think that tanners may feel tolerably easy as to supplies until next season. The great mass of our consumers in Ireland as well as England have not been buying and will not buy South American hides at present prices. Unless leather is to rule higher, there can be nothing but loss to the manufacturer; and we think the trade generally will consider that the less they do under present circumstances the better. There is already some indication of prices giving way, Rio Grande hides having declined 0 1/2d. per lb. in the London market. Bark and Valonia: We have not heard of much doing in English bark, the quality generally being inferior. Our latest advices from Smyrna are to the effect that the stock of prime Valonia is very small, and that extreme rates are being demanded.

BARK, &c.

ENGLISH		FOREIGN.	
English, per 1d. of 45 } £ s. £ s.	Cork Tree, Barbary ..	£ 6 10	7 0
cwt. del. in London } 16 0to 18 0	Do. Sardinian	10 0	10 10
Coppice	Do. Valonia, Smyrna, per ton	15 0	16 0
Dutch, per ton	Do. Camata	15 0	17 0
Hambro	Do. Mores	11 0	13 0
Antwerp Tree	Do. Coppee	7 0	8 0
Do. Coppee	Do. Terra Gambier ..	17 10	18 0
French	Do. Japonica } Cutch	26 0	28 0
Mitmos, Chopped ..	Do. 8 5 10 } Divi Divi	19 0	12 0
Do. Ground	Do. 9 10 10 } Myrabolams	8 0	13 0
Do. Long	Do. 6 0 8 0 } Sunnack, Sicily, p.cwt.	0 14	0 15

FLAX, HEMP, COIR, &c.

LONDON, SATURDAY, Sept. 22.—Since our last report, no demand for flax has been much restricted; nevertheless, no change has taken place in the quotations. Baltic hemp moves off slowly, at £29 per ton for Petersburg clean. In Manila parcels very little is doing. Coir goods are inactive, but not cheaper. Common to fine jute has sold at £13 to £22 per ton.

WOOL MARKETS.

ENGLISH WOOL MARKETS.

BERMONDSEY, Sept. 22.—There has been a considerable amount of business transacted, and at improving rates. The consumers have kept out of the market as long as they could, but have been obliged to come into the market on higher terms than they expected; and it has now become very evident that the diminished supply this year has put the master of price into the power of the holders, who need not

HIDE AND SKIN MARKETS.

LONDON, SATURDAY, Sept. 22.

MARKET HIDES:		HORSE HIDES, each 8	
56 to 64 lbs.	0 3a. to 0 3d.	CALF SKINS, light 2	0 1 9
61 to 72 lbs.	0 3 1/4 to 0 4	Do. full	5 0 0 0
72 to 80 lbs.	0 4 to 0 4 1/2	Shearling	0 0 0 0
80 to 88 lbs.	0 4 1/2 to 0 5	Half-breds	4 0 4 0
88 to 96 lbs.	0 5 to 0 5 1/2	Downs	3 3 3 3
96 to 104 lbs.	0 5 1/2 to 0 6 1/4	Polled Sheep	4 6 5 6
104 to 112 lbs.	0 6 to 0 6 1/2	Lambs	3 8 5 3

dispose of their wool at unremunerating rates, unless compelled by any pecuniary necessity to submit to the casual terms of the day when they effect their sales. The prospects of a good export trade are encouraging; and as stocks of both the raw material and of the manufactured articles are small, a good autumn and winter trade is expected.

Per sack of 240lbs.

Fleeces—Southdown Hogs.....	£20	0 to	£00	0
Do. Half-bred Hogs.....	19	10	20	0
Do. Kent.....	19	0	19	10
Do. Southdown Ewes & Wethers	17	10	18	0
Do. Leicester do.....	17	10	18	0
Sorts—Clothing-picklock.....	20	0	21	0
Do. Prime and picklock.....	18	10	19	0
Do. Choice.....	17	0	18	0
Do. Super.....	15	0	16	0
Do. Combing—Wethermatching..	20	10	21	0
Do. Picklock.....	18	0	18	0
Do. Common.....	16	0	16	10
Do. Hog-matching.....	23	10	24	0
Do. Picklock matchig.....	18	10	19	10
Do. Super do.....	16	0	16	10

LEEDS (ENGLISH AND FOREIGN) WOOL MARKETS, FRIDAY.—There has not been quite so much animation this week in the demand for English wool, but prices are very firm. For clothing wool the demand is rather languid, but prices are steady. The low wool buyers are at present interested in the public sales at Liverpool, and there have not been many transactions in this market.

LIVERPOOL WOOL MARKET, SEPT. 22.

SCOTCH.—The demand for all kinds of Scotch is rather improving, and a fair amount of business doing, at terms more in favour of the sellers.

	s.	d.	s.	d.
Laid Highland Wool per 24lbs....	11	6	13	0
White Highland do.....	15	0	17	0
Laid Crossed do...unwashed...	14	0	16	6
Do. do...washed...	16	0	18	6
Laid Cheviot do...unwashed...	17	6	20	0
Do. do...washed...	22	0	28	0
White Cheviot do...washed...	34	0	44	0

FOREIGN.—The public sales opened here on the 19th inst. with about 850 sheets English, which went off at rather lower rates than last sale-day, say about 0½d. per lb. In East India Wool about 6,000 bales have already passed the hammer, at prices fully equal to last series for all sorts except grey, which are from 0½d. to 1d. per lb. dearer. Very few of the miscellaneous Wools have been brought forward yet.

FOREIGN AND COLONIAL WOOL MARKET.

	Per lb.	s.	d.	s.	d.
German, { 1st and 2nd Elect.....		3	4	4	6
Saxon, { Prima.....		2	4	3	0
and { Secunda.....		2	0	2	4
Prussian. { Tertia.....		1	8	1	10
COLONIAL:—SIDNEY—Lambs.....		1	1½	2	3
Scoured do.....		1	3½	3	3½
Unwashed.....		0	10½	1	6
Locks and Pieces.....		0	6	2	0½
Slips and Skin.....		1	2	2	2½
PORT PHILIP—Lambs.....		1	2½	2	7
Scoured do.....		1	4	3	6
Unwashed.....		0	8	1	8½
Locks and Pieces.....		0	7½	1	11
S. AUSTRALIAN—Lambs.....		1	1	2	11
Scoured do.....		1	0½	2	6
Unwashed.....		0	9½	1	3
Locks and Pieces.....		0	7	1	3
V. D. LAND—Lambs.....		1	6½	2	5
Scoured do.....		1	4	2	11
Unwashed.....		0	10	1	7½
Locks and Pieces.....		0	10	1	9
CAPE OF GOOD HOPE—Fleeces.....		0	9	2	2½
Lambs.....		1	0½	2	0½
Scoured.....		1	7	2	0½
Unwashed.....		0	1	1	6½

BRESLAU WOOL REPORT, Sept. 20.—Owing to our uncommonly large provisions, staplers showed a greater disposition to sell, and in many cases reduced prices a few per cents, by which way some extensive transactions could be effected, which in all amounted to nearly 2,000 cwts. This quantity has been chiefly consisting of Russian wools—ordinary washed at from 72 to 76 thalers, and scoured at from 88 to 98 thalers; the other part being composed of Polish and Gallician fleeces at from 84 to 92 thalers, as well as of refuse at from 64 to 66 thalers. The purchasers were some Rhenish

and Saxon combers and clothiers, as well as many country-manufacturers. Lambswool has been comparatively neglected, and only a few flecks, of superfine quality, realizing at from 105 to 115 thalers per cwt.—Hamburg and English commissioners being the buyers. Fresh arrivals amounted to about 5,000 cwts., and the whole of our provisions is arising to nearly 43,000 cwts.—GUNSBERG, Wool-broker.

TIMBER.

LONDON, SATURDAY, Sept. 22.—Both foreign and colonial timber still commands rather an active market, and prices, generally, are well supported.

TIMBER.	Import Duty	Christians & Sannesund
(Per load 50 cubic ft.)	1s. per Load.	Deals, White & Yel. 13 0 14 10
s. d.	s. d.	Second do..... 9 10 11 0
FIR, Riga.....	70 0 to 75 0	Dram & Frederickstadt
Dantzig and Memel.....	70 0 85 0	Battens do..... 9 0 11 0
crown best.....	70 0 85 0	Dram 6½-inch do..... 8 10 9 10
second.....	55 0 67 0	Gotthen'g, good Stocks 11 0 12 0
small.....	50 0 60 0	Common..... 9 10 10 10
Stettin.....	55 0 65 0	Goffe & Swedish 14 rt.
Swedish, crown.....	55 0 67 0	Deals..... 11 0 13 0
small.....	50 0 63 0	Swedish Deals & Battens,
Norway Balks.....	45 0 50 0	long Millsaw 10 0 12 0
PITCH PINE, United States.....	75 0 84 0	Dantzig, crown deck..... 20s. 25s.
OAK, Memel.....	80 0 110 0	per 40-ft. 3½-in..... 14s. 18s. 6d.
brack.....	65 0 75 0	LATHWOOD. Import Duty
Dantzig and Stettin, crown.....	90 0 110 0	(Per cubic fathom.) 1s. per load.
brack & unsquared.....	55 0 70 0	£ s. £ s.
WAINSCOT. (Per log 15 cubic ft.)	105 0 115 0	Petersburg..... 9 10 10 10
Riga, brack.....	85 0 90 0	Riga, Dantzig, Memel, and Swedish..... 7 10 8 10
Memel and Dantzig, crown.....	7 6 87 6	FIREWOOD. (Per cubic fathom.)
brack.....	67 6 77 6	Swedish Red Deal Ends 4 10 5 0
DEALS & BATTENS. Impt. Duty (Per Petersburg 2s. per Ld. standard hundred.)	£ s. £ s.	Norway Red & White Boards..... 4 0 4 10
Archangel and Negea 14 10 15 10		Round & Slabs..... 3 5 3 15
Seconda..... 11 0 12 0		STAVES. Import Duty (Per mille pipe.) 1s. per Load.
Petersburg..... 13 0 14 0		Memel, crown..... £170 0 190 0
Wyburg..... 11 0 12 0		First brack..... £140 0 150 0
Finland and Hand-sawn Swedish..... 9 19 10 11		Dantzig, Stettin & Hambro', full-siz'd crown 170 0 290 0
Petersburg and Riga, White Deals..... 10 10 11 10		Canadian stand, pipe 55 0 65 0
Memel and Dantzig, crown Red Deals..... 14 0 15 10		Cull, or second..... 35 0 40 0
brack..... 9 0 10 10		Pun., per 1200 pieces 14 0 17 10
		Bosnia, thin brl. do. 27 0 23 0
		United States, pipe..... 18 0 33 0
		Hhd., heavy..... 29 0 30 0
		slight..... 12 0 16 0

MANURES.

PRICES CURRENT OF GUANO, &c.
PERUVIAN GUANO (per ton, for 30 tons)..... £12 5 0 to £0 0 0
 Do. (under 30 tons)..... 12 10 0 13 0 0

ARTIFICIAL MANURES, &c.		GYPSUM, &c.	
Nitrate Soda.....	£14 10 0 to £15 0 0	Gypsum.....	£1 0 0 to £1 5 0
Per ton.....		Bone Ash.....	per ton £5 0 0
Ammonia.....	14 0 0 14 10 0	70 percent.....	4 7 6 4 12 6
Muriate of Potash.....	16 0 0 20 0 0	South Ameri.....	4 7 6 4 10 0
Corn Manure.....	6 10 0 7 0 0	can Bones.....	4 7 6 4 10 0
Superphosph.....	5 0 0 6 0 0	London ditto.....	4 7 6 4 10 0
of Lime.....	0 18 0 1 5 0	Unwashed.....	3 5 0 0 0
Coprolite (gr'd).....	2 10 0 2 15 0	Do. 3-inch p. q. r.....	0 18 0 1 0 0
Ditto (whole).....	2 0 0 2 5 0	Do. dust.....	1 0 0 1 1 0
Estramadura.....	4 5 0 0 0 0	Animal Charcoal.....	4 2 6 4 5 0
Phosph. of Lime for 70 p. ct. p. ton.....		Oil of Vitriol, concentrated.....	0 0 1 0 0 0
		Do. Brown.....	0 0 0 3 0 0 0

OIL-CAKES.

Linseed-cakes, per ton.....	£2 6 11 7 6	Rape-cakes.....	£5 10 0 to £6 0 0
This American, Brissel.....	10 10 15 0	Cottonseed Cake.....	per ton £5 10 0
Ditto bags 10 10 10 15 0		American do.....	8 15 0 9 0 0
Marseilles.....	8 15 0 9 5 0	corticated.....	8 15 0 8 17 6
English.....	10 0 10 10 0	Ditto, English 6 0 6 10 0	

JOHN KEEN, Agent, 35, Leadenhall-street.
 Agricultural Chemical Works, Stowmarket, Suffolk.
 Prentice's Cereal Manure for Corn Crops..... per ton £5 10 0
 Mangold Manure..... „ 8 0 0
 Prentice's Turnip Manure..... „ 6 10 0
 Prentice's Superphosphate of Lime..... „ 6 0 0

Manufactured by Hodgson and Simpson, Wakefield, and Matthews and Co., Driffield, Yorkshire.
 Nitro-Phosphate..... per ton £6 10 0
 Ammonia-Phosphate..... „ 8 0 0

LIVERPOOL GUANO AND SEED, &c. MARKET.

Guano, Peruvian.....	£12 0 0 to £13 0 0	Linseed Cake per ton.....	£5 10 0 to £6 0 0
Do. Upper do.....	5 0 0 7 0 0	American, bags.....	£10 0 0 to £0 0 0
Do. Lower do.....	4 0 0 5 0 0	Marseilles.....	8 15 0 9 0 0
Patagonia.....	2 10 0 3 10 0	English.....	10 10 0 11 0 0
Saldanha Bay.....	4 0 0 5 0 0	Cutad. Cake, decort. 8 0 0 8 5 0	
Kooria Moorina.....	3 7 6 6 0 0	Locust Beans, p. ton 5 10 0 0 0	
Pedro Keys.....	3 0 0 5 0 0	Nitr. of Soda, p. ct. 0 13 3 0 13 6	
Salpate of Am. 14 0 0 15 10 0		Linal. Bomby, p. q. r. 2 17 6 2 18 0	
Bone Ash.....	4 10 0 5 10 0	Guvered American.....	10 0 0 11 0 0
Brimstone, 3d & 3rd 9 12 6 10 0		red, new, per cwt. 2 8 0 2 10 0	

Tallow, lat P.Y.C. £2 13s. 6d. to £2 14s.





THE FARMER'S MAGAZINE.

NOVEMBER, 1860.

PLATE I.

A HEREFORD STEER.

THE GOLD MEDAL BEAST AT THE BIRMINGHAM AND SMITHFIELD CLUB SHOWS,
DECEMBER, 1860.

This steer, bred by his exhibitor, Mr. Richard Shirley, of Bancott, Munslow, Salop, and calved May 3, 1857, was got by Marlow (a son of Big Ben), out of Silky, by Dollagan, her dam Tidy, by The Count. The Count was by Old Dewsall, out of a mottled-faced cow, of the Tomkins breed. Silky is also the dam of a steer calved in 1853, which took honours at Rugby, Birmingham, and the Smithfield Club in 1857.

At the Midland Counties or Birmingham Fat Cattle Show, in the December of last year, this steer took the following series of premiums:—The first prize of £10, as “the best steer of his class;” the President’s prize of £25, “as the best ox or steer, bred and fed by an exhibitor;” the extra prize of £20, as “the best Hereford;” the Gold Medal, as “the best of all the oxen or steers;” and the silver medal, as an especial compliment to his breeder.

At the Smithfield Club Show in the week following he took the first prize of £25, as “the best steer of his breed,” and the Gold Medal, as “the best ox or steer in any of the classes,” with another silver medal for the breeder.

Mr. Shirley’s steer was only two years and seven months old when he achieved this proud pre-eminence at the two great Christmas shows of the season. For his age he was nearly faultless, but this is how we spoke out, on first meeting with him in Bingley Hall:—“From the very first, and even in the time of the temporary decline, the summons to Bingley Hall: has always brought together a good muster of Herefords. Never, however, has the entry produced a better beast than that which this year takes all the great prizes of the show. Mr. Shirley’s steer is not only the best of his class,

and the best of all the Herefords, but the best male animal, and the best bred and fed by the same man. And he really deserves this accumulation of honours, notwithstanding that he is scarcely the stamp of Hereford the eye has latterly been accustomed to. He is darker in colour, rougher in the coat, shorter on the leg, and with a spotted, or more properly a mottled face, in place of the pure white now so commonly accepted as a signal of the sort. But it is a question whether all these diversities be not in his favour. As was said in our report of Hereford Fair, the mottled faces were once the great favourites, and Mr. Shirley’s ox may bring them round again. He is to begin with, of excellent quality, and with a coat thick and rough, but at the same time beautifully fine in its texture—a happy combination that argues hardihood of constitution and goodness of flesh. Then he has a sweet head, a deep, famously filled frame, and altogether the style of a superior healthy animal. It is almost ungrateful to find fault with so good a specimen of what a Hereford should be, and that breeders will do well to keep in their eye; but he has a very perceptible dip in the back, stands a little in behind, and finishes rather narrow over the quarter.” His girth was 8 ft. 7 in., and he was sold as he stood in Baker-street, to the Messrs. Davis, of “the Black Bull,” New Cattle Market.

Professor Tanner in the Royal Agricultural Society’s Prize Essay on the Farming of Shropshire, instances Mr. Shirley as a successful feeder of stock:—“He brings his bullocks, at two year’s old, to average 11 scores per quarter, and for the last two years he has sold his bullocks at this age for £25 each.”

PLATE II.

"A ROUGH CUSTOMER."

"The thorough-bred terrier, though an active, sagacious animal, and very fond of hunting, is nevertheless a very careful one, and kills a rat more by cunning than courage. He likes to wait his opportunity, and catch the rat while running, so as to give him a nip without having a bite in return. This you may say is sound generalship. So far so good. But if there happen to be thirty rats present, twenty-nine will make their escape while he is fretting over one. Still I am satisfied that if you take dogs in general you will not find more than one in fifty that will kill a rat; and if you lump all kind of terriers together, both rough and smooth, I am really satisfied that where you will find one that will kill ten rats off-hand, you will find ten that will not kill one each without the assistance of their master. They will do all the fretting and barking if the master will do all the thumping and kicking, and thus kill the rat be-

tween them. But often, when the rat is dead, to the great delight of the master, the dog will give it a most unmerciful shaking, and thereby earn for himself not only a host of caresses, but a wonderful reputation. I have, at various times, had at least half-a-hundred terriers of one sort or another, but there was only one of the whole that would kill a full-grown rat single-handed; but even he was very soon satisfied, since he mostly declined killing a second till another day; and this I have found to be the case with the great majority of thorough-bred terriers. The truth is, they are too cunning and too soft for such hard work. But when they are bred in with the bull-dog, then you have the most active, resolute, and hardy dog that can be produced; and all those dogs that have performed such wonderful feats in the art of rat-killing are of this breed."—From *The Rat*, published by Routledge and Co.

MANURE MANUFACTORIES.

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

The history of the preparation of artificial manures, is a detail full of the most useful information. It affords us not merely practical information with regard to the increase of our produce: it yields us other very valuable knowledge. The slow progress they at first made—the determined opposition that attended their introduction—may well suggest to us the wisdom of considering calmly every suggestion that is offered; to examine carefully every reported trial with a new manure, even if we doubt the success of the effort.

It is useless to search for any preparations of artificial manures previous to the present century: it was a subject but little understood in the days of Jethro Tull, who died in 1740. Engrossed with the construction of agricultural machinery, and with the good effects of pulverizing the soil, he had no opinion of manures: he even doubted the necessity of using that of the farm-yard. In the year after the death of the immortal author of the drill and the horse-hoe husbandry, Arthur Young was born—a friend of his country's farmers, as warm and as able as Tull, but with other and comprehensive views. Young was not thirty years of age when, in 1769, he commenced that extraordinary series of experiments with manures, which he pursued in a great variety of forms for so many years (*Annals of Agriculture*, vol. ii. p. 17), commencing with comparative trials on the effects of the excrements of our domestic animals—the cow, horse, pig, poultry, ashes, &c., salt, soot, the earths,

&c. We find him next employed upon trials with train oil, bones, ammonia, tartrate of potash, &c. (*ibid.*, vol. iii. p. 67). Young never hesitated to try the effect of even the most unpromising substances. Thus we find him in 1784 using muriatic acid, nitric acid, sulphuric acid, alone or mixed with charcoal (*ibid.*, p. 121-122). That he had all the modest candour of the true man of genius, peeps out on many occasions during these long and laborious trials, which were generally conducted on a small scale. He thus sums up the results of his inquiries during thirteen years experimentalizing (*ibid.*, p. 127). "After all, I wish the reader to consider these minute experiments as nothing more than weak inquiries, and an insufficient pursuit of hints caught slowly, and with difficulty. My wings are tied from the bolder flights that my wishes point to. The whole field is interesting, and almost untrodden ground. But every step leads to connections with other inquiries that I cannot partake of: all depends on chemistry."

When Arthur Young was thus writing, Davy was a boy at Penzance. It was a quarter of a century after this that he came out as the first agricultural chemist of his day—a period which Young was happily spared to witness. Davy urged, and enforced experimentally, the importance of an extended examination of artificial and ordinary manures. When the grave closed over this celebrated chemist in 1829, much progress had been made in the increase of our knowledge in this great

branch of agriculture. The use of oil cakes had become more extended: crushed bones had been introduced. But another ten years elapsed before, in 1839, a few barrels of Peruvian guano were first imported into England, and (what may be regarded as the first dawn of the manufacture of artificial manures) the use of superphosphate of lime was in the same year suggested by Professor Liebig.

From such a rather recent period we may date the establishment of those great manufactories where the most powerful manures are now so skilfully and so largely prepared. It was about the year 1840-41, that the first of these, the works of Mr. T. B. Lawes, and of the London Manure Company, were erected—manufactories which have since been imitated by other manufacturers in most portions of the United Kingdom. Of the extent to which artificial manures are now employed, Professor Anderson has recently made some approximate estimates (*Trans. High. Soc.*, 1860, p. 430), combining with these a variety of very valuable suggestions, as to the valuation and the reading of the analyses with which the dealers may furnish the farmer. This estimate is attended with many sources of error; and as Dr. Anderson observes:—

“Where the substances are of foreign origin, and used exclusively for agricultural purposes, no difficulties are experienced; and we thus learn, from the Board of Trade returns, that the value of the guano imported into this country in the year 1858, and retained for home consumption, amounted to no less than £3,857,424. This sum, however, is considerably above the average, but it is probable that the usual import is not less than £2,500,000.

“Next to guano the largest consumption is that of bones, of which, including bone ash, 84,000 tons are imported annually. In addition to this, however, it is necessary to take into account the bones collected in this country, of which it is only possible to form an approximate estimate. In Glasgow, there are collected about 6 tons 2 cwt. of bones for every 1,000 of the population, and if this were the case all over the kingdom, the quantity would amount to upwards of 150,000 tons; but in country districts a considerable quantity of bones are lost, and the consumption of meat is also much smaller than in towns, and I do not think the quantity of bones collected can be safely estimated at more than 50,000 tons—giving, for the total quantity of bones used, 134,000 tons.” (If we take the population of our island to be 24,000,000, the average consumption of meat by each individual 75lbs., and that this weight contains 12 lbs. of bones, that would give an annual yield of bones equal to 128,571 tons). “A very large proportion of the bones collected in this country is converted into animal charcoal for the sugar refiners, but as the spent charcoal eventually finds its way into the hands of the manure manufacturer, it is not necessary to take this into consideration; but I estimate the quantity used in the manufacture of ivory black, for turning, &c., at 20,000 tons, leaving 114,000 to be employed in agriculture. Of this probably 40,000 tons are to be used as bone dust, costing the farmer £6 per ton, which is equal to £240,000, and 74,000 are converted, by the action of acid,

into 110,000 tons of superphosphate, which, at £7 per ton, is worth £770,000.

“The consumption of mineral phosphates, as far as I have been able to ascertain, is as follows:—

	Tons.
Cambridge coprolites	40,000
Suffolk coprolites	3,000
Apatite, and all other mineral phosphates	5,000
	48,000

which, being entirely converted into superphosphates, will yield 72,000 tons, at £5, value £360,000.

“Of nitrate of soda the average imports amount to 26,000 tons, of which about one-half—worth, at £15 per ton, £195,000—is used for agricultural purposes.

“Of sulphate of ammonia it is difficult to obtain any definite information, but the opinion of persons conversant with the manufacture is, that about 6,000 tons are used as manure, which, at £15 per ton, is worth £90,000.

“If we add to this the sum of £50,000, as covering the value of the blood, fish-oeff, animal matters of all kinds, potash, salts, &c., &c., used in the manufacture of manures, we have the following general statement:—

Guano	£2,500,000
Bone dust, 40,000 tons, at £6 ..	240,000
Superphosphates, made from bones and bone ash, 110,000 tons, at £7	770,000
Superphosphate from coprolites, 72,000 tons, at £5	360,000
Nitrate of soda, 13,000 tons, at £15	195,000
Sulphate of ammonia, 6,000 tons, at £15	90,000
All other substances—say	50,000
	£4,205,000”

Let us compare this enormous estimated amount of artificial dressings with that of our ordinary farm-yard dung; and here, again, let me quote Professor Anderson. He adds:—

“It would be very interesting, were it possible, to ascertain what relation this large sum bears to the value of the farm-yard manure annually consumed throughout the country; but on this point it is not easy to obtain any reliable information. A vague estimate may perhaps be obtained from the number of acres of land under cultivation. It is said that the land under tillage on the British Islands exceeds 24,000,000 acres, and though this is probably above the mark, it may be adopted without much error. If it be assumed that one-fourth of this is annually manured to the extent of ten tons per acre with farm-yard manure, the annual consumption must be 60,000,000 tons, worth about £20,000,000. It is probable that this estimate is too high, but it shows that at least one-fifth of all the manures now used is artificial, and chiefly derived from foreign sources.”

The average value of the farm manure assigned

in the estimate of Dr. Anderson, he offers as a mere approximate estimate, this of course varying in richness with the food consumed by the stock, and the care bestowed by its owner. As, in fact, the makers of artificial manures widely differ in their skill and carefulness, so the farmers, who are makers of ordinary manure, as strangely differ in their mode of preparing the dung of the farm-yard. It is not every young farmer, indeed, who well considers the comparative value of the dung produced by the consumption of different kinds of food, and yet I need hardly enlarge upon the deep importance of the inquiry. Mr. Lawes has recently given an estimate of this kind (*Johnson and Shaw's Farmers' Almanac* for 1861, p. 45.): he remarks—

“The valuation of the manure resulting from the consumption of different foods is founded upon estimates of their composition, and upon a knowledge, experimentally acquired, of the probable average amount of those constituents of the food valuable for manure, which will be obtained in the solid and liquid excrements of the animals. The following table, founded on these data, gives the estimated value of the manure obtained from the consumption of 1 ton of different articles of food, each supposed to be of good quality of its kind :—

	£	s.	d.
Decorticated cotton-seed cake..	6	10	0
Rapecake	4	18	0
Linseed cake	4	12	0
Malt dust	4	5	0
Lentils	3	17	0
Linseed	3	13	0
Tares	3	13	6
Beans	3	13	6
Peas	3	2	6
Locust beans	2	2	6
Oats	1	14	6
Wheat	1	13	0
Indian corn	1	11	6
Malt	1	11	6
Barley	1	9	6
Clover hay	1	5	0
Meadow hay	1	0	0
Oat straw	0	13	6
Wheat straw	0	12	6
Barley straw	0	10	6
Potatoes	0	7	0
Mangold	0	5	0
Swedish turnips	0	4	0
Common turnips	0	4	0
Carrots	0	4	0

Although the estimate of Dr. Anderson raises the aggregate value of the artificial manures now annually employed in this country to £4,205,000, yet if we take the cultivated lands of our islands to amount to 24,000,000 acres, this gives an average yearly outlay of only about 3s. 6d. per acre. And yet we are told on all hands that it is not now possible to farm with the maximum advantage, without an annual outlay of about 20s. per acre for artificial dressings. In a recent report by Mr. A. Simpson, of Seawig, on high farming combined with profit, an essay to which the Highland Society of Scotland awarded their gold medal, he advises a considerably greater outlay. After giving

a variety of details relating to his own farming, he thus sums up his remarks on the use of manures (*Trans. High. Soc.*, 1860, p. 195):

“Take the case of a farm of three hundred acres on the four-shifts system; say 75 acres of grass cut for hay, 75 oats, 38 potatoes, 37 turnips, mangolds, cabbages, and carrots, 75 wheat; I would apply to the grass in March 2 cwt. of Peruvian guano per acre, and in April, or early in May, when showers are falling, 1 cwt. nitrate of soda; an early and heavy cut of grass for home consumption by horses and soiling cattle, and for making into hay, would thus be obtained. Thus treated, I would calculate on a good aftermath, to be either sold or used in the yards, followed by a rich sward for sheep up to Christmas. It would then plough down for oats, with the prospect of a heavy crop, without any addition of manure. I would manure the potato and turnip breaks well, so as to have a full produce from them, and the land ready without further manuring, for the autumn wheat crops, storing the turnips, &c., early in November. I believe that if a moderate portion of oil-cake, or other feeding stuff, is used along with the turnip and mangold in feeding cattle, the oat straw may be consumed, and the wheat straw trodden into manure, that thus sufficient “muck” (the farmer’s surest friend, after all) will have been produced at home, to give 20 loads per acre to all the green crop breaks. I would give (adds Mr. Simpson) the potatoes at planting 2 cwt. of superphosphate and 1 cwt. of Peruvian guano per acre, and top-dress them with 2 cwt. of Peruvian guano at the first hoeing. This practice I have found to give the largest produce. To the turnips, &c., I would give 2 cwt. of superphosphate and 3 cwt. of Peruvian guano per acre at sowing, adding to the mangolds 5 cwt. of common salt.” We would, adopting the practice thus suggested, have a total use of purchased manure to the extent of—

	£	s.	d.
375 cwt. of Peruvian guano at 12s. . .	225	0	0
75 „ nitrate of soda „ 18s. . .	67	10	0
150 „ superphosphate „ 7s. . .	52	10	0
30 „ salt „ 1s. . .	1	10	0
	346	10	0

or a little more than 23s. per acre. “This,” concludes Mr. Simpson, “though it may appear a high, would under the circumstances suggested be, I believe, a wise, safe, and profitable rate of expenditure.”

Three of the great manure works on the Thames side have recently been described by the editor of the *Agricultural Gazette* (vol. for 1860, p. 486), viz., the establishments of the London Manure Company, at Plough Wharf, below Greenwich; of Mr. Lawes, at Deptford and Barking; and of the Patent Nitrophosphate or Blood Manure Company, by the Victoria Docks. These three great manufactories, as the editor remarks, may be fairly placed at the head of any list of the Thames side manure works. In describing the manufacture of superphosphate of lime at these establishments, after alluding to the preparation of the sulphuric acid at these places, the editor continues:

" This is pumped up at a certain rate into a long cylindrical nearly horizontal iron vessel, traversed by an axis carrying arms arranged spirally upon it, and into the same end of this vessel a series of cups on endless chains delivers at a corresponding rate the mixed coprolite powder and bonedust on which the acid is to operate. A continuous stream of these several ingredients thus enters this cylinder at one end, slowly traverses its entire length, being mingled as it goes, and then flows out thoroughly incorporated. The machine is in the roof of the building, so that the mixed material can be conducted in sloping troughs to any part of the floor. And as, after all, the principal feature of a manufactory is its character as a warehouse, first for the materials, and next for the result of their process, an immense surface is covered over by roofing, under which the mixed ingredients gradually accumulate, forming a mass some 12 to 16 feet thick, where it lies until it is quarried out, broken small, and packed in bags. Many thousand tons thus lie in store, and the process of manufacture, is, no doubt, most thoroughly completed in the old heaps, which are thus awaiting the pick-axe and shovel of the quarryman.

I have on several occasions warned the farmer against employing adulterated manures. Several modes of avoiding such wretched mistakes have been often suggested: analyzations—guarantees, have been in vain demanded; still there is ever

some loop-hole, through which the fraudulent dealer escapes; and whatever amount of loss the purchaser sustains, he too often finds that he has been dealing with irresponsible and ignorant makers; the analysis produced, perchance, relates to other specimens than that of the manure sold. The superphosphate of lime is very likely to be made entirely from coprolites and mixed with gypsum; nitrate of soda is frequently adulterated with sulphate of soda or common salt; guano is still mixed with the Lepping clay. There is, in fact, only one safe track for the farmer to follow, and that is by dealing only with first-class firms of long-established reputation. If he is ever tempted by *cheap* bargains in established manures, let him be well assured, that however profitable it may be to the dealer, it will be almost invariably a dear purchase to the deluded agriculturist.

In taking such a retrospective view of the employment of artificial fertilizers, we may not only glean useful information for our future guidance, but, moreover, we may be well led to conclude that still greater advances are yet to be made. It is evident that our knowledge of the food of plants, of their earthy and organic portions, is but in its infancy. Certain effects produced by currents of air, and by the application of particular saline substances, are now just as much in need of explanation to us, as all vegetable chemistry was to Jethro Tull and Arthur Young.

ON TOP-DRESSING LAND WITH MARL, CLAY, &c.

Top-dressing of land means the laying on the surface of the ground of such substances as are known to increase the quantity of the vegetable produce which grows from the soil. It may be very reasonably supposed that this mode of using fertilizing substances would precede the application of them under the soil, or mixed with it; as the effects of substances accidentally dropped on the ground would first attract observation, and would suggest the use of the acting materials in that way, and also the modes that were subsequently adopted.

The very oldest writers on agriculture do not mention manures at all, and though their successors notice it as a most essential part of cultivation, we are left in utter ignorance in what way the dung was applied to the land. Since the earliest records of modern agriculture, the mode of using manure by spreading it on the surface of the ground has always held a very prominent place, and even at the present day of agricultural advancement, it forms the manner of using fertilizing substances that is imperatively directed by the nature of the materials that are used, and not far from being sanctioned as the most beneficial mode by the results of practice and the investigation of science. Observation both intuitive and practical has ever acknowledged that all fertilizing substances that are reduced in particle, and minute in coherence, are most economically used by being spread over the surface of the ground, as the distance between the elements is more reduced, and affords more

opportunities for combinations and reciprocal affinities. The materials that are more gross in nature and larger in bulk, require to be reduced by preparation, and mixed in opposite qualities in order to attain a state of minute adherence. Experience has ever recorded the fact that the effects of substances used as manures on the surface of the ground, are in a direct ratio with the minute or aggregated form in which they exist: or they are efficacious, or they fail in effect, according as they are reduced in particle or concentered into masses. All chemical combination is the result of elective attraction, and bodies unite according to the distances at which the power is exerted. It is a general law that the efficacy is in the inverse ratio of the affinity of aggregation; for this latter power holds together the homogeneous particles, and prevents their separating and joining the parts of another body; and the greater the power is, the less efficacious must be the affinity of composition. Bodies combine from being in opposite electrical states, and decomposition consequently proceeds from the same electrical condition. This action cannot take place unless the substances be mixed in the most intimate manner, and it happens only between the ultimate particles of bodies, and at insensible distances; if the attraction of cohesion only happens, in which the bodies retain the qualities they possessed before they were joined, and can be separated by mechanical force, there will be wanting the combination that results from the uniting of

the different substances, whether simple or compound, and incapable of being reduced mechanically, and of which the properties are often different and sometimes opposite to the former constituents. This affinity of composition is one chief agent in the operations of nature and art, and the ease and rapidity with which bodies are decomposed, or enter into new combinations, are directly as the quantity of the surfaces which they present, or inversely as their masses. The efficacy of composition is inversely as the attraction of adhesion: the absolute force remains the same, but increases on account of the diminution of the opposing attraction. Electric attraction is the principle in action, and chemical affinity is the power by which bodies unite, the one being in this sense a measure of the other. All chemical forces are subordinate to the cause of life, and to heat and electricity, and to mechanical friction and motion. The latter power is able to change their direction, increase or diminish their tendency, and also completely to stop and reverse their action. Causes must exist to produce chemical affinity, or the cycle of life would stand still; and from our ignorance of these causes and of the application, it is probable that in many cases their action is arrested and stopped, often rendered useless, and not produced at all, or at best but accidentally. Bodies that have little or no affinity, and do not enter into combinations, are made to do so by the addition of one or more substances; and this principle shows the necessity of applying a number of substances at one time, and of bringing them into contact with each other in a state of minute adherence. Many kinds of chemical action are effected by heat, electricity, and other agencies, over which any control is impossible, and which do not take place from mere comminution and mixture, yet by that process a ready accession of means will be afforded of producing combinations, which in another state of existence of the substances would not have happened. Science shows that quantity is necessary in many cases to produce any combination whatever, for an increase of quantity is known to be equivalent to a superior affinity; and though no rule has yet been obtained in respect of the quantities to be used in each particular case, yet the strongest presumptions may be drawn in favour of the above conclusion being generally applicable.

The maxims of chemistry that have now been quoted are quite decisive in showing that all bodies, from whose union and combination the benefits of new formations are expected, must be brought into contact in a state of comminution, and must be very intimately mixed, in order that the distance may be insensible between the molecules of the different bodies which produce the reciprocal action. Though one general principle produces the operation, it is very much influenced by various causes, as the quantity of the substances or bodies, and by temperature in a great degree, by electricity, and by mechanical pressure, by insolubility, and by other causes arising from peculiar circumstances. One body at least must be in a state produced by solution or fusion: water or some liquid is necessary to produce a heterogeneous affinity, and the union results from the reciprocal action of the molecules

of the two bodies on each other. Different effects are accordingly produced on different objects in different situations, and the quantity and degree of the exertion of the power depends on various and changing circumstances; for bodies in changing state also change capacity. A knowledge of the phenomena of nature, shown in the order and mutual dependence of combinations, would enable us to make them subservient to the improvement of the arts, and direct them to the useful purposes of life. It may be very fairly questioned if agriculture has yet derived the one-half of the benefits of comminution and mixing of the soil with the substances that are used as fertilizers. Experience has ever shown that the superior effects of substances on the surface of the ground arise from the finer state in which the materials exist, and that much of the benefits derived is owing to the attention that is bestowed on that point.

Nature has produced bodies in various forms and qualities, minute in bulk, diminutive, reduced in size, concreted, and aggregate, and hard or soft, fusible or vitreous, harsh or sweet, acid, acrid, or corrosive. Some are more simple than others, or they are formed of fewer elementary substances, and are consequently capable of exercising a chemical action on all substances in contact, for all bodies of simple constituents have an aptitude to enter into combinations and to effect decompositions, and the results will depend on the strength of the respective actions. In making a change in the nature of bodies, fire and water are the two effective agents: the former banishes the existing qualities, and confers new ones; the latter, by its insinuating force, disintegrates the mass and sunders the particles, and brings the elements into a fresh contact in an entirely different form. For the purpose of being used as manures, most bodies require to be altered in some way by means of which the quality is brought nearer to the condition which is known to yield the desired purpose. Hardened or rocky substances are acted upon by fire, and earthy matters are impregnated with liquids. Other similar ways are used to prepare the various matters that are known to form the useful substances.

MARL.

Of the fertilizing substances that are used in the natural state, and for the application of which little or no preparation has been found necessary, marl holds a very prominent place. The name means "marrow fat, or a preparation of the earth," and by the ancients it was called "terre adeps," and was well known to them. It is a calcareous earth, or a carbonate of lime with portions of other earths, and assumes a fat, unctuous appearance after crumbling or dissolution. Geology places it in the tertiary formation, resting upon the gypsum, and alternating with it. One bed is white and calcareous, and contains silicified remains of trees, plants, and shells; other beds are argillaceous and of great thickness, and often contain balls of celestine or sulphate of strontites. The uppermost beds are thin, and contain large quantities of oysters: marine shells abound in the beds that join with sands and sandstones, and the last bed is of the

fresh-water denomination. Marls have been found stratified in some parts of Europe.

The component parts of marl are so minutely divided as to be invisible to the naked eye, and from this circumstance, and from their containing both fresh and salt water organic remains, and from the fissile structure, it has been conjectured that they have been produced from the detritus of other substances, and that they have subsided from a liquid state. This supposition is strengthened by the circumstance of the substances occurring among the secondary strata. They are soft and opaque, earthy, light, and miscible with water by agitation, soluble in acids with effervescence, hard in the fire, and vitrify with a strong heat; and to constitute true marls, the substance must contain as much clay as to fall into a powder in water, and crumble into minute pieces by exposure to the air, and generally showing a hoary congelation from the effects of the rays of the sun. The quantity of calcareous matter varies from two-thirds to four-fifths, which may be separated by most of the acids, which will wholly dissolve the substance and leave a residue of clay, which is composed, as usual, of alumina and silica. Marls are often indurated, and form "Florence marble," and very like a compact limestone; and also schistose, as at Monte Bolea, in Italy. Earthy and hard marls are supposed to be produced by the decomposition of the latter, but the two kinds do not always accompany each other.

In agriculture the marls are called stony, sandy, clayey, and shell marl, according to the appearances it assumes in different situations where it is found, at various depths under the ground. The first is usually called "rotten limestone;" it is slow and lasting in operation, and very favourable to the production of grasses. "Sandy marl" is most frequent in Ireland, in the pits of limestone gravel, and is called "limestone sand." It feels gritty, and moulders slowly, does not effervesce with acids, owing to the large quantity of sand in its composition, and on clayey lands it has very much improved the texture of the soil when liberally applied. "Clayey marl" is found of different colours, yellow, blue, red, and brown, occasioned by the substances to which it has been exposed, and by the subjacent and superincumbent formations: it contains more clay than other marls, generally from 60 to 80 per cent., and 20 to 32 of carbonate of lime, and 8 to 10 of sand, with some signs of iron; consequently it possesses a greater power of absorbing and retaining moisture: the feel is soft and unctuous, flexible like a paste, and dries and crumbles by exposure. The effects are very great in improving all light and thin soils, sands, gravels, and loams, as the clayey basis adds to the staple of the thin soils and produces consolidation. "Shell marl" is found in places that have been covered with water, and is supposed to have originated from testaceous animals, being composed of shells converted into calcareous earth, more or less refined and pure, according to the attrition and decomposition they have undergone during a long period of time, and according to the quantity and quality of the substances that are mixed with them by the deposition of the early and muddy matters left by the sediment

of the waters. This kind of marl contains more calcareous matter than the others, generally more than the ordinary limestones.

Most marls effervesce in acids, when fresh; after burning, the ebullition ceases. But several varieties are used that show no affection by acids, and have been long celebrated as manures. Clay marl effervesces feebly and hardens in the fire, while the more calcareous sorts dissolve in powder, and all marls are easily vitrified, and crumble by exposure according to the solidity of the texture, and when burnt soon fall by the attraction of moisture, and feel greasy when they contain any particles of mica. Marls are generally found in a moist state, especially the argillaceous sort; they soon crumble by exposure, but lime is not altered. After calcination, lime falls into powder by means of air and water, but marl suffers no change.

The effervescence of calcareous substances in acids shows the presence of the substance, not the quantity; the effervescence will vary according to the strength of the acid, and the compactness, penetrability, and other latent qualities of the calcareous bodies themselves. Marl contains no salts, and the composition of it is very peculiar as a carbonate of lime.

A mixed marl has been found to contain:—

Fine sand.....	36
Clay of a soapy kind.....	44
Mould.....	5
Carbonate of lime.....	14
Gypsum.....	1
	—
	100

The chalk marl in Norfolk contains in 100 grains:—

Chalk.....	85 grains.
Sand.....	10 "
Clay.....	5 "
	—
	100 "

Clay marl of the same county in 100 grains contains:—

Clay with some iron.....	50
Impure chalk.....	43
Sand.....	7
	—
	100

A kind called "Dove marl," from the similarity to pigeon's dung, contains as much as 98 per cent. of carbonate of lime.

Marls have been supposed to be derived from the ruins of the primary and secondary rocks, worn down, carried about, agitated and deposited without any relation to the laws of specific gravity. Animal remains are found at considerable depths, and even stones of great weight are met with, where no rocks of the same or of similar kind are known to exist in the surrounding locality or in the adjacent geological formations. Fire wholly changes the nature of bodies that are subjected to the violent nature of its influence, and gives them qualities they did not before possess, and banishes others which they never afterwards recover. Decomposed lavas are exceedingly fruitful, and the heat of volcanoes produces a most luxuriant vegetation in places within

its reach, and it has been very fancifully conjectured that marl may retain some of the qualities which its constituent substances acquired as rocks by the igneous agency of their production. Such conjectures are amusing, but add nothing to the science, or the systematical experience of the practice of any art or use of a material.

For the sake of conciseness, marls may be divided into two kinds—shelly and earthy. Minute accuracy will make many subdivisions, but these two divisions will mark the distinction of having more earths or lime in the constitution of the substance. Shell marl is generally found under masses and at the bottom of lakes, soft, and of a bluish white colour, and seems to be a natural deposit where water has been stagnant. The composition usually partakes of the nature of the surrounding earths, and may properly be considered as a composition of organic matters with earths and calcareous materials reduced without the action of fire. It often occurs in ponds and land-locked bogs, on the sides of hills, and on the banks of rivers, formed by the accumulation and decomposition of small shells, as whelks and periwinkles, and also of bivalves; and lying in beds of different thickness, running horizontally, but seldom of great extent. It has been found to contain 84 per cent. of pure lime.

Clayey marls are found below mosses and in low wet places, at the foot of hills, and in the valleys between them. The composition and the quality vary much, from 15 to 40 per cent. of calcareous matter, and the remainder of clay and sand, with mixtures of sand, loam, clay, and chalk, according to the nature of the animal, vegetable, and earthy matters which abound in the locality, and which have been collected and decomposed together. Separate and distinct beds of clayey and sandy marls have been found alternating with clays and limestone, of which clay is the undermost stratum, the marl being of very different colours, as it has been exposed to the elements composing and surrounding it, the redness showing the presence of iron, whiteness that of calx, the blue and yellow showing the clayey composition mixed with other substances. It is sometimes found very hard to dig, with lumps of chalk and limestone in it, lying under stiff clays and low black grounds, and very compact and greasy; sometimes flaky, smooth, and red in colour, crumbling, and of very good quality. Other kinds are slaty, and of the shape of flags, and of a bluish colour, are easily dissolved by the action of rains and frosts, and are of good quality.

Marls are well suited to be used as a manure in top-dressing lands, as the substance crumbles by exposure, and the particles are most minutely subdivided. The most preferable application consists in laying it on a grass ley in the end of the autumn, or in the early winter, when the herbage will be of little value, and when the changes of the weather will effect the decomposition of the marl, by the time the grass shoots in the spring. It will thus secure the regular spreading over the surface, and the bush-harrow and the roll being afterwards employed, the particles will be well reduced and pressed into the soil. The crop of grass will be

greatly improved, and when the land is ploughed for a grain crop in the following season, the marl will be thoroughly matted in the turf, and the vegetable sward which it has raised will most materially promote, by its decomposition, the subsequent fertility of the land. This mode affords time for the crumbling of the marl, and it raises a close vegetable growth on which the future crops depend for their nutriment. The substance that is used as top-dressing cannot be incorporated with the soil from want of arable culture, and consequently the effects depend on the influence which it is able to exert on the materials with which it comes into contact. By raising a large quantity of grassy herbage, in the shape of roots, leaves, and culms, it affords by the decomposition of these substances, when the land is ploughed, a vegetable "pabulum" to the growing crop, with which no manure yet known is superior, if any one be equal to it, either in action or duration. Consequently, all top-dressings of an earthy nature should be used with the view of producing this vegetable growth for the support of the future crops. The quantity of marls used in this way on grass land may be stated at an average of 40 to 60 cart loads of two horses.

The use of marls on the fallows of barley and turnips in the spring, admits of the better mixing with the soil, provided the suitable reduction of the marl can be accomplished, which may be done by exposure if the weather be favourable, before the last ploughing of the land, and when the nature of the marl itself favours the dissolution. It is often necessary to go over the work, and break the land with hand-mallets. The weather is the best operator, and the time of exposure may produce some reciprocal actions. In whatever manner marls are applied, it is most absolutely necessary that the substance be reduced as fine as possible by breaking the lumps, spreading it evenly, by harrowing and rolling when dried after rains, and by being ploughed into the ground by means of a shallow furrow. Some marls will crumble to powder immediately on exposure, or very soon after; others require the changes of both winter and summer, and also much attention in improving the action of the weather, by breaking, harrowing; and rolling.

The effects of marls have been much the greatest on dry heathy grounds that have been converted into arable cultivation; and on sandy loams, and on all sandy land generally, the applications have been very beneficial. On raw, damp loams, reports are less favourable: the marl attracts moisture, and thus increases the poachy looseness of the land. Clays are much improved by large quantities of marl, but the clay must be pulverized in order to facilitate the incorporation with the marly substance. Practice directs the use of clayey marls on all light soils, and the application of sandy and shell marls to heavier lands; but all these substances have been found useful on any soils, when judiciously employed.

Marls are often made into composts with earths and farm-yard dung, either in layers in the heaps, or in the bottoms of the fold-yards, where they will be soaked by the urinary juices, and afterwards

mixed with the mass. It is thought that such a preparation is more effectual than marl by itself. Frequency of marling may produce a hurtful looseness in the land, which is very easily removed by the pasturing of the land in rest for some few years. The avaricious use of the plough has produced the trivial hurtful effects that have been observed from the use of marls.

The action of marls is usually attributed to the quantity of calcareous matter which they contain, and to the change it creates in the land by a mechanical action, and a mucilaginous matter that is derived from the exuvie of animals. The extremely minute blending of the ingredients of marl has been supposed to constitute the fertilizing quality, each particle having the power of exerting its peculiar property on the soil, and on each other, and of retaining or giving out the substances they may form, that are favourable to vegetation by the different agencies and combinations. The clays impart moisture to the sandy parts, and the sand prevents the clay from being too adhesive, and thus the respective qualities are exerted advantageously on each other. An oleaginous nature has been discovered in the composition, arising from the mixture of the substances with animal and vegetable matter, and to this property much of the fertility which it produces has been ascribed. It is also thought to be an absorbent earth, composed of clay and limestone, and that the useful quality is derived from the very intimate mixture of these valuable ingredients.

The quantity of calcareous matter is no certain criterion either of the quality or of the effect, for the marls that effervesce little or none by the application of an acid are good manures, and marls of great difference in colour and in chemical composition have been dug from the same pit, where they lay contiguous and almost mixed with each other, and have shown no discernible difference of effect in any crop, when applied in equal quantities on the same soils. On coarse, heathy pastures, an application of marl produces the usual effect of calcareous matters in banishing the rough foggage, and substituting a close sward of finer grasses. This result will be obtained by the use of any other substances, provided it be properly prepared for the intended purpose.

Marls exposed for years retain the same properties as when newly dug—do not effervesce after calcination, and good marls feel greasy when touched, and friable when dry, and the land is generally good above them; the red and blue colours, with yellow veins, are found to be the best in quality. Marls are known by breaking into small pieces from exposure; by the crackling of the particles of dry marl in the fire, like salt, and by throwing up bubbles to the surface of the water by which it is covered, and by gradually dissolving and forming with the water a soapy substance like a paste, and not unfrequently of a liquid nature, the marl remaining dissolved and suspended in the water without any coagulation. But water alone will produce bubbles when poured on certain dry clays, and hence it is recommended to subject marls to water for a time before being tested by an acid. Marl contains no alkaline salt, as it imparts no

quality, smell, nor taste, when digested or boiled, and has nothing soluble in water. Muriatic acid may be applied till the effervescence ceases: the loss of weight will show the quantity of air expelled, and the remainder is earths. The quantity of calcareous earths may be ascertained by dissolving the marl in muriatic acid, diluting the liquid with water, passing it through a filtering paper, and then precipitating the calcareous earths from the clear liquid by a solution from some fixed alkaline salt.

CHALK.

Chalk is a calcareous earth, and the most recent formation of the carbonate of lime. It is divided into hard and soft chalk, and rests on the third sandstone formation: effervesces strongly with acids, and is distinguished from magnesia by not being disturbed by the caustic volatile alkali. Its specific gravity has been variously estimated at 2.252, 2.316, 2.657, 2.226, and it contains per cent.—

Lime	56.5 or 53
Carbonic acid	43.0 „ 42
Water	0.5 „ 3
Alumina	0.0 „ 2
	100.0 100

Hard chalk is burned like lime, for building and manuring purposes, and soft chalks are used in top-dressing arable and grass lands, as clover leys, stubbles intended for wheat, and for bare summer fallows. It should be dug from the pits in autumn, and laid at once on the land to be dressed; the rains and frosts will be useful in pulverizing it, and what is left unreduced must be broken by means of axes and hammers. Some attention is required in getting chalk properly pulverized: the fat unctuous kinds soon crumble on exposure, but the harder sorts require longer time and more labour. The quantity laid on per acre varies very much, according to local circumstances; a medium may be stated at 40 to 50 cart loads, and from 8 to 15 loads of a waggon. The expense of carrying a rude, heavy article very much restricts the use of the substance, and chalk in the original state falls under the list of these materials.

The use of chalk as a top-dressing is much best obtained in the form of a compost with earths and peat, as is the case with all calcareous substances. It is a mild agent, and possesses no destructive solvent quality, which attaches to the limestones after undergoing the action of fire. In an unmixed state, chalk absorbs moisture and attracts acids, which hasten putrefaction; and the mechanical action lies in uniting with clays, and forming a resemblance of marl, and preventing the stubborn hardness of the land in summer, and the wet adhesiveness in winter. On grass lands, it has the usual property of manures or any application in banishing the coarser herbage, and bringing in their place white clovers and grasses of a sweeter quality. Chalk has a very strong affinity for water, and consequently is most useful on dry sands and gravels, by attracting and retaining moisture for the use of the growing plants. And this use is very much assisted by being mixed with earths, and brought into contact with animal and vegetable remains in

a state of minute subdivision, which settle into a stratum round the roots of the plants, and form the source whence the nutriment is drawn, and which was formed by the application. Hence arises the superiority of earthy substances for the purpose of top-dressing, over the effects of caustic stimulents; the latter exert a passing influence on the growing bodies of the moment, but leave no residuum as a source of future use.

At a minimum calculation, the expense of a dressing of unmixed chalk cannot be less than £4, or 40 cart-loads at 2s. each. This amount supposes a favourable contiguity of the chalk and the land on which it is to be used. When made into composts, the expense will be very similar, as the smaller number of cart-loads per acre will meet the cost of collecting the earths, and of turning over the heaps. In very many situations, the cost will be very considerably above £4, owing to the expense of carriage, and the quantity of the article that is required to produce any effect. If this quantity be not large, the expense will be wholly lost; for quantity is most imperatively required in many cases, to rise to a superior affinity. The most important recommendation must not be omitted, that all aggregated bodies that are used in top-dressings must be reduced to a finely-pulverized state. Lumps of chalk will lie on the surface of lands without being broken; the plough and the harrow turn them over, and the roll presses them into the soil; but the purpose will be entirely defeated unless the body be finely reduced: well-prepared composts have an advantage in this way.

On soils of the lighter description, sands, loams, gravels, and even on chalky lands, very great improvements have been done by large applications of chalk, the effects of which have not ceased with a few crops, but have operated, like all calcareous substances, in imparting properties to the land that it did not before possess, and at the same time increasing the quantity of every crop. The quantity applied must be large, and when used for top-dressing grass lands, it must be applied one year or more before the land is ploughed, in order to raise a close, grassy sward, which, by its decomposition affords the food to future crops. This vegetable stratum in its formation constitutes the value in top-dressings. Chalk is a heavy body, and is not much used, and less in the native locality than at distances to which it is carried.

CLAY.

Clay is a mixed body, mostly composed of "alumina, sulphuric acid, and water." It is found in vast beds in the alluvial deposit of the tertiary formation, of which chalk, or the most recent condition of lime, forms the basis, and is much mixed with other bodies in different states and combinations. The prevailing colour is brown or reddish brown, yellow, and sometimes bluish—sandy, gravelly, often solid, more or less unctuous and soft to the touch, often friable and dry, breaking into small lumps, containing more silex, and loses its plasticity; and perhaps no body is found in a greater diversity of composition in soils and in slates, and in all argillaceous formations. It enters into all good lands, in fertile soils from 9 to 15 per

cent., and in barren lands from 20 to 40 per cent.; the absence of it forms a soil too dry and porous, and a superabundance of it constitutes a soil too wet and cold when in a moist state, and contracts and hardens by heat into a condition that is adverse to vegetable life. Clay is found calcareous, meagre, and unctuous, effervescing with acids, rough and gritty, and containing a greater quantity of alumina. The purest specimen contains upwards of 60 per cent. of sand, and is always mixed with mineral, animal, and vegetable substances. The aluminous base imbibes 15 times its weight of water, and retains it with great obstinacy.

Like all other substances, the quality of the clay, the mode of its combination with other substances, and the exposure of the combined elements, render it a fertilizer both in the simple state and in the condition of a "compost" with other substances. When found of a clammy or indurated texture, great difficulty is experienced in reducing the substance to particles that can act with and upon the other elements with which the contact will occur. But with calcareous clays, the process is easy, the mass is friable and crumbling, and the dissolution is so fine as to allow an intimate incorporation with the soil. Accordingly very great improvements have been effected by excavating clays of this nature, and laying pretty large quantities on the surface of light lands—a moist quality has been given to the sandy soil, and more firmness and a greater consistency. The quantity must be liberal, from 100 to 160 loads an acre, and must be attentively used in the breaking and spreading of the pieces. On the other hand, ferruginous clays, and those of a white, sandy, and gravelly nature, are positively pernicious, and require a mixture with substances of a better quality to correct the noxious property, and an exposure to atmospheric action to extract and dissipate the hurtful effluvia. A total alteration must be acted upon the constituents before clays of that nature can be made fertile, either as a cultivated soil, or as an application to other lands.

Sulphuric acid in any form or combination is noxious to vegetable life, and in preparing clay for the purpose of acting as a manure, that hurtful ingredient must be banished, and more friendly qualities introduced. The quantity of water and acid amounts to two-third parts of the constituents of pure clay; and being in combination, the destruction of both elements must be effected. Some body must be applied that will act violently and forcibly in disintegrating the mass of clay, in sundering the particles, in banishing existing properties, and in conferring more valuable qualities by means of reciprocal action and mutual combinations. For this purpose, no better agent has yet been found than caustic lime, in a state of hot shells newly burned. Lime is the oxide of "calcium," one of the newly discovered terrigenous metals, which contains in 100 parts about 38 parts of oxygen. An oxide is a sour, pungent body, and draws off every volatile substance, without fusing the primitive body: it is the circumstance or state of change, while calcination is the mode of effecting it. By the application of a violent heat, lime loses the water of crystallization, and the carbonic acid

gas is expelled, which in combination with the earthy base formed the neutral salt known by the name of the carbonate of lime. In the newly burned state, it forms a strong caustic, and has a very powerful corrosive quality, and the alkaline character of turning vegetable blues into green. After being exposed to the air for a determinate time, it imbibes carbonic acid from the atmosphere, and becomes mild like pounded limestone.

Lime is a homogenous body, and will exercise a chemical action on all substances in contact—for all bodies of simple constituents have an aptitude to enter into combinations and to effect decompositions, and the results will depend on the strength of the respective actions. The clammy and indurated clays, which are the most abundant, must be laid in a large oblong heap of about 6 feet deep in the centre, and sloping at the ends, which will permit the carts to pass over it, and lay the loads of lime upon the surface. The lime must be in the hottest possible state, and the clay may be in any form, dug from the beds of deep deposit, or from the surface ground of soil in mixture, and consequently with a portion of animal and vegetable matters. The heap of clay must be turned over and mixed regularly with the shells of lime, in the proportion of 2 to 3, and the sides sloping all round in order to allow room for the swelling of the mass. When moisture touches lime in a newly calcined state, a hissing noise takes place, a swelling follows, vapour arises, much heat is evolved, and light is emitted in a dark situation. In most cases the water that is contained in the clay will dissolve the lime, if sufficient care be used in mixing the heap, that the lime does not lie in dry masses, but is touched by the clay in every shell of its form. The heat that is evolved penetrates the harsh mass of the clay, and the acid and the water in the clay are expelled by its action, and are dissipated along with the water of the lime which escapes in the form of vapour. The aluminous base of clay being thus freed of the acid and the water which rendered it harsh and rigid, immediately assumes a mild gelatinous form, and being united with the lime which is now mild by the absorption of carbonic acid gas, the combination becomes a saponaceous mass of an unctuous nature, which is loosely connected and easy of decomposition. The harsh properties of both the constituent bodies have been expelled by mutual action, and milder qualities have succeeded.

After the dissolution of the lime-shells has been completely effected, and no more heaving of the mass takes place from the swelling of the lime in bulk, a time may be allowed to remain in quiet, for the purpose of settling the combinations after the union has been effected by the violent intestinal motions that have been provoked by the action of the bodies singly and on each other. After remaining in a quiescent state for an indefinite time, the heap must be again turned over, and the materials very intimately mixed by breaking the lumps, and placing in the centre of the mass the materials that have been exposed on the outside, and consequently will be less decomposed. This movement of the heap will provoke new affinities, and produce fresh combinations, and effect additional results. It

must be done with much care in reducing the elements to fine particles in order to bring the bodies into contact in the nearest possible ultimate form, and at insensible distances. Unless these conditions be effected, no useful combinations will take place.

It will depend on the state of reduction which the mass of materials exhibits, if it be necessary to turn over the heap the third time; if it be finely pulverized, the necessity will not exist, after it is seen to assume the form of a saponaceous unctuousness, for the beginning of this condition shows that the affinities are exhausted, and that the results of their action are settling into the newly-produced state of existence. But if the materials appear still to be crude and harsh, and if the lime still exists in the dry granulated form as it falls from the dissolved shell, the heap may be turned over with advantage. The lime is still hot, and will emit caloric, which will enter, and dilate the bodies, separate the particles, diminish the attraction for each other, and proportionately augment the attraction of the particles of adjacent bodies, and consequently produces combinations, and facilitates reciprocal unions. This principle shows the necessity and advantage of the frequent stirring of mixed bodies.

Mixtures of lime with earthy bodies will require two or three turnings according to the original state of the materials—if they be coarse and lumpy, or fine, and easy of pulverization. After every motion ceases by reason of the non-generation of heat, the materials will become a saponaceous unctuous mass, and will afford a mucilaginous manure, which is very easily decomposable, and applicable to any purpose of fertilization. The period of time of one year at least will be required to produce a mass of mild and easily soluble materials from the agency of caustics on the crude and harsh earthy forms that contain both volatile and fixed principles of very inveterate hostility. When the mixing of the different bodies is made in summer, the compost will be ready for application in the autumn of the next year, after the hay crop is got; or on pastures somewhat later, when the cattle are housed. An equally good season occurs in the early spring, before the grasses begin to rise; but the period of autumn may be preferable, in the compost keeping the roots of the plants warm during winter, and affording an earthy bed for the spreading of the creeping shoots of the fibres. In laying the compost over grass-lands of old or young duration, carts with broad wheels must be used, with tire of at least 5 inches in width. The compost must be spread from the carts by two persons provided with broad shovels, one on each side, to the right and left, over a space of ground in three yards to each person. When the earthy mass is laid on the ground in heaps and afterwards spread, the bottoms are difficult to be cleaned out, and a tuft of herbage grows from the extra quantity of manure that is left on the spot. By spreading the compost from the cart, a superior evenness is obtained, and the work is finished at once.

After the compost has lain on the surface of the ground in order to expose the cloddy particles to the action of the atmosphere, the bush-harrow will

be very usefully applied in breaking into pieces the lumps which will adhere to each other, and in tending to distribute the mass equally over the ground. For this purpose, the harrowing must be done across and lengthwise, so as to act in both directions. When the surface has become thoroughly dry, a heavy roll must be applied, which will level all inequalities, and press together the earthy compost and the roots of the plants. The roll must be very liberally used both in the autumn and in the spring; one or even two applications may not be sufficient in order to produce a close bed for the roots of the plants in contact with the manure, and level against the penetration of drought.

The quantity of such a compost manure to be used on an acre of ground may be stated at an average of 40 cart-loads of one-horse draught. Very much of the effects of all manures is lost from the want of quantity; the chemical combination of bodies is often produced by the addition of one or more substances, which alter the relationship, and in changing state they also change capacity. Different effects are also produced in different situations, and the quantity and degree of the exertion of the power depend on various and changing circumstances. Besides the quantity and the quality of the substances, much influence is exerted by temperature, by electricity, and by mechanical pressure, by insolubility, and by other causes, arising from peculiar circumstances. The compost manure which we have now described, being a cool mass, will be used in cool weather, when the solubility will not be too much hastened by the violent heats, nor retarded by the pinching colds. A gradual decomposition will best answer the purpose of the assimilation of the elements to the food of plants.

The value is very great of earthy composts properly prepared in this way, for being used as top-dressings on grass lands of all kinds, and also on fallow grounds. Not only the common herbage is increased in quantity, but the quality is very much altered, by the invariable effect of grass plants of a better kind being brought forward and established on the ground. It is a very beneficial practice to sow the seeds of the better grasses on the top of a liberal application of a good, rich, earthy compost, to be pressed into the fresh earthy stratum by the heavy roll. Inferior grass lands may be very much improved in this way, and at a very moderate cost, in the purchase of the lime and the seeds of the grass plants. In every case of application, the compost of lime and earths is much superior in effect to lime by itself, especially on lands of an inferior description. This truth is settled beyond all dispute.

The burning of clay for the purpose of being converted into a manure, has been often tried with much boasting confidence, but with no lasting success. By the application of a smothering fire, the water in the clay is banished, the earths are reduced, and divided into minute particles, and invested with an unknown property which substances acquire that have undergone the action of fire. In this state, it is supposed to attract and retain the ammonia conveyed to the soil by rain water, and thus

affords to plants the nitrogen contained in the ammonia. Clay is the oxide of "aluminum," one of the newly-discovered terrigenous metals, and is composed of silica, alumina, oxide of iron, and some little inflammable matter, and probably some other substances, but in a very minute ratio. The combination of alumina with the oxide of iron produces the well-known earthy smell of clays. The action of fire on clay will further oxidise the residual calxes that compose it, and must contain none of the elements of vegetation, a property which belongs to all bodies that exist in that state. Very much, if not the whole value will consist in the composition of the clay itself; and when it is taken from the surface of the ground, it will contain both animal and vegetable matters, and the ashes will be of the usual nature after burning. The practice of burning clay by itself has wholly sunk in repute, as it never had a legitimate existence on scientific grounds. A metallic base that has been divested of every ingredient can form no fertilizing substance, and the preparation adds very considerably to the lessening of its value. On the other hand, alumina has a very strong affinity for lime, and hence the very beneficial results that attend the reciprocal action, and arise from their union.

On the subject of using clay, it may be added that the clods of clay land fallows may be very advantageously pulverized by being laid into heaps and mixed with the shells of hot lime, which are ignited by the exposure, or by the application of water. The damp heat exhaled from the lime will produce a smothering effect on the clay, will penetrate the tough mass, and impart a fertilizing property to the mixed substances. The lime and the clay will be pulverized together and most minutely blended and mixed in a manner that is otherwise impossible. This mode of using clay has been seldom noticed, and little practised, but of the value of the application no doubt can be entertained.

Clay has been laid on longitudinal heaps of hot dissolving lime, and it is benefited by the penetration of the damp vapours from the bursting of the lime shells. It is afterwards removed, and used as a manure. Little certainly is known of this way of using clay; the quantity of lime must be very considerable, in order to pierce and crumble a tough mass by means of the damp exhalations. The duration may be doubted of the fertilizing quality that is communicated to the clay by the volatile elements of the caustic lime.

In mixing clays with lime in order to form the compost as now recommended, the special attention must be directed to the laying the clay and lime together in the hottest possible state after the lime has been burned. The dissolution of the cinders by the effect of moisture emits much heat, which penetrates and crumbles the tough harshness of the aluminous mass, and reduces it to the condition of being combined in a milder and more useful form. If the lime be allowed to lie exposed and becomes mild, it loses the character of a caustic solvent, and assumes the state of an earthy ingredient. In this form, it does not act on other bodies, and enters *only* into a mechanical mixture with substances that are pulverized in a similar state. The clay is usually in the form of clods and

lumps, and requires a powerful solvent in order to disintegrate the mass and sunder the particles. If this reduction be not effected, the lime merely adheres to the outside of the clods, but no combination is effected, and no results are produced by the union of the different bodies. It is an object of the very last importance that the ultimate elements of bodies be brought into contact at insensible distances. The surface of one body being presented to the aggregated mass of another body, affords no opportunity for reciprocal action, the distance is much too great, and the efficacy of combination is in the inverse ratio of the affinity of aggregation; and the greater the latter power is, the less efficacious will be the affinity of composition. Hence pulverized lime being brought into contact with lumps of clay can exert no useful influence, and merely gilds the clods with a whiter varnish than they before possessed. This argument is equally applicable to the use of lime on rough clay fallows; the lime is in fine particles and the clay is in large lumps, and consequently no reciprocal action can happen: the lime is powerless from the want of opportunity, and the soil is formed into masses which admit no influence of exterior action. Hence it would answer a very beneficial purpose to form heaps of the clods of fallows mixed with lime shells, which by bursting and evolving much heat would penetrate, crumble, and pulverize the clayey lumps, and reduce them to ashes, mixed with the granular particles of the lime in the most extreme comminution. Peat might also be reduced to ashes by means of the shells of hot lime, and during the process some useful combinations may happen between the lime, the clay, and moss.

Bodies that undergo the powerful influence of fire (in conjunction), will have a better opportunity of forming new states of existence, than when brought into contact after the action has ceased, and the mutual change of condition has taken place. The susceptibility is cooled by exposure, and the homogeneous qualities are quickly lost which enable bodies to attract each other, and to enter into combinations. Fire is a most violent agent, and the results of its action must be applied immediately on being produced, and before the nature is altered and neutralized by the introduction of adventitious elements. In the case of using lime and clay in conjunction, the quick application of the lime in the hot caustic state is the primary consideration in forming the useful compost by mixing the two substances.

FARM-YARD DUNG is sometimes used for top-dressing grass lands, and experience has now decided that it is best applied in the unprepared state, consisting of straw and excrements as it is produced in the dung-yards. It is most beneficially used in the latter end of autumn or in the early winter; and by the time the grass shoots up in the spring, the faeces will be partly decomposed, and will have subsided into the earthy stratum that holds the roots of the plants; the strawy part will have afforded shelter and warmth to the vegetable layer, and when the vivifying heats of spring commence, the effects will be protruded with much vigour. In the early spring, any roughness that remains on the surface must be raked off, the clods broken by

bush-harrowing, and the application of a heavy roll will level the inequalities, and press to the roots of the plants, the earthy decomposition of the faeces from the effects of the action of the winter's atmosphere. The quantity must be such as will cover the surface evenly and closely when spread out by the hand, and care is to be used in breaking the lumps and laying the materials very equally over the ground. And when the strawy covering is removed in the spring, the combinations that have been forming during the winter will be ready for development in the promotion of vegetable growth. New seeds for hay are most wonderfully benefited in this way. As the excremental part of the manure contains an earthy residuum, the seeds of the better grass plants will be very beneficially sown in the spring, and rolled into the ground.

The other substances that are used for the purpose of top-dressing lands may be divided into the two kinds of earthy and pulverulent—the former existing in the condition of a concreted mass of a greater or less bulk, and the latter in the state of the residuum of combustion.

HUMAN FÆCES and the dung of the minor animals are very strong in nature, and emit very disagreeable effluvia. They are best mixed with fine earths, which absorb the liquid part of the excrements, and reduce the noxious smell. In that condition, a very useful compost is found for being used in the common way. The DUNG OF PIGEONS particularly strong. COAL ASHES are very beneficially used on old sour pastures. They are best reduced by being broken by spade and mattock before the application. The quantity is from 60 to 100 bushels to an acre.

SALT, SALTPETRE, and the NITRATE OF SODA are fossil substances, and after being comminuted they exist in the form of granular or cubical masses. They are best sown by hand from baskets on grass lands, and on culmiferous crops in a young state. Being deliquescent, rains wash away the substance, and the effects of the application as a manure are not great.

It must be held as a rule, that all bodies of an earthy nature must be comminuted as much as possible, in order to be usefully employed as a top-dressing.

Among pulverulent bodies, GYPSUM has been partially introduced as a fertilizer. The substance is the sulphate of lime, or the earthy base in combination with sulphuric acid. After burning it falls into powder, and has been applied to young crops in quantities of 6 and 8 bushels to an acre, but with very small success. The opinions and the results are very contradictory, and do not obtain a place for gypsum among certain and trusted fertilizers.

SOOT and VEGETABLE ASHES are pulverulent bodies, and are sown by hand on young crops of the culmiferous and leguminous kinds. The quantity per acre averages 40 to 60 bushels. The effects are quick and very great, but last only for one crop. Such bodies require no preparation, but to be kept dry in order to prevent the clotting by moisture, and thus prevent the equal distribution. Moist weather is necessary to the action of the elements, which can be studied by choosing

the season of application. The latter end of April and the first part of the month of May is the most common time of using these light substances. Dews and light moistures fasten the light bodies on

the leaves of the plants; heavy rains are injurious in washing them entirely away. For top-dressing vetches, they are most peculiarly applicable and very highly useful. J. D.

THE COMMERCIAL VALUE OF MANURES.

In the last number of the Journal of Agriculture of Edinburgh, Professor Anderson, in a paper entitled "Instructions to Farmers on the Reading of Analyses and the Valuation of Manures," furnishes some details which are interesting, and when qualified by more accurate and recent statistics than the Professor evidently has access to, may be usefully placed on record for more general reference. It is impossible, as he well observes, to form an estimate, with accuracy, of the sums annually expended by the British farmer on the purchase of artificial manures, because no means exist of obtaining an exact statement of the quantities of some of the substances used for agricultural purposes; but an estimate may be formed which approximates to the truth. "When the substances," he adds, "are of foreign origin, and used exclusively for agricultural purposes, no difficulties are experienced; and we thus learn, from the Board of Trade returns, that the value of the guano imported into this country in the year 1858, and retained for home-consumption, amounted to no less than £3,857,424. This sum, however, is considerably above the average; but it is probable that the usual import is not less than £2,500,000." Dr. Anderson's commercial researches do not seem to be very extensive, however accurate his chemical investigations may be. Had he been a careful reader of the *Mark Lane Express*, or *Farmer's Magazine*, and scanned more closely the annual returns of the Board of Trade, he would have come nearer the mark in his estimate of the cost and quantities of artificial manures. Taking the average of the last five years the consumption of Peruvian guano has been 220,000 tons per annum—worth, at £12 per ton, £2,540,000, which corresponds closely with Professor Anderson's assumption, although there is besides a small quantity of other guano imported.

"Next to guano the largest consumption is that of bones, of which, including bone-ash, 84,000 tons are imported annually. In addition to this, however, it is necessary to take into account the bones collected in this country, of which it is only possible to form an approximate estimate. In Glasgow there are collected about 6 tons 2 cwt. of bones for every 1,000 of the population, and if this were the case all over the kingdom the quantity would amount to upward of 150,000 tons. But in country districts a considerable quantity of bones are lost, the consumption of meat is also much smaller than in towns, and I do not think the quantity of bones collected can be safely estimated at more than 50,000 tons—giving for the total quantity of bones used 134,000 tons. A very large proportion of the bones collected in this country is

converted into animal charcoal for the sugar refiners; but as the spent charcoal eventually finds its way into the hands of the manure manufacturers, it is not necessary to take this into consideration; but I estimate the quantity used in the manufacture of ivory-black, for turning, &c., at 20,000 tons, leaving 114,000 tons to be employed in agriculture. Of this probably 40,000 tons are used in bone-dust, costing the farmers £6 per ton, which is equal to £210,000, and 74,000 tons are converted by the action of acid into 110,000 tons of superphosphate, which, at £7 per ton, is worth £770,000." Upon this we would remark that the bones collected at home were estimated ten years ago to exceed 70,000 tons by Mr. Poole, in his "Statistics of British Commerce." That gentleman, from his position as traffic superintendent of the London and North Western Railway, had great facilities for investigation into the collection and employment of various substances. We have invariably found his estimates fully borne out, and looking at the improved condition of the country, and the increase of population in the last decade, we think the quantity of bones available at home may still be taken at fully 75,000 tons. If to this we add the average imports 85,000 tons, we have a total of 160,000 tons, which we may apportion, according to Professor Anderson's plan (first deducting 20,000 tons for turning, &c.), and we shall have, say 60,000 tons used as bone-dust, at £6 per ton, and 80,000 converted into 120,000 tons of superphosphate at the same price.

The consumption of mineral phosphates, according to Professor Anderson, is about as follows:—

	TONS
Cambridge coprolites.....	40,000
Suffolk coprolites.....	3,000
Apatite and all other mineral phosphates	5,000
	48,000

which, being entirely converted into superphosphate, will yield 72,000 tons, at £5 value—£360,000. Of nitrate of soda the average imports amount to 26,000 tons, of which about one-half—worth, at £15 per ton, £195,000—is used for agricultural purposes. The average imports are not so high as 26,000 tons of nitrate, although that quantity was imported last year, unless it is meant to include saltpetre.

Of sulphate of ammonia it is difficult to obtain any definite information; but the opinion of persons conversant with the manufacture is, that about 6,000 tons are used as manure—which, at £15 per ton, is worth £90,000.

If to this be added the sum of £50,000, as covering the value of the blood, fish offal, animal matters of all

£c., 236,240; exempt, 437,754. This gives a total of 790,785 charged, exclusive of Ireland.

The increase of our horseflesh, then, is not a matter of indifference even to the Government, seeing that horses bring in a revenue of nearly 400,000*l.* a year.

The comparative assessments on horses and horse-dealers in the decennial periods named have been as follows:—

GROSS PRODUCE OF REVENUE FOR GREAT BRITAIN.

	Riding Horses.	Other Horses.	Horse-dealers.
1831....	£356,356	£ 61,484	£13,543
1841....	344,571	71,599	14,198
1851....	300,403	76,254	10,800
1859....	230,617	117,819	13,757

But what is our limited stock of horses compared to the vast number in Russia, which, by their mortality, not only supply us with tons of horse-hides and horse-hair, but also with those breakfast delicacies yelet Russian "ox-tongues," which never, however, adorned a bovine throat.

In 1851 there were more than 17,000,000 horses in the Russian empire: of these the greater number was to be found in the provinces of Oran (2,000,000) and Perm (700,000), where most of the inhabitants—who are of the Tartar race—have a peculiar inclination for horse-breeding; or the country of the Don Cossacks (400,000), where horsemanship is an indispensable part of the daily avocations of the people; and in the provinces of Middle Russia, which require a great number of horses to carry on their extensive trade.

As far back as the historical accounts of Russia extend, the rearing of horses seems always to have formed a notable branch of the national industry. The warlike and nomadic habits of the ancient population—the increasing demands for the supply of the numerous cavalry and artillery of a large army—the immense distances, requiring a large amount of animal labour, as well for the conveyance of produce and merchandise as for locomotion, all combined, have stimulated the development of this branch of rural economy, favoured as it is over a large portion of the empire by the great extent of pasture-lands. Accordingly the Russians possess excellent horses for all uses. We need not particularize here the several varieties.

From a recent account we learn that the imperial studs at present are seven in number, namely, two in the government of Woreneje, four in that of Kharkow, and four in that of Nijini Novgorod. Being destined to raise stallions for different purposes, they have been arranged accordingly, and each of them has a type peculiar to itself. The Tshesmenka stud is a nursery of pure-blooded horses, and is divided into two sections, one devoted to English racers, and the other to Arabian. The Khrenovoie stud is composed of three departments—saddle-horses of the old Orloff breed, uncrossed saddle-horses, and cross-breeds, including the Rostoptchine-bred stallions; the Derkhoul stud for large-framed enirassier horses; the Strelitz stud for light cavalry; the Novo Alexandroff stud for draft-horses of medium size; and the Pochuki stud for

heavy draft-horses of large size, and the ordinary farm-horses of the country. The rural horse depôts, or private studs, are twenty-four in number, and serve twenty-nine governments. In 1850 they comprised 1,440 stallions, which in that year covered 25,189 marcs, being an average of 17 or 18 for each stallion.

Among the agricultural horses of Russia, two classes are to be distinguished. The first the common or indigenous breed, which possesses every proper quality, both as to strength and energy of temperament: but although it leaves nothing to be wished for in either of these respects, it is, unfortunately, at the present day, subject to degeneracy, in consequence of precocious copulation between animals only two or three years of age; and the other, an improved breed, has shown in numerous instances the advantages of crossing it with trotters.

Horses are imported into Austria in greater numbers than are exported from it. In the years previous to 1850 the excess of those imported was about 4,000. They appear to be brought in tolerably equal proportions from Tartary, from Southern Germany, Spain, and Russia. In 1854, those imported exceeded the number exported by 8,300; but in 1856 the excess was only 2,700.

Our own import and export trade in horses, although not large, is important. In the six years ending with 1858 we imported 24,558 horses, and shipped, during the same period, 13,218; but the value of the horses exported is very much in excess of those imported, the price being fully as three to one; the average value of the horses brought in being but £30, while those sent away to order are worth about £90. Of 3,458 horses imported in 1858, 1,764 came from Belgium and Holland; 782 from Iceland and Faroe; and 781 from France. Strangely enough, the principal number of those we ship go to the same countries—no doubt to improve the breed. Thus in 1858 there were shipped to France, Belgium, and Holland, 1,864 out of the total of 2,072 exported.

The India Government has been long turning its attention to different quarters for the purchase of horses. The result of its Commissions in the Cape Colony and Australia we have, from time to time, noticed. Several hundred had been purchased in Egypt, at about £25 each, and shipped to Bombay. It was calculated that these horses would cost the Government nearly £100 each, irrespective of casualties.

Finally: We think more attention might be paid to the breeding of horses in many of our West Indian colonies than is now given. With the cheap and abundant pasturage, this might be done at very small expense. Mr. President Price, in an official despatch to Governor Hamilton, dated March 23, 1858, thus speaks of the ponies of the Virgin Islands:—"The breed of ponies, of from 12½ to 13½ hands high, is distinguished for many excellent points. Endurance and admirable fet to sustain the shocks inseparable from running amongst rugged hills, with light and active frames, mark these animals as particularly well fitted for crossing with larger horses. A slight increase in the size of the mares would infallibly lead to the establishment of mule-breeding on a more satisfactory plan; and when I add that each of these animals, at three years old, will command from 100 to 130 dollars (£20 to £26), in any of the Leeward Islands—and that the cost of rearing them is so small as to be scarcely appreciable (certainly not more than about 50s. a head)—the profits of this particular enterprise will be sufficiently apparent."

THE HERDS OF GREAT BRITAIN.

CHAPTER XXI.

CAPTAIN SPENCER'S HERD.

Although many of them will never lose that traditional love of Galloways which burnt so brightly when "moss-troopers rode the hill," the Cumbrians have been latterly very steady in their allegiance to Shorthorns. Just two-and-fifty years ago, Mr. Christian Curwen, M.P., in whose day Workington Hall ranked as the Holker of the North, gave his county the keynote by some fattening experiments, for the report of which the Board of Agriculture awarded him a £50 prize. His "experimental cattle" consisted of a couple of Shorthorns, Herefords, Glamorgans, Galloways, and Longhorns, and a solitary Sussex. The greatest profit was £8 10s. 1d. on Shorthorn No. 2, which increased in weight from 90st. to 115st.; and the second best was £6 16s. 5d., on a Hereford, which began at 61st. 7lbs., and made 28st. 7lbs. In the case of the former, the food, in which 6st. 6lbs. of oilcake was the only stimulant, cost £7 17s. 7d., and in the latter £7 19s. 11d.; and each of them was purchased at 4s. and sold at 6s. per stone.

A race of cattle closely akin to the "Hereford rent-payers," but whose origin has never been quite unravelled, flourished about this period in Cumberland, and were familiarly known as "Lamplugh Hawkies." In his admirable prize essay on the Agriculture of West Cumberland, Mr. Dickinson thus describes their peculiarities: "They were chiefly dark red or brown, and some of them nearly black with white faces and legs, and usually a stripe of white along the back. The eyes were commonly margined by a narrow strip of colour, as if bound about with coloured tape." Our historian adds that they stood low on the leg, with very large carcasses, thick joints and hides, and "abundance of neck leather and dewlap." "What will they say at Cocker-mouth?" has long been a favourite political expression in cannie Cumberland; and it is to a speech of Mr. Grey of Dilston's, at that once fierce little borough, that we have to look for information on the horn question. At the very time that the straw and chaff and green meat, &c., were being meted out to the eleven candidates in the Workington Hall stalls, that gentleman was passing his schoolboy days with Parson Sewell, in the beautiful vale of Lorton. Hence the contrast between the Longhorns of those days and the Shorthorns of the present was a very natural theme when he came back to his old haunts, at the close of half a century, and returned thanks for the judges at the agricultural meeting. There is, in fact, no telling what future naturalists might have said on the point, from a bison, or an antediluvian point of view, if Mr. Grey had not taken such especial pains to explain that the Lorton Longhorns of 1809 could hardly enter a house, until they had acquired the dodge of twisting their heads on one side, so as to

acquire the proper angle of entry. We do not know whether these were the "Longhorns" which cut a very good figure in the experiment. Both Mr. Curwen and Mr. Spedding, of Mirehouse, tried to improve on them; but their skins were too thick and their flesh too slow in its growth, to induce them to persevere; and after the introduction of Galloways into the Abbey Holme, they and the other Longhorns gradually gave way before a breed, which combined the colours and qualities of the former with the greater size of the latter. The pure-white Lysicks, emanating from the Hall of that name, near the head of the Bassenthwaite-lake, disappeared about the same time; and Mr. Dickinson recalls, in his pages, their fine spreading horns, and that smart figure and lofty carriage, which rendered them so invaluable for "topping" the Yorkshire dealers' lots when prices were high, like their leg.

In West Cumberland, Mr. Curwen, as we have seen, was quite the Shorthorn pioneer, and Messrs. Burrow, Milham Hartley, Thompson, and the Rev. John Benson (who introduced Regent and Western Comet), did yeoman service in the cause, when his herd was sold off. The East owed not a little to the West, which sent them "Studholme's little Monarch," as he was fondly termed, to spread the Regent blood; but, unlike his son Maximus (2284) by Magnum Bonum (2243), he was not a show bull.

There was no such thing as a Shorthorn in the Vale of the Eden, when Charles Collings held his great Ketton sale. The souls of Mr. Richardson (father of the present Mr. Saunders, of Nunwick Hall) and Mr. Mat Atkinson were so stirred within them at the news, that they rode off on a pilgrimage across hill and heather, to the new Durham land of promise. They made no secret of their mission, and farmers flocked from all parts to see the two white and two roan heifers, which were the upshot of it. The pilgrims drew lots for choice, and Mr. Atkinson sent his pair to one of the late Earl Lonsdale's bulls. His lordship from very early times had never lacked a good bull at Lowther. Mr. Hudleston has preserved a tradition, that the Blue Boar of Brougham and the Yellow Boar of Lowther got loose and fought in a pen at Penrith, but the yellow bulls of the East and the blue bulls of the West preserved a far more peaceful rivalry. It was a bad day for Cumberland breeders when the Lowther herd was sold, and none have noted the change so much as the jobbers and the show judges. The former always said that they would give away the point of their being at times a little narrow through the heart, if they could only have another crop of Gainford hind-quarters. It was with this massive red bull, who so especially distinguished himself as a heifer getter, that the bull competition

sprung up, which once gave such zest to the county showyards. It virtually began with Mr. Buston, of Dolphoby, who came to the county about 1829, and brought with him Crofton's Cripple (1887), and Young Rockingham (2549). At last a proposition was mooted to have a five-guinea sweepstakes at Penrith, and shortly before the day, it oozed out that Lord Lonsdale had bought a new bull from Colonel Cradock, at Richmond races, for 100 gs., which was to cut everything down. His lordship had not drawn his bow at a venture; and when the great unknown descended from his van on to the show ground, in the shape of a three-year-old scion of Thorpe and old Cherry, the owners of his opponents too truly foresaw that their chances were out. Mr. Buston had sent Sir William; and Priam and Wallace represented the Denton and Troutbeck herds; but the fiat of the judges was fully endorsed by the great majority of the spectators, and Mr. Blamire, the senior tithe commissioner, declared in his speech that evening, that he did not think there was a better bull in England. However, a different opinion obtained next year, at the Carlisle Show, where Priam, nothing loth, confronted him again, and Mr. Studholme's Maximus was declared the winner. Gainford was sold back after a few seasons to Mr. Crofton for 100 gs.; and whatever we may be tempted to hope for the future, there has been no high-class bull at Lowther since.

Mr. Sober Watkin was generally pretty handy in the show yard, and Cumberland came boldly out, at Mr. John Maynard of Harlsey's sale, by the purchase of the yearling bull Chorister, by Velocipede, for 95 gs. This bull was let to Mr. Troutbeck, of Blencow, and his calves as well as Wallace's heifers formed a strong item in that gentleman's catalogue when in 1838 he for the first time gave his conventional invitation to his "friends and well-wishers at Blencow, at 12 o'clock, where they may rely upon farmers' fare and a hearty welcome." Old Dorothy Draggletail, by Marmion, dam Old Nell Gwynne by Layton, a cow with a particularly nice laid shoulder and well sprung rib, attracted Mr. Parkinson's notice for 29 gs., and she bred so well in his hands that she was re-named Dorothy Gwynne, and from her the Gwynnes came into fashion. Nothing at this sale made more than 43 gs., except Dairymaid by Wallace, from the old cow; but in 1849, her blood, which had been retained at Blencow through her sister, Old Cripple, and her daughters Poll Gwynne by Wellington, and White Moll Gwynne by Wallace, made Messrs. Senhouse, Wetherell, and Stafford pretty busy, though none of them ventured beyond 45 gs. The nine-year old Strawberry by Chorister from Strawberry by Tom Gwynne, was taken to the West by Mr. Curwen for only 19 gs., but she left the nucleus of a tribe behind her, in Jane Strawberry, Spotted Strawberry, Strawberry Lass, &c., which made a very formidable array, along with the Gwynnes, when another ten-year cycle was concluded. Old Strawberry only returned to the home of her tribe, as Mr. Troutbeck had originally purchased her great grandam Strawberry by Ossian, at Bishop Goodenough's sale in 1819. The bishop had,

with good sense, gone for them to the fountain-head at Workington Hall, to which they had come with an unbroken pedigree, through General Simpson's and Charles Collings' hands. Old Nell Gwynne had a still more princely descent, as she was from the dam of St. Albans (which came, we believe, to Blencow as barren), and a granddaughter of Princess, which was bred by Mr. Robert Colling. Ketton and Barmpton were thus represented in the two great lines of blood, which formed the third sale, in which, contrary to expectation, the Gwynnes averaged considerably more than the Strawberries. Never had such prices been heard of in Cumberland before. Mr. Douglas made a mystic signal to his commissioner that, however heavily he might be "punished" by Mr. Saunders and the opposition, he was not to leave off till Polly Gwynne (91 gs.), Prim Gwynne (150 gs.), and Priscilla Gwynne (125 gs.) had all been booked for Athelstaneford; and Mr. Jefferson kept Phoebe Gwynne (70 gs.) in Cumberland, while White Strawberry (52 gs.) was the highest bid for any of that tribe.

This last sale ranks with Mr. Saunders's in 1855, as the most important that ever took place in East Cumberland, and the West is about to take its turn again on Friday next, with Captain Spencer's, of Distington House. His herd, which only dates from 1856, has been got together with no small spirit and judgment, and its Young Ben has spread its fame as a show herd beyond the mere narrow county limits. One of the Captain's first purchases was a cow—at Mr. Crisp's, in 1856; but in the May of the following year, he went in for Lizzy, at Mr. Grenfell's sale, and beat off all opposition at 150 gs. He would have bid for her yearling daughter Leila as well, but Mr. Harvey Combe had set his heart on her as well as Lizzy, and hence it was arranged that they were not to oppose each other. Lizzy's daughter, who was then about 24 hours old, was carried into the ring, and if ever we longed for Leech's presence it was then, to hit off the ponderous and yet enraptured gravity, with which the magnates of that Shorthorn world gazed at that "infant Sappho," (as it sprawled feebly about in the centre), and gave an approving hum, when Captain Spencer was declared the purchaser at the rate of some two guineas per hour of its precious life. The elegant Leila came into the market two years after, on the death of Mr. Combe, and she ran up to 170 gs. before she was secured for the Distington pastures. When we next saw her, John, the greyhound trainer, whose fame is at Aintree, Biggar, and Brougham, was busy milking her for a litter of Seagull and Sunbeam puppies, and a widowed Brahmin bull, about the height of a tup, was in close attendance. The extraordinary devotion of the latter induced us to inquire his history, and we learnt that he had paid similar attentions to Lizzy on her arrival, and had then heartlessly deserted her in favour of her daughter.

Leaving John to his reflections on the forms of Silk and Scarlet, or Skittles, we pursued our road through the nutglade, and so on through Stubs Gill domain to Dyon's Hall, which is the head-quarters of the herd. The old door cornice bears the date of 1712, and the

yew tree in front of it—where the game-fowl and the pigeons cluster at nightfall as thick as the sacred apes in the temples of Benares—was nearly as antique. Knight of Warlabby by Windsor, from Blithe by Hopewell, granddam Bliss by Leonard, had gone home after his year's sojourn, leaving five calves; and some cows in calf by him. The year before, Captain Spencer sent two heifers to Lord of the Valley and bought others in calf to him and Windsor from Mr. Carr; and, in fact, throughout his herd there is a very strong infusion of the most fashionable Booth blood of the day. The lots include 23 cows and heifers, and 10 bulls. Miranda 3rd, the eight-year-old matron of the herd, has distinguished herself as the dam of Young Ben, and several good bulls; but she has, unfortunately, just lost her only heifer calf, by Knight of Warlabby.

The bulls have all been sold, with the exception of Young Ben, by Booth's Benedict, who was purchased as a calf from Mr. Dickinson for 30 gs. Besides winning in the county twice, he crossed the Channel to the Dublin spring show this year, and beat 10 bulls for the head prize in the aged class. His neck is a little thinner than we like, but his hind-quarters are especially orthodox; and take him all in all, he is a good class animal. Sunflower, bred by Mr. Grindal, is a strong-backed, roomy, and rather old-fashioned cow. Her daughter Sontag, the last of the get of Daisy Duke, was recently sold as a yearling for 80 gs. to the Duke of Richmond, but the three-year-old Slavonia by Cherry Duke (12589), and the yearling Lady of the Isles by Young Ben, keep up the line. Slavonia catches her head from Sunflower, and has very nice fore-quarters, though perhaps she may be a trifle on leg; and Royal Duke by Young Ben, and Baron Garnoch, by Knight of Warlabby, are the first of her stock. Beyond perhaps, being a trifle down in her loins, a point which has not prevented her getting several prizes, there is little to urge against Lizzy, whose handling and curved horns, coming so gaily out of her top-knot, would guide us to her at once out of a thousand red and whites. She is only five months over seven years old, and has had five calves. Her yearling Miss Kitty, by Young Ben, has already won a couple of first prizes at Penrith and Ulverstone; and her Baron Lowther, by Welcome Guest, is not yet three months old. Josephine, by Prince Duke (13507), was calved soon after she arrived; and she in her turn has calved Josephine II. to Knight of Warlabby, so that Lizzy has very quickly founded her tribe. Leila is well worthy in looks of her dam, and in the Brahmin's judgment she is prettier, but so far she has only bred bulls, one of them, Skyrocket, a nice cropped Marmaduke, with an exceedingly pretty side view, and the other Knight of Allerdale by Welcome Guest. Blink Bonny, a white with roan ears, by Viscount Coke (13957), from an Earl of Warwick (11412) cow, was purchased from Mr. Straf-

ford, and the result of her visit to Lord of the Valley was the yearling Sultana. Pretty Maid of Sandford is alone in her glory, but Arkleby Lass, the last which Mr. Thornwaite had of the old Christian-Curwen sort, has a white Knight of Warlabby calf, Derwent Lass, at her side. Her horn is a little against her, but she looks a heifer of capital constitution.

One of the greatest losses has fallen on the herd in the death of La Vallière's heifer calf, but she is believed to be in calf again to Knight of Warlabby. Before Mr. Carr sold her for 150 gs. to her present owner, she had produced a redoubtable son and heir in Mr. Ambler's celebrated prize winner Prince Talleyrand; and she was then in calf to Lord of the Valley with Seigneur, a very useful-looking country bull. La Vallière herself is by Gainford 5th (12913), and has several of Booth's best bulls in her dam's escutcheon. Her quality is perhaps not very remarkable, but she is a nice-shouldered, useful, and compact cow. Castanet by Booth's Prince Arthur came from Mr. Wood's, of Ireland, as a yearling in calf to Lord of the Valley. She has always been a great favourite of ours, and has made wonderfully good use of her time by calving Maid of Orleans—a heifer with a nice head and hair and quality—to Lord of the Valley, when she was scarcely 28 months old. She followed this up with twin bulls, to wit, Knight of Distington and Knight of Moresby, which have adopted the fashionable Gunter precedent of coming roan and white. Crown Princess, a fine square cow with a well-sprung rib and low twist, is a union of the Crown Prince and Troutbeck Strawberry sort; and the neat Harmony by Harbinger, from a cow with three crosses of Booth, has added a fourth, by the aid of Windsor, to her roan Prince of Orange. Lady Eagle by War Eagle, a true-made cow with a nice head, has six crosses of Booth, including the very pick of the Warlabby bulls, Leonard, Buckingham, and Raspberry. Queen of Oude, from a Norfolk cow, and so back to Pilot and Agamemnon, was purchased at Mr. Cator's sale; and Wild Eyes 28th is a cross between Lord of the Valley, and that well-known Kirklevington tribe. Lastly, the "Nestor of the Shorthorns" is represented in Bloom, a 110-guinea purchase at his Aldborough sale; she was first at Ulverstone as a calf, and the best proof of her merit is that above a hundred was refused for her at Dublin this year. Considering that Captain Spencer has only devoted himself for four years to the task, it is wonderful that so promising a herd should have been got together; and we need only add that with the exception of Josephine 2nd, who will be kept as a relic of the Lizzy line, the whole of the lots will be sold "without reserve," in the *bonâ fide* meaning of the words.

H. H. D.

PRESENT CONDITION AND PRODUCTIVE RESOURCES OF CANADA.

The tour of His Royal Highness the Prince of Wales in Canada, with the ample descriptive details of his journeyings and of the districts visited, are calculated to attract attention just now to Canada, to familiarize the public with its scenery, capabilities, and resources, to remove many misconceptions and prejudices respecting that country. The tide of tourists as well as settlers is likely to turn that way, now that steam communication is so frequent and so cheap, and even the British farmer may take his holiday trip in that direction, as well as the jaded member of Parliament, or circumlocution clerk. The emigration to Canada of late years has been very small, as compared with former periods; indeed, scarcely one-third of the number of some previous seasons. The whole amount of emigration is now indeed only about one-half what it was on the average of a few past years.

Without touching upon the more picturesque features of Canada—such as may attract the mere tourist or pleasure-seeker—we may glance at the present condition and productive resources of this fine British colony, to which we drew attention prominently about two years ago. Two years in a British colony, especially an enterprising one like Canada, are marked by great strides, and several events of prominent importance have to be chronicled. Among these are the completion of the magnificent railway bridge of two miles crossing the St. Lawrence, of the gigantic works of the Grand Trunk Railway of Canada, upwards of 1,000 miles in length, connecting the American railway system west of the Great Lakes with the ocean at Portland in winter, and at Montreal, Quebec, and Rivière du Loup in summer. This presents probably the most complete and comprehensive railway system in the world; and, taken in connection with the unequalled inland navigation of the St. Lawrence, it cannot fail to attract a large share of the vast and increasing traffic of the west, while it affords to the whole province of Canada the greatest possible facilities for inter-communication. The province is now traversed by upwards of 2,100 miles of railway. By means of its canal and lake navigation, vessels drawing ten feet water can be taken from Fond du Lac in Lake Superior to the Gulf of St. Lawrence, a distance of twenty-two hundred miles. The plank road, which had pushed the venerable “corduroy” back into the woods, has retired before the railroads, with which the province is now traversed. The lakes and rivers are covered by steam-boats, and every year is adding to their comfort and beauty.

The towns and cities are something more than mere colonial villages now; and their public buildings will compare favourably with those of many of the European States, while the improvements that will be made in the new capital, Ottawa, will draw population

thither, admirably situated as it is in the centre of the two provinces, and readily accessible from all quarters.

Canada may properly be said to have but three seasons—summer, autumn, and winter. Indeed, were it not for the change in the appearance of the foliage, it would be difficult to say where summer ends and autumn commences. Generally, as soon as the snow disappears, warm weather sets in; and vegetation is exceedingly rapid, so much so, that, although the spring is about a month later than in England, by the end of June vegetation of all kinds is as far advanced as it is here. Corn, on an average, is ready for cutting about a fortnight or three weeks earlier than in this country, and the grain when once ripe dries so fast, that it is not at all unusual for corn to be cut and carried on the same day.

For many years the agriculture of the province generally was at a very low standard, but within the last few years it has made great advances, and is beginning to keep pace with the improvements introduced into England and Scotland. The emigration to the colony of scientific agriculturists, with the extended establishment of agricultural societies, has been mainly instrumental in producing this great change. Stock of a different and better description has been imported, and much land that was previously considered by the old proprietors worn out, has been improved and brought back, by means of judicious treatment, to its old capabilities.

The following shows the exports of wheat and flour from Canada for three years:

	Wheat.	Flour.
1855....	3,193,748 bush.	643,936 brls.
1856....	4,997,656 ”	878,775 ”
1857....	2,762,654 ”	743,949 ”

The productiveness of the soil, and the high price of wheat in some years, have tended unduly to encourage the growth of this cereal to the neglect of other products of the soil. Hence by the rapid fall in the price of wheat the value of the agricultural exports from Canada fell from £4,384,083 in 1856 to £2,747,516 in 1857.

The farmers of Canada ought certainly to turn their attention more to the raising of live stock, particularly in those sections of the country where the risk of the wheat crop is the greatest. We have seen on the bleak hills of Scotland several thousand sheep in a single flock, and while the long winters of Canada may present a great obstacle to the successful raising of cattle, there can be no doubt, from the success of some of the most intelligent Canadian agriculturists, that sheep-farming could be largely and profitably engaged in. We have no late returns of the live stock; but in January, 1852, there were but 1,697,633 sheep in the whole province, and 1,336,111 horned cattle.

There were in Upper Canada in 1842 575,730 sheep and 504,963 cattle, and in 1848 833,807 sheep and 565,845 cattle. In Lower Canada there were 603,821 sheep and 469,851 neat cattle. The decennial increase was, therefore, 519,082 sheep and 361,297 head of cattle.

Canada, and especially Western Canada, is essentially an agricultural country. Three-fourths of her people are engaged in agriculture, and the other fourth is mainly dependent upon these. Whatever, therefore, contributes to the prosperity of the farmer tends to advance the interests of all classes in the community. The facilities afforded to the agriculturist by the introduction of railways into Canada have added to the value of real estate in the colony an amount almost incredible. In many parts of the province land has risen from 6 to 40 dollars per acre. This increase in value, however, can only be rendered profitable by a fuller development of the various products of the soil. The experience of the past eight years shows the risks to which the wheat crop is exposed. The chances of the crop itself, and the fluctuations in the price, are greater than those of any other commodity. The labour of the mechanic yields a certain return, but the return of the farmer is dependent on many contingencies. Within three years wheat sold at 11s. 9d. and 4s. 2d. per bushel in the Toronto market. To the ordinary

risks of the crop and the fluctuations in the market must be added the undeniable fact, that continuous cropping must speedily so deteriorate the soil, that the wheat culture will be abandoned in Upper Canada. Like the once fertile valley of the Richelieu in Lower Canada, which in 1790 yielded 40 bushels per acre, the wheat fields of Western Canada under this present system will become exhausted, and their owners dependent upon the Western prairies for their daily bread. In this we are but echoing the sentiments of well-informed colonists on the subject. For most other products of the soil there is a steady market, and fair prices, if the Canadians would but turn their attention to their production, instead of allowing their American neighbours to supply the leading cities of the province with the common necessaries of life. Animals and dairy produce, poultry and eggs, lard, tallow, and meat, hops, seeds, fruit, vegetables, plants and shrubs are all easily supplied by the Americans. With a soil and climate adapted for raising the best fruit in the world, why should the Canadians import a large quantity of apples from the United States?

Much as has already been done, the agricultural resources of Canada have yet to be developed, and dairy produce and the rearing of stock, and attention to the noble river and lake fisheries, will hereafter constitute a considerable source of wealth.

THE LEADING FEATURES OF THE IMPLEMENT DEPARTMENT OF THE CANTERBURY SHOW.

When discussing, previous to its meeting, the probable results of the implemental department of the Canterbury Show, men's minds ran forward to those which were likely to arise from the *plough trials*, which it was supposed were instituted mainly with the view of establishing data by which to estimate the comparative advantages of the Kentish turn-wrest, and the ordinary wheel or swing-plough. We say supposed to be instituted for this purpose; for the advantages of such a trial were so obvious, and the facilities for making it so apparent, that the notion of making it simply such a trial, or, to speak truly, an attempt at a trial, as *did* take place, was scarcely likely to occupy men's thoughts. Yet a perusal of the conditions of the prize list would have shown that the framers of it never contemplated any such comparative trial—were, indeed, obviously unaware of the immense advantages to the practice of agriculture arising from it; for the conditions were so framed as to exclude all competitors who did not come forward with ploughs of a certain make and style of operation, that is, on the Kentish turn-rise or turn-wrest principle, or on any principle calculated to turn the furrow according to the Kentish system. A casual observer, or reader of the conditions, would have supposed that by the insertion of the words in italics "for the plough on the turn-rise principle, or otherwise, a

door, so to speak, was opened, by which manufacturers of other forms of plough were open to compete with the Kentish men; but this was shut by the words which followed—"best adapted to turn the furrow slice according to the Kentish system of ploughing;" these two clauses being virtually contradictory of each other. It is quite clear that the Society, in framing the prize, was either unaware of the value of the opportunity placed within reach, of trying the two great classes of ploughs against each other, or, knowing it, were indifferent to its being taken advantage of. In either case it is placed upon the horns of a dilemma, from which its best friends will have a difficulty in relieving it. It is a most unfortunate phase in the history of the Society, that of late years, and most markedly in this year, a studied or careless indifference to the best, because the most practical interest of agriculture, has been evidenced in the loose unbusiness-like way in which the prize conditions are drawn up, and the red-tape absurdly official manner in which it persists in maintaining this ambiguity of phraseology after it has been exposed, and the prejudicial influence which it creates has been explained. We have made bold to speak very plainly as to the line of conduct pursued by the leading implement makers in withdrawing from the Society's shows; we now say no less plainly, that in great measure the Society has

brought about this secession, and in no way so markedly influential as in that connected with all their arrangements bearing on the trials of the implements and machines, and in the prizes offered for them. The implement makers have, indeed, great reason to complain of the Society's conduct in these respects. They have always shown a strong desire to grace the Society's shows with the best and ablest of their performances, and have gone to great expense in doing so, and they have certainly some right to expect a deference to their opinion and a consultation of their interests. The Society has of late made some grievously bad steps in the wrong, it behoves it for its best interests to get back as speedily as possible to the right way. For the interests of the implement makers, and alike for the interest of the Society, we deplore this secession. Let the Society, as representing the guide of agriculture, do all it can, by rapidly undoing much of its recent work, to heal the breach already made, and not to widen it by lack of graceful concession, for the redress of past mistakes, or of generous acts for the guidance of future labours. It is all very well for the Society in its corporate consciousness, or shall we say unconsciousness?—for how often do we see "bodies" perpetrate absurdities which the individuals composing it would not for the fear of ridicule or contempt, dare to do!—to assume a haughty and aristocratic indifference on the subject. The truth really is, that if the implement makers cannot well do without the Society, the Society can as little do without the implement makers. Working together in future as in the past days of old, heartily desirous to aid the onward progress of that noble and creative art all really love so well, we prophesy great things for both; working separately, with interests clashing and inimical, it is hard to say what will be the nature and how great the extent of the evils which we may yet have to deplore. If the implement makers have shown a too hasty readiness to secede, let the Society remember that they have been mightily provoked to it. Let both, by concessions gracious and grateful, make up a peace which will be

lasting in its effects, a peace which will be productive in future times of triumphs as noble and as useful as those which have graced their connection in times gone past. The reader must forgive this digression; but the truth is, that the subject which has prompted it, bulks so largely in all minds interested in the true progress of agricultural mechanism, that it is impossible not to dwell upon it when eligible opportunities offer themselves. But to return to the plough trials, which, in point of fact, were, as they were carried out, quite unworthy of the name; trials to make trials would be the most fitting phrase to use, in writing about them. But if we have little to say about the trials, that little being in another part of this Journal, and by another hand, well said, we have something more to say about the ploughs, their nature and construction, which played an important part in the day's proceedings.

In order fully to understand the principal features of operation and construction of the Kentish turn-wrest plough, it will be necessary briefly to glance at those of the ordinary plough, *the plough* as we may term it; this distinctive title being, we think, fairly earned by it from the fact of its being almost universally used throughout the country; the turn-wrest plough being confined to a comparatively limited district, and that, are we wrong in saying? nay, we shall put it mildly, and say, not the best farmed in England.

The leading feature of the wheel or swing plough is, as our readers know, its mould-board or turn-furrow; this always occupies the same position relatively to its other parts, and its office is to turn the furrow slice over at a determinate angle; the slice being previously cut from the bottom of the furrow by the share, and from the land side by the coulter. Passing from the share, the slice is taken up by the mould-board, and through the medium of its varying outline, or contour, it is made to assume a variety of positions, till it is finally laid over at a determinate angle, this being generally 45 degs. The following diagram, fig. 1., shows the various positions which the furrow slice assumes.

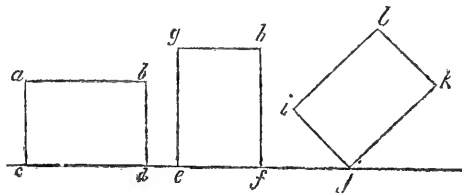


Fig. 1.

Thus, if the line ab represents the original upper surface of the slice torn and cut from the soil, bd represents the land side cut by the coulter, and cd the bottom cut by the share; this shows the slice at that stage, before the lifting and turning over process commences; at a succeeding stage the slice assumes the position say at $e f, g h$, the side $f h$ corresponding to $b a, f e$ to $b d$, and $g h$ to $c a$. The final or last stage is shown at $i j k l$, where what was the upper side ($b a$)

is now the lowest ($j k$), what was the lowest ($c d$) is now the upper side; $l h$ corresponding to $a c$, and $i j$ to $b d$. A series of the furrow slices thus laid over assume the position shown in fig. 2, in which all the grassy or stubbly surfaces originally exposed, as the side $a b$ in fig. 1, are completely hidden or covered up by contact with the parts of the other slices. A series of seed-beds ($a b c, c d e, e f g$, and $g h i$) are thus formed, and a series of shoulders, as $b c d, d e f$, and

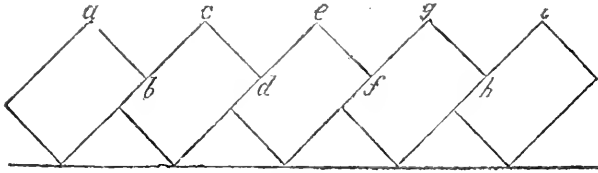


Fig. 2.

f g h. The mould-board of an efficient plough is so set, that surfaces of equal breadth, as *a b*, *b c*, *c d*, *d e*, are exposed to the atmosphere; this arrangement giving the greatest possible extent of surface, and also the greatest possible cubical contents to the angular shoulders on *b c d*, *d e f*, &c. The furrow slices thus laid over are unbroken, the shoulders (*b c d*, &c., fig. 2) and the seed-furrows or beds (*a b c*, &c.) being left in full development. This unbroken series is, however, as might be supposed, greatly influenced by the nature of the soil on which it operates. Generally the operation is such as to throw over the furrow slices in comparatively unbroken order, keeping up the integrity of the

seed beds. But although out of all the series of furrow slices which the surface of a ploughed field presents a certain number lie all in one direction, as shown in fig. 2, the whole do not, one half lying in one direction, the other half in another and an opposite. This difference is brought about by the nature of the construction of the plough, in which, as before described, the mould-board is fixed so as always to present the same relative position to the other parts of the plough. To throw then, the furrow slices all in one direction, the plough would have to travel always in the same line of draught. Thus, in fig. 3, to throw over the furrow slices all in one direction, as *g h i j*, the plough going in the

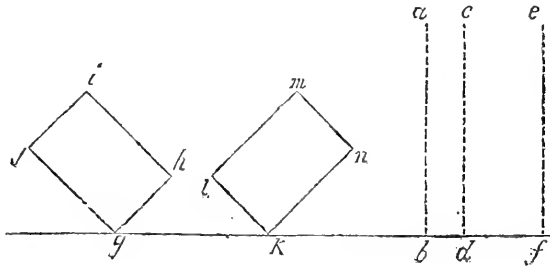


Fig. 3.

direction of the line *a* to *b*, would have to return to the point *c* and travel towards *d*, the return journey from *b* to *c* being obviously lost; if, to save this, the plough, as soon as it reached the point *b*, having, with its mould-board to the right-hand side, thrown over the furrow slice *g h i j*, simply were reversed, and commenced to plough in the direction of *d* to *c*, close alongside the line *b a*, the mould-board still maintaining the same relative position towards the other part, and point-

ing to the right, would turn over the furrow slice not in the same direction as *g h f i*, but in the opposite, as *h l m n*, thus defeating the very object of the ploughing, and bringing about anything but a covering up of the old and the exposing of new surface, and the formation of a series of seed-beds. The mode of ploughing, then, adopted, is to have one series of furrow slices lying in one direction, the other in the opposite, answering the position when finished as shown in fig. 4—one furrow

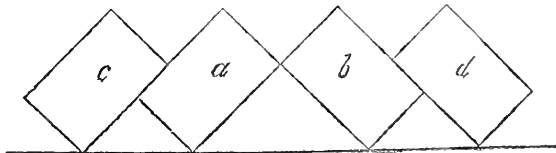


Fig. 4.

slice being made while the plough is going in the direction of *b* to *a*, fig. 3, the slice *b* while it is coming up the return journey as from *c* to *d*. On finishing *b*, the plough is brought round and makes *c* going from *b* to *a* again (fig. 3), and so on, till all the surface of the ridge or stretch is ploughed.

Now, in the Kentish turn-wrest plough these two features of ordinary ploughing are not met with. In the first place each furrow slice is turned completely over. Thus, if, in fig. 5, *a b c d* represent the slice in its original form, *b c* the upper or sward surface, *a b* the land side, and *a d* the lower side; in its next stage, *h f*

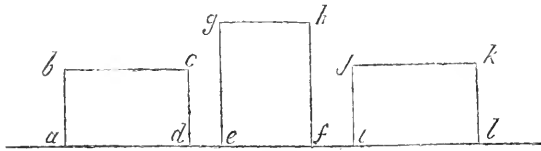


Fig. 5.

represents $c b$; $f e, c d$; $h g, b a$; $e g, d a$; and in the last stage the slice is so completely reversed, that the lower side $i l$ was the upper $b c$ in its first stage, the lower $a d$ in the first being $j k$ the upper in the last stage.

Again, the whole of the furrow slices lie in the same direction; thus, let $a b c d$, fig. 6, be the first slice turned over by the plough as it comes in the direction $e f$, the plough is turned sharply round in reaching the point f , so that it points in the direction of $h g$. The

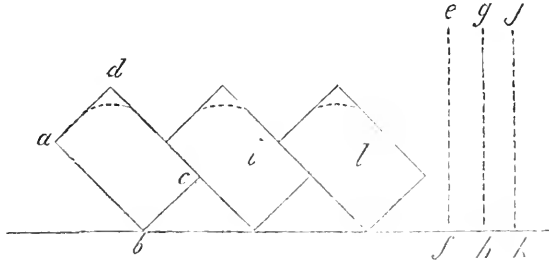


Fig. 6.

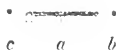
mould-board is then removed to the side of the beam opposite to that on which it was fixed in coming up the line from e to f —that is from the right to the left; it then lays its furrow slice (i) immediately in contact with the last laid one ($a b c d$), although the plough is going in the contrary direction. On reaching the point g , the mould-board is again removed from the left-hand and fixed to the right-hand side of the plough-beam; the plough is then turned round pointing in the direction of k , and made to follow the line $j k$, which lays over the next furrow slice (l).

In addition to completely turning over the furrow slice so that the upper surface shall be the lower, as $b c, i l$, fig. 5, it is not left unbroken, as in the case of that of the ordinary plough, but is pulverized, so that the angular shoulders, as $b c d$, fig. 2, are not presented, but a series of half-rounded surfaces, as shown in the dotted lines in fig. 6. So much for the difference between the operations of ploughing as affected by the Kentish turn-wrest and the ordinary mould-board plough. It now remains for us to describe the peculiarities of construction of the turn-wrest plough; this being, doubtless, a novelty to many of our readers.

The general form of the plough, in its want of lightness of construction, is anything but likely to convey a favourable impression to the mind of the spectator who sees it for the first time. Perhaps the correct term with which best to designate it, is that it is a clumsy-looking implement, giving no great assurance of its working capabilities. In its general arrangement, so far as the beam and wheel-carriage go, it is not unlike the French (Flanders) wheel-plough, which we illustrated some weeks ago in our article on the "Agriculture of Flanders" in this Journal. The following is a descrip-

tion of the parts of the Kentish turn-wrest plough in what may be called its normal condition. The beam is of wood, and rises upwards towards the front at a considerable angle. The end of the beam is supported by two wheels: these, however, are not fixed to the beam in the usual manner displayed in wheel-ploughs, but the end of the beam rests in a hollow or rounded part of a piece of wood called the "holster." This is made to rise and fall between two parallel rods or bars—termed a gallows—which rise vertically from the axle-bar or carriage of the wheels. The wheel carriage, thus independent of the beam, is however secured to it by means of chains, all of which are adjustable, so that the wheel-carriage can be brought nearer to the working part of the plough. At the hind end of the beam a "foot" is mortised, the lower end of this being connected with the hinder part of the "chep" or sole, the front of which bears the share or "buck." To the upper part of the foot the handles are fixed. In front of the foot, a flat piece of wood passes through a mortice in the beam, and is connected with the sole or "chep." The front of the "chep" is rounded, and rising upwards expands into larger diameter as it approaches the stils or handles. The share itself is shaped like a chisel, with broad expanding point. The coulter passes through a mortice hole made in the beam; this being made angular or broader at the top side than at the bottom, admits of a side movement of the thin flat coulter. This side movement of the coulter is required to change the direction of its cutting-point from one side of the share point to another, so that the point of the coulter may be on a line with the point of the share, which is nearest the land from which the next furrow slice is to be cut. The upper end of the coulter is placed and kept in position

Fig. 7.



by a rude yet effective contrivance, as follows: Let *a* represent the (fig. 7) upper part of coulters bar, *b* a pin morticed into the upper edge of the plough-beam, and *c* another behind the coulters. If a stick or rod is placed with one end against the lower side of the pin *b* twisted so as to go round the upper side of the coulters bar (*a*), then again twisted to come under the lower side of the pin *c*; the coulters bar will thus be maintained jammed up against the right-hand side of the angular mortice in which it plays, and the point of it will consequently be thrown or thrust aside to the left.

The mould-board, as before mentioned, is movable, and in consequence of its being placed alternately on the right and left-hand of the plough, both sides and edges are alike, so that either may be uppermost. This gives to its outline little or none of the convexity which marks the mould-board of the ordinary plough. In point of fact, the mould-board of the Kentish plough, is simply a board narrower at one end than at the other, and its surface slightly rounded. The mould-board is attached at its narrow end by a hook, to the fore-part of the body of the plough near the share, and the hinder part is kept extended upwards and outwards from the body, so as to form the proper angle with the line of the "chep" or sole, by means of a rod which goes into a hole made into the body of the plough. The share entering the ground raises the slice while it is cut from the land-side by the coulters; the slice is then taken up by the rounded front part of the "chep," and sets it on its edge, it is then passed to the mould-board, which turns it completely over.

Those of our readers present at the plough trials at Canterbury, noticed perhaps, an old shoe nailed to the beam of one or two of the ploughs, and wondered why it was there. This is used as a pocket in which to keep a supply of nails, in order to adjust the links of the

draught-chains of the plough. This adjustment being with some ploughs and ploughmen a matter of great nicety, a plough in work is often seen with a very complete garniture of nails in the links of the chain.

Many improvements have been effected of late times in the construction of the parts of the Kentish plough: and from the use of iron a lightness of construction and an increase of business-like capability have been obtained. In the plough exhibited by Messrs. Drury and Bigglestone of Canterbury, the end of the plough beam is connected with the gallows of the wheel-carriage by an efficient screw movement, while the adjustment of the coulters from side to side is effected by a very simple screw and cam motion, which enables the ploughman to make the necessary adjustment while between the stils. Improvements have also been made in the method of adjusting the mould-boards. Thus Mr. Eley of Frondbury, Rochester, Kent, has two mould-boards, one on each side of the plough; they are hinged or jointed to the body nearest the share, and are connected together at their wider and outer ends by a rod which passes through an aperture made in the body: while one mould-board is in action, the other is pressed up flat against the body, and *vice versa*.

There can be no doubt that the Kentish turn-wrist plough does efficient work, but in view of its heaviness and its difficulty of adjustment, we think it is scarcely entitled to be ranked as an economical implement, or to be able to stand comparison with the form of plough used generally throughout the kingdom. The Kentish folks are, of course, loud in its praises, and were reported to be eager to back it against all comers. But unfortunately, through a mismanagement of which nobody will likely take the blame, the opportunity afforded to put all conflicting claims at rest has been lost. Truly or not, the Society will be blamed either for its over-sight or indifference in connection with the trials, or rather the attempt to institute trials—an attempt which, we need scarcely here again repeat, was a signal failure.

R. S. B.

THE AGRICULTURAL SOCIETIES OF SHROPSHIRE.

MR. MEIRE, much as he agreed in the opinion that the agriculture of the country had been largely developed by means of local associations—and if he were to select any local association in which special excellences had been fully sustained, it would be this at Bridgnorth—had, after much careful consideration, arrived at the conclusion that the local associations of Shropshire had not developed the agriculture of the county to its proper position. He had lately been in Staffordshire and the adjoining counties, having been selected as one of the judges at the Burton-upon-Trent Agricultural Association, and he had there seen very strikingly exemplified the effect of an itinerant movement in reference to agricultural societies. He had before seen the effect of the Lichfield Society when it was stationary, and contrasting that effect with the effect produced by its becoming an itinerant society, he was very anxious to see the Bridgnorth Association take a similar course, and become the nucleus of a great Shropshire

association, and to show to the world that—although the county society had, from want of ability in its committee, being marked only by disgrace—there was spirit and practical energy enough in Shropshire farmers to stand second to none. The local Lichfield Society was a failure, the great object of competition being on a restricted basis; but now that it had become itinerant and extended its operations over a wider sphere, it had, he believed, laid the foundation of a great and useful institution. At the recent meetings at Burton-upon-Trent the show-yard was visited by 7,000 persons, while 500 English yeomen and aristocracy, with 200 fair women, attended the dinner. The great object of an agricultural society was to produce competition on an extended basis. At Bridgnorth he had, from year to year, seen Mr. Jasper contend with Mr. Wilson, and the latter's nephew with Mr. Smith, and the only question was which of them was to obtain the prizes for sheep in their respective classes. But that principle, he held,

was not calculated to do justice to the breeders of Shropshire sheep: the plan was for his friends to take their good-natured faces into other parts, and to challenge the whole county, so that the excellence of the Shropshire Downs might be made palpable to public view. Mr. Meire dwelt at some length on this subject, emphatically enforcing the principle of open and unrestricted competition on a broader basis than could be afforded by a merely local show, and arguing that no one should suppose any landlord or country gentleman who became an exhibitor did so with the paltry motive of obtaining a £5 prize. The object was one of improvement, and it ought to be encouraged. Specially referring to the injury resulting from the operation of a restrictive principle, he said that, if he had not been excluded by the rules of the Society, he should have exhibited a ram which he had purchased in Staffordshire. He did not know whether anyone supposed that he should be proud if he had done so and had won three or four pounds, but he did know that his own feeling would have been one of pride at the exhibition of an animal which he believed would give evidence of his good judgment. He would recommend the Society to allow competition without any restriction, no matter where the animals came from, or by whom they were bred ("No, no"), being fully convinced that that was the only plan to ensure the full development of any breed of sheep or cattle, or any branch of agricultural operations. Repeating his desire to see the Bridgnorth Society become an itinerant one throughout the country, Mr. Meire commented on the ill-fame into which Shropshire had been brought by the involgancy of the Shrewsbury Society, and added that, as a purely local exhibitor, he should not care twopence about beating Mr. Jasper or Mr. Wilson, who, by the way, had beaten each other so often that neither knew which was the best man. On a broader field of competition, however, additional honour would be gained, and he was confident that the interests of agriculture would be promoted.

Mr. TAYLOR explained that Mr. Meire was mistaken in supposing that the rules of the society excluded him from exhibiting the ram to which he had referred. In the classes for male animals there was no restriction whatever, either as to the breeder or the time the animal had been in the possession of the exhibitor. He concurred in the general remarks of Mr.

Meire, but he thought that, with the explanation he had given, that gentlemen would be of opinion that the society was not quite so confined in its operations as he had supposed.

Mr. HENRY SMITH, Jun., maintained that the Bridgnorth society occupied a prominent position, not only in reference to Shropshire, but in reference to adjoining counties, and he stoutly contended for the pre-eminence of the Shropshire-down breed of sheep. He was a breeder of Shropshire sheep, but it was a great error if any one supposed that the Shropshire people were his best customers: he could look to the whole of England and Wales, to Russia, and to Australia, for his customers. The Shropshire sheep were unequalled in the production of the greatest amount of wool and mutton on the smallest quantity of food. Formerly people used to go to Mr. Jonas Webb for Southdowns, to Mr. Garne for Cotswolds, and to Mr. Pawlett or Mr. Sanday for Leicesters; but now, they were all turning to the Shropshire downs. He referred to the fact that he had already won about 45 prizes, and hoped to make the number 50; and that number of prizes obtained in four years was the best commentary that could be given on the excellence of the breed. Commenting on the character of some of the sheep which had been exhibited that day, he said he noticed that four out of five of Lord Dartmouth's ewe lambs had black heads. As black heads sometimes indicated black tails also, and as black tails indicated an absence of wool on the belly and the back, he could not recommend their being patronised at a time when wool was realising 20d. per lb. He deprecated the notion of a cross between the Cotswolds and Shropshire-downs, and said that such a cross would be something like that of a polar bear with Welsh rabbit. After further enlarging on the merits of the Shropshire sheep, Mr. Smith went on to notice the solvent and flourishing position of the Bridgnorth Agricultural Society, and contended that, while it was in such a position, they should be careful what steps they took to effect amalgamation with other societies. He augured a successful career for the society, and declared it able to withstand any "£3 blows" that might be directed against it: as long as there was a Whitmore to patronise and support the society, there should be a Smith to show Shropshire sheep.

SALE OF LORD BATEMAN'S HEREFORD HERD, AT SHOBDON.

The sale of this famous herd took place pursuant to announcement on Tuesday, Sept. 25, at Shobdon, his Lordship's seat, near Kingland. Previous to the sale, a large party of agriculturists were entertained at luncheon, served in a tent, Lord Bateman presiding, and the office of vice-chairman being filled by Mr. Russell, the auctioneer.

The biddings were steady, without excitement, and the prices were in no case up to the "fancy" rates which have in some cases provoked the censures of our leading agricultural papers. The following are some of the highest prices realized. A majority of these animals had been prize-takers at the Royal Agricultural and the local Societies.

Peeress, by Monarch (Powell), £23.
Lady, by The Knight (Capt. Heygate), £26 5s.
Vesta, by Carlisle, dam Lady (Powell), £35 14s. Her bull-calf (Dent), £6 6s.
Nymph, by ditto, dam Little Beauty (Wright), £42.
Superb, by Carlisle, dam Strapper (Wright), £22 1s.

Damask, by Carlisle, dam Mr. Gallier's Dainty (Sixty) £19 19s.

Lily, by Royalty, dam Victoria (Holloway, Hopton), £25 4s. Her bull-calf (ditto), £19 19s.

Pretty Maid, by Carlisle, dam Old Cowslip (Oldworth), £31 10s.

Gem, by Quicksilver, dam Silver (Vaughan), £17 17s. Her heifer-calf (ditto), £4 4s.

Shut, by Carlisle, dam Strapper (Bulmer), £30 9s.

Gentle, by Carlisle, dam Lady (Stone), £31 10s.

Lioness, by Carlisle, dam Lofty (Wright), £34 18s.

Baroness, by Carlisle, dam Little Beauty (Stone), £31 10s. Her bull-calf (Hughes, Lady Court), £10 10s.

THE TWO-YEAR OLD HEIFERS.

Hebe, by Carlisle, dam Young Spot (Stone), £42.

Nelly, by Carlisle, dam Peeress (Stone), £37 16s.

Verbena, by Carlisle, dam Flower (Sixty), £19 19s.

Sylph, by Carlisle, dam Lily (Bateman), £21 10s.

Empress, by Carlisle, dam Strapper (Bateman), £21.

Two heifers, by Carlisle, dams Little Beauty and Peeress (Stone), £50 8s.

TWO-YEAR OLD STEERS.

Four steers, by Carlisle, dams Young Lady, Marchioness, Mr. Gallier's Shut, and Stately (Phillotts), £84.

STEERS.

Six steers, sires St. Alban's, Shobdon, Redan, Morpeth; dams Lowly, Young Damsel, Golden Pippin, Snowdrop, Crimea, Lofy (Edmunds, Dayhouse), £69 6s.

Six steers, sires Redan, Morpeth, Carlisle, St. Alban's; dams Primrose, Beauty, Virgin, Pretty Maid, Young Lofty, Little Beauty (H. Allsworth), £94 10s.

Four steers, sire Carlisle, dam Young Lily (J. Carwardine, jun.), £54 12s.

Five steers, sires Thruxton, Carlisle; dams Superb, Frolic, Young Fancy, Stella (Russell, jun.), £36 15s.

Six steers, sires Shobdon, Carlisle; dams Young Damsel, Young Lily, Red Cap, Young Lofty, Myrtle (Russell, jun.), £50 8s.

BULLS.

Carlisle, calved in September, 1852; bred by the Earl of Radnor; by Venison (1442), dam (Clara) by The Duke (550).—Mr. Jackson, £52 12s.

Shobdon, calved in June, 1857; by Carlisle (923), dam (Young Pretty Maid) by The Knight (185).—Lord Hatherton, £57 15s.

Golden Horn, calved in July, 1858; by Monkland 3rd (1013), dam (Bury 2nd) by Noble Boy (751).—Mr. J. Walker, Holmer, £52 10s.

Nutmeg, calved in July, 1858; by Carlisle (923), dam (Natty) by Monarch (504).—Mr. Batton, £42.

General Wyndham, calved in September, 1858; by Redan, dam (Blossom) by Llewellyn (636).—Mr. Hall, £26 5s.

Reptile, calved in December, 1858; by Alma (1141), dam (Rebecca) by Royalty (1374).—Mr. Lloyd Edwards, £18 18s.

Oxhove, calved in September, 1859; by Carlisle (923), dam (Lily) by Big Ben (248).—Mr. Wright, £27 6s.

Star Light, calved in August, 1859; by Shobdon (1725), dam (Strapper) by Monarch (504).—Mr. Davies, Chaustoue, £45 3s.

Belgate, calved in August, 1859; by Shobdon (1725), dam (Lady) by The Knight (185).—Mr. Lewis, £36 15s.

Patriot, calved in November, 1859; by Carlisle (923), dam (Pretty Maid) by Royalty (1374).—Mr. Stone, London, £63.

The total result of the first day's sale amounted to £2,648 1s. 6d.

Some of the animals are destined for Australia, and those purchased by Mr. Stone were for exportation to his brother, who lives at Morton Lodge, at Gwelph, near Hamilton, in Upper Canada.

SALE OF STOCK AT PENRHYN CASTLE.

The second annual sale of high-class breeding stock came off as announced, at the Farm Yard, Tynewydd, on Tuesday, Sept. 25. The attendance, especially of Short-horn buyers, was not so numerous, as, from the high quality of the breed, we were led to anticipate.

The stock consisted of about 30 head of pure Shorthorn cows and bulls, in the breeding of which it was apparent the greatest care and attention had been observed, descended as they were from the most "fashionable blood"; also upwards of 500 ewes and rams, and 12 pigs.

Mr. Dew, the auctioneer, in introducing the stock, said the additional laurels which Col. Pennant had gained, as an exhibitor, had of necessity increased the celebrity of his noble herd of Shorthorns. No less than a hundred cows were then in view, and such a sight should fill all connoisseurs with admiration, and convince them, that with such magnificent dams and such world-renowned sires as "Marmaduke" and "Sir C. Campbell," this stock of the hon. proprietor ought soon to rank amongst the highest in Britain. The introduction of these, as well as the various classes of sheep, into this country should also be looked upon as a boon of no small magnitude, and he sincerely trusted, that the principal object which Colonel Pennant had always in view, namely, to stimulate tenant farmers to improve the breed of their stock, be it of whatever class, would soon be realized. To do that, as all breeders would admit, a large outlay of capital was required, and which had been laid out with an unsparring hand; added to which he must not forget to mention the untiring energy, discrimination, and judgment, which Mr. Doig had ever evinced in carrying out the Colonel's wishes. He had a few words to say to those gentlemen who held mountain farms (which Mr. Dew again repeated in Welsh) with respect to the sheep of the Cheviot and Welsh Mountain cross, with which he proposed to commence the sale. He was perfectly alive to the great barrier against all progress and change—the prejudice, custom, and habits of a country (be it in Wales or any other part of the world) presented, yet he trusted that the facts which he was now about to bring before their notice, would, in a great measure, serve to eradicate that false impression which appear to have taken such deep root in the minds of most mountain farmers that no other than native

sheep would thrive in their district. The fallacy of that idea was apparent when they looked upon the ewes and thaves of this cross, and introduced as an experiment by Colonel Pennant. At the last sale they realized from 23s. to 27s. a head; whereas those of the native breed would not average 12s. each. The wool, also, of the cross-bred sheep was of infinitely superior quality, and the yield was more than double. Their hardihood must no longer be a matter of doubt, for where could they see a more healthy flock than the one then before them; and had this question not been fully and satisfactorily answered, when they reflected upon the unparalleled severity of the last winter, and the still greater trial they experienced from the unprecedented inclemency of the summer (if summer it could be called); and to ratify his remark, Mr. Doig had just informed him that they only lost five out of the whole flock. (Mr. Dew here read a letter from Lord Howe to Mr. Doig, eulogizing in the highest terms the superiority of this breed.) With such glaring facts before them he sincerely hoped that the gentlemen present interested in mountain sheep would avail themselves of the opportunity of improving their breed, which Colonel Pennant now so generously afforded them.

The Cheviot and Welsh mountain cross ewes, offered in pens of five each, averaged 23s. 6d., and thaves 25s. to 26s. each; Cheviot ewes and thaves £2 10s. to £3 5s., and Leicesters about the same price. A Leicester tup reached £12 12s., and other tups ranged from three to five guineas; shearlings £3 to £7. Bull calves, four months old, realized from 20 to 37 guineas; and for one called "Vampire," son of "Marmaduke," 125 guineas was offered, and 90 guineas for "Stanley," a yearling bull by "Statesman." Some pure bred cows, of high class pedigree ranged from 30 to 52 guineas. Amongst the chief purchasers were Mr. W. S. Couwy, Bodrhyddan; Mr. J. Dawson, Gronant; Mr. W. Provis, Ellesmere; Mr. J. Barkcroft, Cabinteely, Co. Dublin. There was a very fine show of pigs, including some of the finest specimens ever introduced to this country, including seven beautiful sows of Lord Ducie's breed. They were sold at prices varying from four to ten guineas each; all of which in the eyes of some native farmers present bordered on the fabulous.

WAYLAND AGRICULTURAL ASSOCIATION.

This recently-established Society has already attained an excellent position in Norfolk. Indeed, the entries at the annual exhibition which has just taken place at Watton, were 23 in excess of those of the general county association at its next meeting at Norwich.

The show was held in a field within easy distance of the town, and highly suitable for the purpose. There were a couple of thorough-bred stallions on the ground; one of them, Roland, being shown by Mr. John Castendieck, and the other, Sirikol, by Mr. J. L. Barrat; the attraction being a piece of plate offered by Mr. Castendieck, which was awarded to Roland, bred by Mr. A. Johnstone, and the prize horse at Windsor. The show of hacknacs was not very large; in fact, it has been often remarked that the old Norfolk hackney is almost as extinct as the dodo. There were, however, some clever animals on the ground. Mr. George Jacobs, whose fame as a horse-dealer extends far beyond the limits of the Wayland hundred—a fact which will be readily appreciated when we state that he has generally 100 to 120 first-class animals in his stables, whilst at the last Horncastle fair he offered 40 lots and brought upwards of 30 fresh ones away—exhibited two hackney stallions, which were awarded a special prize offered by Mr. Wyrley Birch, and a piece of plate given by the society. There were a few ponies shown, some of them likely animals enough, and the Hon. F. Baring took the special prize offered by Mr. Alexander Baring, M.P., and Mr. R. Taylor the society's piece of plate. The agricultural stock, of course, occupied a prominent feature in the horse department; for as the Wayland Society prides itself on its practical work-a-day character, it pays special attention to animals coming under that designation. There were two very handsome cart stallions shown by Mr. W. Beck, and the special prize (a silver cup) given by Lord Walsingham, was awarded to the younger, Ploughboy, a fine symmetrical two-year-old, bred by Mr. J. Marsh; Sultan, a very powerful deep-chested fellow, by his side, was allotted the second prize, given by the society. There was a large show of cart mares; no fewer than 35 being entered, many of them having promising foals at foot. With the exception of one or two clumsy and heavy creatures, which had suffered from the advance of years and long servitude, this class was one of high excellence. In the cart colt and filly class Mr. S. K. Gayford received the special prize for a two-year-old filly bred by himself; Mr. Tingey also carried off both the first and second prizes for cart geldings, of which there was a not very numerous but serviceable collection. The "rising generation" were pretty well represented in the foal class, and Mr. Matthews, sen., carried off Major Weyland's prize. Altogether there were nearly 120 entries in the horse class, a number far in excess of the languid equine exhibition one witnesses at the county shows, which has more than once elicited the surprise of distant judges, especially if they were selected from Suffolk, *par excellence* the county for agricultural horses. One of the judges on Wednesday was a well-known Suffolk breeder, Capt. Barlow, of Hasketon, near Woodbridge; and the successful exhibitors had the additional gratification of being praised by a well-praised man. Capt. Barlow's colleague and assistant in his by no means sinecure duties was Mr. E. Farrer, of Sperle.

The cattle department next invites attention. The most noticeable entry in the yard was a splendid aorthorn bull,

three and a half years old, bred by Mr. Ollard. This bull was a deep-barrelled, straight-backed, well-coated fellow, and elicited general admiration. Without a doubt he could have carried off the prize in his class had he not been disqualified by his success last year; as it was, he was simply "highly commended." The special prize offered for the best horned bull, was awarded to Mr. R. Goulder, a very good entry bred by himself, and Mr. Wyrley Birch was second with a younger animal, bred by Mr. G. Bland, of Coleby Hall. In the class of polled bulls there was much variety, although there were only four entries. The prize was awarded to a bull four years old, bred by Mr. B. Haystead, and shown by Mr. S. K. Gayford. This bull was exhibited at Norwich, and his pedigree, which is first-rate, can be traced back an almost indefinite period.

The cows were numerous, and many of them were highly commended; being taken from their ordinary life, and exhibited in their customary guise; several were, however, more or less out of condition, as their thin bodies and protruding hip-bones testified. Sir Edward Kerrison's prize for the best horned cow was awarded to Mr. Wyrley Birch—a handsome animal, stated also to be an excellent milker; Mr. F. Palmer was second, with a cow somewhat past its best looking days; and Mr. Oldfield and Mr. Allday were commended. Mr. R. Hartt took Mr. Dewing's prize in polled cows; Mr. J. Pitts was second. In horned heifers (in calf) Mr. C. Matthews, sen., was first, Mr. H. Oldfield second. In polled heifers Mr. W. Rook was first, Mr. Matthews, jun., second. The competition for the special prize offered by Mr. G. P. Bentinck, M.P.—the conservative member for West Norfolk, who is washing out the accumulated dust and grumpton of St. Stephen's with a cruise in his yacht, and who was unable in consequence to put in an appearance at the dinner—for the best fat beast without restriction as to age, excited a good deal of interest. The judges—Mr. T. Fulcher (Lord Soudes' agent), and Mr. T. Davey, of Garboldisham—had some difficulty, we believe, in deciding as to the allotment of the first place, although the owner of the animals where excellence was so nearly balanced was the same in each case, viz., Mr. Matthews, sen., who exhibited a cow six years old, and a fat steer two years and nine months old, both of his own breeding. The cow was the more showy animal of the two, being in excellent condition, of fine symmetry, and of an exquisitely varied colour. The steer did not appear to such advantage, so far as his exterior was concerned, but the judges considered eventually that his solid merits entitled him to the first prize, and awarded it to him accordingly. The cow, which has previously taken two prizes, was declared second best. There was a class of working bullocks—a useful, and, as some contend, a by no means unprofitable class of animals—which also please the eye considerably if it has an appreciation of the picturesque. The hon. T. Baring seemed to take all these points into his consideration, and offered a special prize, which was awarded to Mr. Wrightup: Mr. Tingey came second. On the whole the show of neat stock was very creditable, and the fat beasts were especially deserving of the notice which they received.

The show of sheep was larger than last year, but as before indicated was not very considerable. There were, however, nearly sixty entries, no contemptible number for a district ex-

hibition. The judges had not much difficulty in making their award for the "best ram of any age, bred, hired, or bought by the exhibitor." Mr. J. E. Mann's rivetted every critical eye. Assuredly he was a very fine fellow, both as regards size and probable wool-bearing and mutton-yielding qualities; a long-woolled sheep with possibly some Leicester blood in him, he was bred by Mr. Casswell, of Lincolnshire, and purchased at Peterborough fair; Mr. J. Sewell was second, with a ram bred by Mr. H. Aylmer. Mr. R. Webb was pre-eminent in shearing ewes, and took the first and second prizes. Mr. Barton carried all before him in fat yearlings, exhibiting three, which excited general admiration for their size, condition, and symmetry. Some black-faced Suffolks were shown for a special prize, given by the town of Watton; and although this is a not very popular class of sheep, it was creditably represented. The pig pens did not occupy much space, and did not call for much remark. One entry in the class of breeding sows was clearly too fat for breeding purposes, and the judges pronounced her monstrous bulk a fatal disqualification.

The remainder of the exhibition was made up with roots and a few lots of implements, the latter being merely entered in an advertisement sense. The present has not been a favourable season for roots; and it was generally remarked that the turnips were rather smaller than usual, although they had a great development of stalk and leaf. Some of the swedes and white turnips appeared to be, however, very sound and of first-rate quality. The long mangolds were, some of them at least, "pipy," or hollow under the stalk, a very common fault. As regards the implements shown by Messrs. Gedney, of East Dereham, and Holmes and Sons, of Norwich, we have not much to say, except that a portable engine by the latter firm seemed to be of creditable and finished workmanship, and worked steadily and smoothly, in consequence of being well shored up so as to secure that necessary and essential element in mechanics "resistance;" for lack of which many a machine of this kind throbs and shakes itself into expensive and embarrassing derangement.

There was, of course, a dinner after the show: the Wayland Hall being the scene, Lord Walsingham the chairman, and Mr. T. Barton the vice. Thus far the proceedings have justly called for praise; but the same cannot be said of the after-dinner oratory, which was, with one or two exceptions, dull and almost a blank. The noble Chairman made an attempt, with however little success, to provoke some conference on agricultural topics. "Now, it is always said," observed his lordship, "that when farmers meet together they ought to talk a little about farming; and I don't know that I can do anything more useful than to make a few observations upon some of the improvements which appear to have taken place in the general farming of the neighbourhood within the last year or two. First of all, you know that we have a steam-plough working—practically working, I may say, because it has been applied to the cultivation of the land—during a great portion of last year within five or six miles from here. It did a great deal of work, although I don't know whether it did it well. Perhaps if any gentlemen here have had an opportunity of seeing this enormous and magnificent implement in operation, they will give us their opinion upon it. I shall not go myself into the question of steam ploughs, or make the mistake of talking figures after dinner; but there is another implement which I think is even a more practical one, viz., the reaping-machine. That I know has been in practical operation within our district, and I should be very glad if any gentleman who has had an opportunity of seeing one at work, or who is working one, would give us his opinion of its value. I had a reaping-machine once myself, but it was a very imperfect implement,

and I was glad to get rid of it; since then the machine has been wonderfully improved, and Messrs Burgess and Key's is, I believe, a very admirable implement. Another matter which has attracted some attention has been the Scotch carts. I have seen them at work, and I dare say there is a gentleman in this room who has been working them; at all events I shall be very glad to hear anything which may be said upon the subject. Another matter in which I have observed a considerable change within the last year or two is the breadth of sainfoin grown in this neighbourhood, which is much larger than it was a few years ago. I believe this is a most valuable plan; and if any gentleman is willing to give us a few practical observations upon the subject, I feel sure the meeting would have great pleasure in listening to them. I have alluded to the new implements of which we all take great notice, and which, as auxiliaries to our farming, we are very often disposed to employ; but I would not have you suppose that I think that success in agriculture wholly depends upon the success of new and expensive implements. We have for some years had good implements, which would do extremely well in the hands of clever and practical men; but I feel sure that success in agriculture depends on the industry, capital, intelligence, and good judgment which is brought to bear—and which you know so well how to bring to bear—upon all operations connected with farming. As a general rule, I should advise tenant-farmers to wait till they see a thing well tried, for it is dangerous and expensive to experiment in implements." Here were four topics suggested by lordly lips:—steam ploughs, reaping machines, Scotch carts, and sainfoin; but the invitation expressed so handsomely found no response, and fell quite flat. Mr. Fulcher, in replying for the judges, said he was most "taken" with the half-bred shearlings and lambs, two or three being particularly good. He was, however, a little surprised to hear that some gentlemen in Norfolk were not satisfied with once crossing, but continued to breed from half-bred ewes. This he thought must be a mistake: they should cross once, and then leave off, and not go on with a mongrel breed. If they looked to Norfolk cattle they would see the mischief of such a system. He must say he was ashamed of the cattle bred in Norfolk, which had been crossed in all sorts of ways, until they had almost nothing but mongrels. For his part, he said, "Stick to your pure breeds as much as possible." Mr. Woods, in replying to the toast of his health, also made one or two pertinent observations on breeding, of which, however, he did not take so desponding a view, so far as Norfolk was concerned, as Mr. Fulcher. Mr. Woods remarked that the successful exhibitors had proved themselves fully entitled to their prizes, because they showed that they did not go on the hap-hazard system of their forefathers. It was far easier and more economical to keep a well-bred animal than an ill-bred one, for if one of the animals exhibited in the show-yard were placed on the same amount of food, whether artificial food or pasturage, with an animal bred in the old-fashioned slip-shod style, it would be found that, while in a few weeks the latter would have the appearance of having been just landed from the Shetland Isles, the other would look as well as if it had been fattened on the luxuriant pastures of Watton. There could be no better proof of the truth of this than the splendid cow exhibited by Mr. Matthews, through the veins of which coursed some of the best shorthorn blood in the country, which had taken a prize before as a shorthorn cow, and was now equally successful as a fat beast. These are words of wisdom there can be no doubt, and they did much to redeem the monotony of what was otherwise a dull evening. Out-of-doors the society was decidedly successful; but in-doors it was less so.

RIVER EMBANKMENTS.

An embankment is a mound, wall, or bank of earth, or other materials, constructed for the purpose of protecting lands from the inundations of rivers and water-courses, and to confine streams of water within the bounds of a prescribed channel. The term has been extended to fences of any kind that are raised for the purpose of guarding lowlands from being covered by floods of water, and the banks of streams from being torn by currents and demolished by the overwhelming force of waters. The two cases are most common—protecting lowlands from being covered by inundations, and the banks of rivers and streams from being destroyed by the weight or rapidity of flowing and running waters.

Heavy falls of rain, and the melting of snows in hilly and mountainous countries, produce an excess of water, which enlarges the volume of rivers, rises above the banks that contain the usual quantity, or overflows the adjoining surface of grounds, and by remaining in stagnation on the lauds, inflict a damage on the produce and value of the soil. This damage equally ensues, whether the land be in an arable condition, or used in a state of grass; for the covering by water causes a low degree of temperature, which continues for some time, and very much retards vegetation. These grounds are mostly grazed by animals, during the periods when the inundations of water are absent; but in many cases, the arable condition would be very profitable, if the presence of the water could be averted. The low position of the inundated grounds presents a formidable barrier to the removal of the water, as the descent induces a sluggish motion, and retards the escape after the stream has been directed into a proper channel. This obstacle has exerted much influence on the operations of embanking, and has very much perplexed the arrangements for the purpose. When the fall of the ground affords a quick descent of the water, the process is comparatively very easy, as it only remains to provide a proper channel, and to direct the water into it. In other cases the channels are overcharged, and burst by the bulk of the water, or are always full, and throw back the water into the small outlets.

In order to prevent a superabundance of water from overflowing the flat grounds adjoining the course of rivers, the first direction relieves the excess by providing a quicker discharge into the ocean, which is the general receptacle of all collections of water. This relief is prevented by the flatness of the country permitting the waters of the ocean to oppose a weight of opposition, by a deposit of mud placed at the junction of the river and sea, and by the tortuous course of the river producing a sluggish motion of the waters—all produced by the level position of the ground. The remedy being impossible in this way, the next course provides a confinement for the waters within certain bounds, till the burden is relieved by the gradual discharge of outlet, after the cause has ceased from rains and melted snows. A bank or fence is required for this purpose.

Embanking is based on very simple principles, but the application of them requires both skill and experience. The fundamental principle is, that a liquid presses on any resisting solid, not by any dimensions, or general properties of the fluid, but solely with a force proportionate to

its depth. Hence when a perpendicular bank or wall is opposed to a body of water, it has to sustain the pressure of the depth of the body, and undiminished by any assistance that can be given to it. This is a fixed law of fluids, and carries along with it the simplest conviction of practice. It only remains to convert the deep pressure laterally into a shallow depth vertically, and thus reduce the opposition from an impinging force into a rolling harmlessness of motion. The force or weight of the water must roll upon the bank or fence, and not impinge against it in depth; if water beats against any resistance, it will demolish it, and cause an overwhelming destruction. It is a law both of theory and practice that the greater the slope of a bank or fence, the more effectually it performs the object of its purpose, and its end as a resisting surface. There is no precise rule for the degree of slope, because it depends on the nature of the materials of the banks, and the degree of exposure to the effects of water. This arrangement rests with the judgment on special cases as they occur.

Local experience will have ascertained in most cases the height to which the greatest floods have been known to ascend, and professional skill and judgment will be required to determine the additional height that will be caused by confining the overflowing water within a marked line of boundary. It is a great blunder to confine a volume of water within narrow bounds: water spread abroad is very harmless; large collections, being confined and agitated, burst all opposition, and sweep away every obstacle in the movements. At the same time an extent of ground may not be wasted in giving room for water to flow: but a narrow confinement must be avoided.

The embankment or earthen mound that is raised in order to confine waters from overflowing a level surface of ground, must be directed in every possible case to throw the volume of water into a mid-channel that tends to form a straight line for the running stream. This line will be the natural bed of the river when not swollen by an excess of water, and into it and over it the volume must be directed. The line of embankment must be directed, at every turn or bending of its course to point the flow of the stream into a mid-channel, narrowing for that purpose the space that is allowed, but not so much as to throw a force of water on the opposite bank, which would press on the embankment, and overtop or demolish it. From both sides of the river, the embankments must point the waters into a mid-channel, by gradual narrowings and gentle directions.

The line of the mound or fence being determined by local experience and professional skill, the erection of the embankment is done with compacted clayey earth, rammed hard in a moist condition, or made damp during the process of being constructed. The front of the bank slopes in three feet of base to one of perpendicular height, and rises to a top of six feet in width, and of vertical height that is at least one foot above the mark to which the floods are calculated to rise. The back slope to the cultivated lands is one foot or one-and-a-half feet of base to one of vertical height, as it only forms a back support to the front pressure, and does not sustain any direct opposition. The front slope is made with great care, the damp materials rammed into a compact hardness, and levelled with much

nicy. The surface is covered with grassy turf, jointed, fitted, and beaten together, so that no opening or inequality present an obstacle or opposition to the waters, where to make a breach and a beginning of destruction. The safety of the bank and the whole success of the undertaking depend on a level and unbroken surface being formed, on which the water rolls without a ripple, and finds no obstacle of contention. In low countries and on level grounds where embankments are required to confine the overflows of the rivers, the flow of water is sluggish and lazy in the movements, so that no great difficulty is presented in constructing a barrier against its force. The pressure being lateral, and not in a forward direction, the level slope prevents the extension of the water, supports the downward pressure, and permits the water to roll along as if running on the base of the embankment. The turf must be very grassy and matted, of vivacious herbage, and of good soil. Hooked pegs of timber are driven into the mound in several cases, in order to hold the turf in the required position. This use understands a degree of rapidity in the water over the fence. The growth of grassy surface presents the best of all materials on which waters roll without inflicting damage, and it is fed by the alternate benefits of being dry and having a watery covering. The entire construction must be duly attended and repaired, will soon become a barrier of great strength, and will bear an intrusion much beyond its appearance. The outward point of the slope dips underneath the turf of the level ground which is raised to receive the outermost apex of declination, forming a raised continuation of grassy turf that allows the rolling of the water, and merely prevents its spreading over a greater extent of surface. The course of the water is only changed to a slope from a level course.

A trough is the natural channel of a river; and the deviations from this form are occasioned by steep banks, a barrier of rocks, or greater or less resistance of the surface strata, when the stream of water is diverted into pools, shallows, and eddies, and excavation of the banks. The solidity and permanence of the bank depend in part on the inclination of the surface, the hardness, tenacity, and smoothness of the materials, and on the degree of parallelism that is preserved between the course of the bank and the impinging current. Tortuous courses of bodies of water present an angle of resistance to the moving fluid, which, being enlarged in volume, acts with violence against an earthy deposit, tears the mass, and carries away the dissolved materials. The peat soils of alluvial formation are gradually wasted and reduced in the superficial area by the invasion of watery bodies; and the protection of the cultivated lands becomes a business of constant attention. In these flat countries the rivers move slowly, and generally stand deeply, making a pressure on the banks at the bend or turn; in other places, a current is produced in rather higher situations, which runs from one pool to another; and the force being directed against the bank, a demolition takes place of the earthy stratum, at all times of the river being swoln by rains and thaws. A straight course not being possible, by reason of natural obstacles, it becomes necessary to turn the stream of water into as many straight runnings as can be got from one place to another, by means of fences to turn the course at the bendings of the channel. The rolling volume of water sometimes rushes against the opposing bank at a right angle, but most frequently at an angle of divergence, or strikes the bank laterally, when the destruction is much greater than when the stream rolls directly against the bank. Impinging bodies are reflected

from obstacles at an angle equal to their incidence; and the smaller that angle, the less force is exerted against the body that is presented to oppose their progress. Accordingly, in raising fences to protect earthy banks, by turning from them the force of water that rolls against the deposit, it is required that the position of the fence is directed aslant the current of water, so as to receive the impression at an acute angle, throw it off in the same divergence, and direct the stream into a mid-channel. For this purpose, the fence must cut a direct current of water at less than an angle of 45 deg., receive the impression at the most acute angle possible, turn the volume of water from rushing against the bank, and direct the course into a mid-channel. In alluvial countries, the substratum is generally deep in earthy deposits, and allows the driving of piles shod with iron into the bed of the river, in two or more rows, and placed in the slanting direction that has been determined. The distance from the bank will depend on circumstances, according as the water rolls against the bank in a direct or slanting course. The space between the bank and the piles is filled with large stones, that are rolled promiscuously into the vacant extent, and settle into position by their own weight. The force of the water is broken by the piles and stones; and though it flows among the stones, no injury is done to the bank that is behind, and the water finds a slow escape along with the main current. In the absence of large stones, baskets made of strong osiers are filled with small stones, and sunk in the bed of the vacant space behind the driven piles; and in other cases, bundles of brushwood are placed behind the piles, and held in position by ligaments of some kind being fastened around the stakes; in this position the sediment lodges among the twigs, and consolidates into an earthy bank. The large piles of timber by which the whole provision is sustained must be used in quantities as they appear to be necessary from the materials that can be obtained. The weight of large stones quickly finds a bed of repose; it only remains to have piles fronting the river, to prevent the stones rolling into the deep trough of the channel. Small stones will require the front piles to be thickly planted, and also cross rows at no great distance, extending to the bank. The placing of the piles must be thicker for brushwood, the bundles of which are pressed and held down by planks that are joined to the driven piles. A very effectual defence is erected by forming a slope bank of stones and planks, extending from the top of the bank of the river forwards to the bottom of the water, of which the surface is lozenge with cross and longitudinal plank of timber. The water rolls up this sloping surface as upon the grassy banks that have been described, and though it is costly, it forms the most complete barrier that can be furnished. But in most cases the rows of piles, with some hard or consolidating materials placed behind, will be adopted. A slanting fence of the description now given, will be required at ever bend of the river, and all places where the current tears the bank, and always placed to throw the current into a mid-channel. The stream must not be directed against the opposite bank, to produce the evil that is sought to be avoided; the fence must form a line with the current of the stream.

When waters run in a straight course, little or no damage is done to the banks which confine the current; but when the bed is narrow, and the line crooked, the water is broken, and is placed in the particles, and the agitation that is produced carries forward violence and destruction to all opposing obstacles. The course of rivers must be straight, or as nearly so as possible, and all attempts to alter or improve the line of currents must approach to that design. All

bends of rivers must be assimilated to the straight line, by using the largest circular sweep that can be got, and the barriers that are presented to an impinging current must not offer a direct resistance, but receive the force in a sharp divergence, and throw off the brunt of the violence. This adoption forms an approach to the straight line; and though not straight itself, it throws the water into a straight course, till it meets a similar obstacle, when it is similarly treated. In making new courses for water, or improving old ones, it is a great blunder to confine the current. Water spread abroad is very harmless, and damage arises from large collections that are confined in the movement, and agitated in the course. A tendency must ever be manifested to widen rather than contract the beds of rivers, and to straighten the lines of course wherever a possibility exists. Necks of land may be often cut through with advantage, in order to obtain a straight course, even at a present sacrifice in the land that may be used. The gradual damages of future waste will reach the amount, and exceed the present expenditure.

The action of floods of water over a level surface of ground is not violent, nor the force very large; the intrusion is easily averted, and the direction controlled. The bank lies in the direction of the course of the river, and has only to support the weight of a fluid body that glides along its exterior, but does not exert an action upon its constructed strength. It has only to show the course to the water, and not impede or obstruct it; the outspread water is restrained, but not carried any prescribed course. The bank must be directed along its course, so as to avoid any abrupt turning or hollows, in which water can lodge, and press with weight. The exterior slope must be convex, and the line must be uniformly gradual in the bendings, and afford the water an easy rolling motion, without any ripple, or displacement of the particles. Care must be used that the embankment is continued to the first current of the overflowing, in order that the water does not get behind the mound, and render it of less avail.

In alluvial countries, as now described, the surface is flat, and the currents of water are slow, and hence the means of preventing damage are adapted to these qualities. Rivers of greater or less magnitude, that flow from hilly countries, are rapid in the course from the fall of the ground, and liable to very sudden risings of water by means of heavy rains in the mountains: the impetuous course continues till the flat country is reached, and before that advance much damage is done by the raging waters rolling against the banks, tearing away the loose soil in the narrow alluvial valleys through which the river flows, which very often amounts to a total alteration of the course, when a bed of gravel is left for the new channel that is taken from the cultivated land. These hilly grounds and narrow valleys produce more bendings than happen in wide plains, and the soil being mostly alluvial in earths and gravels, the waste is easy, and the demolition very quick. The gravel that is rolled along by the torrent is usually heaved against one side of the channel, which being obstructed, the water is driven to the other side, and with the whole force and weight it undermines and tears the soft deposit of which the banks are formed. The power of the water is very much augmented by the narrow channels which are formed between the natural banks, and the mounds of rolled gravel, which shifts with the floods and lies where deposited:

The furious rush of these impetuous torrents requires to be opposed by the strong erection of very hard materials. Solid stone work is the best resistance, built of squared blocks, with or without mortar, and raised beyond the highest reach of the

waters. The form of the bulwark is square, and longer in the face to the river than in the breadth to the land, and must be very firmly based on the solid substratum that is reached by digging through the alluvial mass of gravels and loose earths. The barrier is called a jetty, and is placed to receive the current of the water at a sharp angle of divergence, and to throw it off easily, and almost without seeming to stop the direction of the current. An obtuse angle of divergence will throw the force of the water against the opposite bank, and if the bed of the stream be narrow, the water will break it, and probably cause a damage equal to that which is sought to be prevented. The jetty must throw the current of water into a mid-channel and not against either bank, and consequently the face of the stone work must be in a straight line with the mid-channel into which the water is wished to be directed. The force of the current being broken against the jetty, the water will flow for some distance before a new force is acquired, unless the fall of the country is very great; and when a fresh current is formed, which threatens danger to the bank, a jetty is there built, which turns the stream, as before, into a mid-channel, and clear of either bank. In this way the stream is conducted in a harmless current till it reaches the placid flow of the level country, when it is directed by the embankments that have been described.

It is useful to protect jetties in front, when the streams of water are very powerful, by placing large stones in a loose position at the base of the wall, and raised to the height of the ordinary quantity of water. The bottom of the heap may extend three or four yards into the stream, and taper to one stone at the top where the loose aggregation leans against the jetty. The weight of each single block must be sufficient to secure for itself an immovable bed, and defy the force of the water to change the position. In the substrata of clay and alluvial earths strong and lengthy timber piles may be driven into the bed of the stream, as has been mentioned before, and a defence formed between them and the jetty; but in many cases the driving of piles is difficult, and the loose aggregation of stones will be preferred. Both ends of the jetty must taper backwards into the bank with a wall like itself, in order to prevent at the upper end the ingress of water behind the building, and at the under end the eddying of the stream into a corner, which may become the receptacle of waters that may seek a new channel. The whole volume of the stream must be directed into a mid-channel, and without any scattering of the sheet of water towards either of the banks. The collected stream will wear a channel for itself by the weight of the volume, and for that purpose every encouragement must be given to direct it in a mass. This direction is very peculiarly applicable to streams that descend an alluvial valley from higher grounds, where the banks are in composition soft and easy of demolition, and where the rapidity of the torrent soon excavates a bed for the water. It is not here meant to confine the bed of any river of water, but in certain cases to direct the body of water in a mid-channel, which will keep it from running against the banks and tearing away the land.

Water-courses are beds of rivers on a small scale, that traverse estates, farms, and plantations on their way to join the main rivers that lead to the ocean. A surface of undulations and sinuosities very often compel a tortuous course of the waters; and a formation of gravel or of soft alluvial ground gives way to the floods and torrents that run in the bended course that has been executed. These torrents arise from the heavy falls of rain and melting of snows, and are confined in doing harm at the bending of the course by driving into the ground with heavy mallets a row or two of strong stakes at one or two feet distant, and weaving a fence

with branches of trees, in the manner of a basket. The space between the row of stakes and the bank is filled with the largest stones that can be found, among which the water passes and deposits a sediment, which in time fills the crevices, and the mass becomes a solid layer. The wicker-work, having the tail of the branches in the direction of the current, directs the water very quickly and smoothly along the wattled fence, and the wall being open to the passage of the water through it, no solid resistance is opposed to the current, but rather a break-water, which directs but does not obstruct the course. Small rivulets, that are only periodical streams of any size, are fenced in this way by upright walls of wicker-work, backed with stones; and larger brooks are guarded with a sloped wall as has been described. This slope is well formed with strong stakes driven into the ground, the vacancies being filled with stones from the shingly bed of the stream, and the top covered with long branches of trees, with the tails pointing along the current, and fastened to the stakes by the natural hooks of the branches, or by ligaments, or by cross beams nailed to the stakes. Heavy stones being laid on the top will add much to the solidity of the structure. In course of time the pro-

per grasses will grow and form a matted turf, along which the floods of water will rush with much ease and tranquillity. Very good walls are formed in this way: the materials are generally ready, the performance requires little skill, and the expense is not great.

The principles of embanking are few and very simple, and admit an easy application. Water should run in a course as strait as can be obtained, and have a wide channel rather than a narrow bed. The bendings of rivers are guarded by barriers of piles and stones, and the impetuous currents of mountain-streams are diverted into a mid channel by jetties of stone masonry, against which the water rushes at a sharp angle of divergence. The rising of tides and floods into deep formations of water are averted from doing harm by means of earthen mounds covered with grassy turf, on which the waters roll, but against which they do not impinge, and press with the weight of their depth. This last principle constitutes the chief remembrance of embanking. The difficulties of execution will be proportionate with the circumstances of the locality, in position, materials, and labour.

FRENCH AGRICULTURE.

THE POLICY OF NAPOLEON III.

It has been the custom to regard the Emperor Napoleon as an inscrutable statesman, who, commenced with a fixed design, or series of designs before him, from which he has never swerved, and to the accomplishment of which he advances slowly, irresistibly, and triumphantly. It is, doubtless, most convenient for him that men should receive this impression; but that the impression is totally fallacious, a glance only is required at his course to show. He has been by turns Republican, Socialist, Imperialist, a disciple of every religious creed under heaven; and although he may have had a fixed idea from early life that he should step to the throne of his uncle, it has been the only fixed purpose of his life. No man has shown such alarming vacillation, and only upon the evidence of one circumstance can we grant him credit for working out an independent principle. By an independent principle is meant a Napoleonic principle, Napoleon III. existing professedly only as the political executor of Napoleon I.

"Agriculture the soul, the basis of the empire," said Napoleon I. "Agriculture the soul, the basis of the empire," echoes Napoleon III.

Some years ago Louis Napoleon, the guest of one of our nobles, lay on the grass, discoursing dogmatically about what he should do to reclaim the marsh districts, to improve the waste lands, and to develop the agricultural resources of France when he came to the throne! He was then an exile, living a desultory despised life in England. Now he is Emperor of thirty-six millions of people, and commander-in-chief of some seven hundred thousand troops. The changes of life and position have been rapid and startling; and though a comparison of his opinions as they were twenty years

ago, which have been published to the world, with his policy now that he is absolute in France, is not such as to engender confidence, he has kept instinctively true to one dictum, namely, that already quoted—"Agriculture the soul, the basis of the Empire." His army will not save him, but agriculture will. Territorial aggrandizement will not save him, but the reclamation of waste land will. The employment of the people about the beautification of the capital, and the interference of Government to reduce the price of bread, will not save him, but an application of science to the object of increased production will; he will be saved not by centralization, or that system which swells the city at the expense of the country, and dwarfs the whole, drawing the vitality from the rural districts to concentrate it in one apoplectic executive at Paris; but he may save his position by diffusing a sense of power and responsibility—by sending back the gentry to restore their chateaux, to live amongst the peasantry, and incite them to improvement, similar to that which Coke Earl of Leicester, and others of the like character, inaugurated in England.

But there must be security.

We are told that not many years ago a quarter of a million of persons, in one province of moderate extent in India, perished of famine, entirely through the defect existing in the means of irrigation. Within a short distance of the Mahanuddy river, nearly thirteen thousand habitations, with their inmates, were swept away by a flood. Capital of course is not expended upon the land so exposed to destructive influences, and the 50,000 square-miles of country drained by the Mahanuddy are well nigh uncultivated. The river Godavery, which drains 130,000 square-miles, did

under the native rulers produce as disastrous results, before an English water company led its turbulent stream gently into new and multitudinous channels, irrigated the country, and caused the wilderness to blossom as the rose. The practice brought assurance to the Indian farmer, wealth to the undertakers, prosperity to the district, and gratitude to the English ruler. So the Mahanuddy was a source of poverty to the people of one province, while the Godavery was a source of wealth to the people of another. In fact, the tale of security and insecurity is well told by the mere relation of the *difference* that has taken place in twenty-three years between the revenues of Tanjore and Ori-sa, which amount to no less than eight millions sterling.

Security is another name for good government, and good government is as essential for agriculture as for manufactures. The Sicilian starves on the most fertile soil. Italy, once so famous for her agriculture, has long ceased to support her own diminishing population. The splendid wheat lands of Poland have not endowed the Pole with any better thing than slavery, nor has the wail of distress long ceased to be heard from the luxuriant soil of Ireland. There was a time not removed by many years from our own, when very little care was bestowed by the East India Company upon anything beyond the collection of a sum adequate to pay the expenses of their governmental apparatus, and yield a handsome dividend to the holders of India stock. Had a different course been adopted, had the reform now inaugurated been applied years ago, India, instead of being a drag upon us, might have yielded us a splendid revenue.

Agriculture is, then, the soul and basis of an empire; yes, when there is security to capital, or in other words, the fostering care of good government.

But Napoleon III. has not only proclaimed his adoption of this fundamental dictum of his uncle. He has also made in our hearing the following announcement:

"I represent before you [the people of France] a principle, a cause, and a defeat. The principle is the sovereignty of the people; the cause, that of the people; the defeat, Waterloo. The principle you have recognised, the cause you have served, the defeat you desire to revenge."

Now, treating this declaration seriously, have we not every reason to be alarmed? No, not in the least! As this "inscrutable" individual has failed to "represent the principle," except in as far as he may be regarded as the conqueror of the French people, and to serve "the cause," may he not also find it convenient to wink at Waterloo? Indeed, would not the practical recognition of the two first conditions of the declaration render the third impossible? For, substituting liberal institutions for the Napoleonic principle and cause, would not the French people, by the time they were inducted into them (indicating the possession of a vast amount of common sense and sound thinking), thank us heartily for the drubbing we gave them

at Waterloo, and the salutary check we then put to an insane course of ambition, which had exhausted their treasury, decimated their population, laid waste their fields, and dragged them to an abyss of ruin from which they are only now crawling?

We are, however, of opinion that it is altogether a mistake—a misprint. The Emperor intended to say that he "represented a defeat," pleasantly alluding to the terrible defeat he has sustained in the fields of France—a defeat which he seems burning to revenge, the dictum of his uncle tingling in his ears—"Agriculture is the soul, the basis of the empire."

The sovereignty of the people, and the cause of the people, are quite consistent with this last condition in its amended form. The two first cannot be obtained without the last. The triad is homogeneous and complete. The defeat to be effaced is on the fertile fields of "La belle France." The victory that has stung the French to the quick, is the victory obtained by English hearts and hands on English fields. So decided is this triumph, that the prean of victory bursts from the ranks of the enemy. It comes from a soul warmed into admiration of noble work, and above jealousy. The burden of the song is as follows:

"Whilst France," says Monsieur Lavergne, "taken as a whole, produces 100 francs per hectare,* England produces 200. The animal produce of an English farm is equal to at least the total produce of a French farm of equal area; all the vegetable production being additional. Taking only the three kinds of domestic animals—sheep, oxen, and pigs—and not taking poultry into account, the English obtain from these four-times more than we do in butcher's meat, milk, and wool. Among the vegetable products, whilst the French soil does not produce quite one hectolitre and a-half of wheat per hectare, the English soil produces three, and it gives, besides, five-times more potatoes for human consumption."

"How superior," cries the same writer, "are the soil and climate of France! In comparing with England, not the fourth only, but the north-west half of our territory—that is to say the thirty-six departments grouped around Paris, inclusive of Brittany—we find more than twenty-two millions of hectares, which surpass in quality, as they do in extent, the thirteen millions of English hectares."

'Tis here is the victory. This is the defeat Napoleon III. represents.

The Napoleonic idea is working. There was a great review of the Agricultural forces of the kingdom at Paris in June last. And the British farmer went to see the display with as much composure as the British soldier went to dance at the festivals of Cherbourg. It is to be hoped that the results of the audible intention to revenge this victory may be such as to convince our French brethren that standing crops are better than standing armies. E. R. S.

* The hectare is equal to 2½ English acres.

THE AUTUMN MEETINGS.

There are now few country towns but are cognizant of some little bustle just at this season of the year. The carriages of the County people come rolling in. The yeomen jog steadily along, or freight four-wheels and dog-carts with their wives and daughters. The citizens have luncheon ready laid out almost ere their own breakfast is disposed of, while the different hotels are all alive with business. The glimpse of an honourable M.P. is caught, as he turns the corner arm-in-arm with his solicitor; and rosy, rural-looking clergymen hail each other from the opposite side of the street. There is evidently something going on, although not exactly in the town itself. There is not the excitement of an election, the crowding of a fair, or the raffish "have-a-card" air of the race-day. Still the town-clerk has got his best coat on; there are strangers enough about to tell there is a gathering of some sort; and a well-bred, bang-tailed horse in a full suit of clothes swings by, in the direction everybody else appears to be taking. Following this, you find it is neither the Monthly Market, the Visitation, nor the Assizes; but that at the entrance of a goodly-sized close in the outskirts you are brought to stand and deliver—a shilling for a sight of the anniversary show of the Shire Agricultural Society.

Or, it may not be the shire, or the district, or the hundred, or even the *whole* town show, after all. These meetings have multiplied exceedingly; and there is scarcely a local journal of any repute but has to chronicle three or four such occasions in the course of a week. County members, prize short-horns, and learned judges are at their wit's-end as to where they should go and where they should not. Our letter boxes are filled with invitations, with programmes in prospective, and particulars of the past. Everywhere, moreover, are these Societies flourishing, and very deservedly so, too. The most bitter and obstinate of their opponents have gradually come to admit the beneficial influence of such institutions, while their original supporters are as staunch to them as ever. It is no doubt true that a catchy, much protracted harvest may have done something this year to thin the attendance of visitors, but from nowhere do we hear of dispiriting reports. Almost all our agricultural Associations have something to fall back on, and although the farmer may not for once be able to spare his day, still he will not, despite a bad sample and a doubtful yield, withdraw the half or whole sovereign which registers him as a subscriber.

When, then, the agricultural Societies of the kingdom are generally doing so well, it may sound like a bold word to say there are too many of them. And yet there are men found equal to this. It is years since we ourselves saw and declared that one united Association, to embrace the whole strength of a county, was susceptible of far more good effect than any number of

more local bodies, which just tested the strength and marked the progress of their own parish. In some few instances this amalgamation has been very advantageously acted upon, but with the majority every hundred or so has still its own little celebration. It is clear enough that such a limit must gradually result in a certain sameness and tameness, and that even Brown, Jones, and Robinson may tire of beating each other. Mr. Meire has seen this in Shropshire, or rather the conviction has come to him from what he has witnessed out of his own county, and there is no question but that a united Society for Salop would at once obtain such a position as Bridgnorth, Wenlock, or even Shrewsbury "limited" can never hope to realize. Mr. Meire has since received some very distinguished support. The Right Honourable Benjamin Disraeli has been saying for Buckinghamshire a good deal what Mr. Meire has been advancing in Shropshire, and certainly not without some cause for so doing. It is but a year or two since that we were present at a meeting of the Bucks Agricultural Association at Aylesbury—and there was to be a meeting of another Bucks Agricultural Association at Buckingham the next day—and a meeting of a third Bucks Agricultural at Aylesbury again the week following—and there had been one at Winslow the week previous, and so on. This year Mr. Disraeli has duly been to Aylesbury, and thence to Slough, where he spoke in this wise: "I think the time has come when you ought calmly and carefully to review your position. You may now consider whether you cannot make a still further advance. As far as the locality is concerned, nothing can be more complete in their operation than these Societies with respect to the elevation of the condition of the labourer. No central association can do that; it requires local knowledge and local feeling. Therefore I think you can't have too many local societies with the distinct and avowed object of the South Bucks Association. But you have to consider whether you could not combine with them some means by which all these local societies should hold communication with a central body, by which on at least one day in the year the whole of the enterprise and skill of this county could be brought together, so that we may know what is the general progress of Buckinghamshire; whether we are up to the mark; and whether there is that readiness either to adopt new inventions for the improvement of the soil, or to create those inventions ourselves, which is highly desirable; and whether all those various divisions of labour for which this country is eminent cannot produce those specimens and make that show which may at once maintain its reputation, and stimulate its skill and enterprise to new developments. I do not see why some federal constitution—if I may use the phrase—may not be devised for these societies, by which

the dairyman of the extreme North, the grazier of our rich vale, our stock farmer in the hills, and those who produce the admirable crops in the fields about us, may not meet together, and compare notes, implements, machinery, and stock, thereby becoming acquainted with each other's different degrees of industry and skill. By some such means a more general sympathy might be engendered in respect to the great occupation of all of us than I candidly believe now exists."

There is a great deal of suggestive matter here, and the argument itself is very forcibly put. A show of stock, or of implements, to work on to any real use and progress, must not be confined to any one small district. A man cannot be content with merely following or teaching his neighbour. We live in an age when, especially with regard to agriculture, the tone of society is altogether beyond this. On the other hand, perhaps the welfare of the labourer cannot be too directly the care of those about him. That the system of offering premiums for skilled labour, long service, and good conduct, has been signally successful, no one who knows anything of the effect of such an influence will now attempt to question. But the point is whether in the proceedings of one day the several sections of the prize sheet can be all duly attended to. At many meetings the labourers' rewards are distributed before "the dinner" instead of after; and such is the case with the Bedfordshire Society. At the last meeting, however, Colonel Gilpin, one of the members for the county, expressed his regret that the farm servants were not still introduced and addressed by the chairman. And he said this with a printed list before him embracing no less than five-and-twenty toasts—involving something like five-and-forty speeches—in addition to the reading of a Report, and two tables of awards, by a rather talkative secretary! No wonder that people were heartily tired of it before it was half over—a consummation that would never have been arrived at, but for the tact and good taste of the chairman, Mr. Hastings Russell. But what would it have been if Colonel Gilpin had his will, and marched in a Company of labourers who had served their times, or reared their lambs, or cut straight furrows! Still it is only fair to add that the same desire was expressed yet more strongly the day previous at Ludlow, when Dr. Bowles, a clergyman, said, "I would venture most respectfully to suggest to the members of this society an alteration, which I think would also be a great improvement, in the mode of distributing the rewards to your farm labourers and domestic servants. Under the present arrangement, those whom you deem worthy of so great a distinction are huddled in and huddled out of this room with little more, nay with not so much observance as the prize-cattle in your show-yard, and have scarcely time allowed them to pocket their reward, and gulp down a glass of wine and make their exit (Cries of "No, no," and expressions of disapprobation). I think they are especially entitled to your respect and consideration (Mr. Weyman: "So they are, and they

are here now"), when you consider, gentlemen, that the greatest privilege which the rich possess over the poor is the power of making them happy, and that all your happiness has for its basis the industry of the poor—that all the distinctions of the rich gentlemen that I see about me are also supported by their industry, I think that you will agree with me that this is an occasion when the rich and the poor, the employer and the employed, meet together on something like an equality. I would therefore take the liberty of suggesting that when they come up to receive their rewards, that the patron of the society should himself be requested to distribute them. I am sure that in proportion as you lift up your labourers in their own eyes, they will forget their poverty and think themselves rich in your kindness; and they would be delighted to hear a few kind words of encouragement, calculated to give them true elevation and self-respect. I am sure they would be delighted to hear a gentleman in Mr. Knight's position, as the patron of the society, if he would—I won't say condescend—but if he would take the trouble to address them in the spirit of brotherhood, and to tell them that honest labour involves no degradation, and that they may, though poor in circumstances, become rich in good works, and so dignify the humblest station in society, so as to meet with the approval of God as well as the approbation of their fellow-countrymen. I think that such a course would confer great benefit on the recipients of your rewards. I think that the patron might almost venture to tell them that goodness levels all the distinctions of this world; and that the sense of duty and the power of doing right are the greatest gifts God can bestow upon man. He might also, I think, impress upon them that the greatest man in this room is not necessarily the patron of this Society; or the honourable friend, the baronet on my right; or the Members of Parliament, or any among those whom he may see about him; but that he is the greatest man in this room—nay, in the world—who, be his station in life what it may, is most impressed with a sense of duty. I think that if the patron would condescend to distribute the rewards of the labourer, it would be the means of sending from your presence a number of proud and happy men, and would do more to exalt and purify their character than the mere hasty and undignified bestowal of the richest pecuniary reward."

If not altogether so practical, the sentiment of much of this is very admirable, and it is no doubt as eloquently put. But is "after dinner" in a public room, where such an address will be seasoned with *hurrahs!* *tally-hoes!* and comic songs, just the time and place for what strikes us would come much better earlier in the day—say in a tent on the show ground, or on the ploughing-match field? However, the unnecessary harshness of Dr. Bowles' expression towards the employer resulted in "a row," and "a correspondence," with which we have no desire to interfere further. Perhaps, if the Doctor came to look a little closer he would find that although others wished quite as well to the labourer as himself, there was not time here to do all

he recommended. For our own part, we consider the distribution of the labourers' prizes after the dinner of the Society to be altogether a mistake; conducting in

reality to no possible good whatever, but rather to the contrary, in keeping men, at a comparatively long distance from their homes, to a late hour of the evening.

THE BEDFORDSHIRE AGRICULTURAL SOCIETY.

Owing perhaps to a lucky accident, this Association, though peripatetic in its principle, has now held a second meeting in succession at Bedford. From the success of this experiment it is not improbable that for the future the county town will alternate with other places the anniversary celebration of the Society. Such a course is adopted in Suffolk, where Ipswich comes in every other year, and Bury, Saxmundham, and other sites at longer intervals. Leighton, Biggleswade, Woburn, and Luton might, on the same system, in turn "relieve" the head-quarters of an institution that has now seen its sixty summers. But in its great feature, the ploughing match, there never was a better show than this. It was in every way worthy of the reputation that the county, and more especially the town, has already achieved. There were seventeen half-acres of the straightest and best ploughing the judges had ever seen in their lives; cleanly cut, well laid, and altogether slightly in appearance and true in workmanship. The ground, nevertheless, was more than usually trying—a wheat stubble recently manured. In fact, so difficult was the spread dung to deal with, that Mr. Bearn, one of the adjudicators, strongly recommended that for the future even Bedfordshire ploughmen should not be subjected to so severe a test, but the more general clover ley be again resorted to. The marked success which has this autumn attended the working of Howard's plough was only further confirmed at home. It was first in the three divisions, and first and second in the great Champion class, where a Hornsby plough finished third; while Page claimed one second, as well as a fourth place in the other trials. Frederick Purser, in the employment of Mr. Street, must be recorded as the champion himself—a young man of much promise, that will most probably have the opportunity of further distinguishing himself. George White, a commended entry of last year, when he was thought by many to be worthy of more distinction than he obtained, was a good second; and James Madden, another capital hand, who took a Hornsby in preference to a Page plough, maintained the excellence of the class as the third best. The ploughing of the lada was also remarkably good, but owing to illness and accident, the farmers' sons and pupils did not compete for their cup.

The shorthorns were the mainstay of the stock show; and Mr. Robinson, of Clifton, was as pre-eminent amongst the cattle as the Howards with the implements. He brought Hayman, a low, level white bull, never shown before, that quite spoilt the look of the entry beside him. In fact, he was the only good bull amongst them. The show of cows and heifers was much better, and went more to mark the strength of the many

budding herds in Bedfordshire. Amongst those so represented were Mr. Fowler's, of Henlow; Mr. Lawford's, of Leighton; Mr. Charles Howard's, of Biddenham; Mr. Barnett's, of Stratton; Mr. Burton's, of Northill; Mr. Crouch's, of Lidlington; and Mr. Pawlett's, of Beeston. Mr. Fowler's hope was the curly-horned Warwick prize heifer, and the commended of Canterbury—now a roomy handsome cow, but for the crumply horn, which is taking a more awkward turn than ever. Mr. Pawlett was second with a bargain from Milcote, while half-a-dozen others were commended. Mr. Robinson was amongst them, but he became more prominent with both the three and two-year-old heifers, taking the first prize of one with Northern Belle, and of the other with the still better known Claret. In the generally commended class of heifer calves he was also first, while his young bull Champagne, by May Duke, only six months old, was pronounced to be the most perfect animal in the show. Whether for looks or touch, there was no finding fault with him, and great was the congratulation accordingly to the owner of so promising a youngster. But Lord Spencer and Mr. Beazley had anticipated what Mr. Sandy or Mr. Ladds might think of him. On only the day previous, in a stroll through the Clifton pastures and homestead they had selected him, and, win or lose at Bedford, he was booked for Althorpe, at a hundred guineas. Of course his Lordship is so already the owner of a prize bull. The Duke of Bedford and Mr. Paxton sent three very capital Herefords as butcher's beasts, which were preferred to the Shorthorns entered against them; and his Grace had also premiums for his Southdowns, as Mr. Charles Howard for his Oxford Downs, Mr. Twitchell for his Leicesters, and Mr. Hine for his cross-breeds. But the competition here was weak, although some of the entries themselves were of much excellence.

Lord St. John sent a two-year-old filly, which united size, symmetry, and quality in a very remarkable degree; and there were a few clever cart-mares. But altogether the agricultural horses were by no means imposing to look upon, and "the nags" less so still. Mr. Thomas, of Bleetsoe, took the hunter premium with a moderate four-year-old filly by Hesperus; while—a long way the best-looking one—a Rochester horse was disqualified from an injury he had received in the back when a foal. He could neither trot nor turn. Mr. Thomas had a better Galloway, so superior, indeed, to a mere "cob" in the common acceptance of the term, that the judges had to go for something with more beef and barrel, but of nothing like the style, or fashion, or action of the little chesnut. There were a few pigs, and the now customary curiosity in the way of two couple of Bretonne cattle,

and on these the ladies had to centre their affections. There was neither fruit nor flowers nor poultry nor music to entertain them; and, fortunately for themselves, they were not suffered to sit down to the dinner. But all this may be amended by another year, and there is nothing in the proceedings of the Bedfordshire Society requires amending so much. Let the toast-list be cut down to one-half; let something like due attendance be secured, and another as efficient a President as Mr.

Hastings Russell be elected. And then, as the crowning point in this advancement, let the ladies not be "permitted" merely, but be specially "invited" to attend, as they are at the Sparkenhoe Club, at Burton-on-Trent, and everywhere, in fact, where civilization is really exerting its proper influence. In such a presence slow speakers brighten up or sit down, while a half-glance or a whispered cheer has warmed up many a faint heart into glow of eloquence.

NORTH WALSHAM AGRICULTURAL SOCIETY.

The annual meeting of this society on Wednesday, Oct. 3, was scarcely so successful as the corresponding gathering last year, the unfavourable season having thrown something of a damp over the agricultural mind, while many farmers were absent in consequence of their being bent on making an effort to secure during an interval of fine weather their long exposed and sadly deteriorated barley. The show of stock was small, taking into account the rich resources of the district, which is one of the most fertile and kindly spots in Norfolk; in fact, in several of the sheep and pig classes there were no entries. There were a tolerable number of agricultural horses on the ground, the Cart Mares class being well represented. Mr. W. Cubitt had a handsome cart stallion eight years old, stated to be constantly worked on his farm at Bacton Abbey. Lord Suffield, who has been something more than a nominal president of the society, and who is accounted a pretty good authority in horse-flesh, gave a prize of £5 to encourage the exhibition of hackneys for riding and harness purposes; and this premium was taken off by a five-year-old shown by Mr. W. L. Jex Blake, and bred by that gentleman. Mr. Blake's horse had fine action, and appeared to have some good blood in him. He was much admired, and as he succeeded in beating a three-year-old bred by Lord Suffield, Mr. Blake expressed himself at the dinner in terms of high glee at the result. In cattle, the horned cows were a pleasing and attractive class, especially a Devon shown by Mr. R. Wortley; a Shorthorn by Mr. J. A. Storey; and a white cow, bred by Mr. H. K. Thompson, by Omar Pasha, dam Termgant, by Ruby. The "gems" of the cattle class were, however, two fat steers, bred by Mr. Beare, one of the oldest and most respected members of the society. These steers were of the polled breed crossed with the Shorthorn, and as North Walsham lies near the sea, the strong saline air could be readily discerned in the yard on Wednesday. It is contended by some that it is desirable, in order to secure a hardy breed adapted to the climate, not to neglect the Norfolk Polled element. Mr. Beare's steers took prizes almost as a matter of course, for nothing else shown in the yard came near them for breadth, depth, general symmetry, and condition: and a wish was expressed at the dinner, although it did not transpire with what result, that they should be shown at the approaching exhibition in Baker-street. As regards sheep, there were only a few hoggets on the ground; and in pigs there was nothing remarkable. Considering the extraordinary character of the season, the roots were good,

some of the swedes and white turnips being of extraordinary size. Lord Suffield took the prize for wheat, but his sample was cold and rather indifferent; indeed, the Noble Lord handsomely intimated his intention of returning the prize under the circumstances.

The dinner at the King's Arms was thinly attended, and the speaking had little reference to agricultural topics, notwithstanding a well-meant attempt on the part of Mr. Beare to get up a few speeches on such subjects. The "great gun" of the evening was Lord Wodehouse, Under-Secretary for Foreign Affairs, who talked hopefully about the Continental situation, the volunteers, the past session, his admiration of reaping machines, and the progress of agriculture—dealing, however, in generalities. Colonel Coke, the Whig member for the county, made three speeches on the volunteers, his brother the Lord-Lieutenant, and his legislative position. Mr. Howes, the conservative member, was great on the Italian crisis, and eloquent in his aspirations that the love of agriculture might never wax cold in the British heart. And the Rev. P. Gurdon spoke at least half a column, beginning with the Holkham sheep shearings, and ending with the recent visit of Prince Napoleon to Norfolk. Mr. Beare in his "practical" remarks enforced the importance of Norfolk farmers breeding to a greater extent their own stock. He had been told, he said, that Norfolk was not a breeding county; but there were few farmers who did not keep some cows, and he would ask them whether it would not be better not to sacrifice calves when they were two months old, but to rear them upon their farms instead of going to market for every head of cattle they wanted? He considered also that hundreds of cattle bought off Norwich Hill, and brought into the neighbourhood, were sent away carrying 20 stone of beef less than they ought to carry, a loss both to the farmers concerned and the community at large. Hundreds of cattle also became victims to diseases from mismanagement; cattle as soon as bought were put into loose boxes, and forced, so that they might as soon as possible give place to another lot; and the consequence was that they were strained beyond what they were able to bear, became diseased, and died. If people would pay greater attention at the beginning of feeding, there would not be so many losses; "for everything," said the speaker, emphatically, "should be brought on by degrees." Mr. Beare invited discussion on these points, but failed to elicit it. On the whole, we scarcely thought the meeting up to last year's mark.

THE DISEASES OF CATTLE AND SHEEP.

IPSWICH FARMERS' CLUB.

The Ipswich Farmers' Club recently held its fifth meeting for discussion at the White Horse. Mr. M. BIDDELL, the vice-president, in the chair. The subject for the evening's discussion was, "The prevalent diseases in cattle and sheep;" introducer, Mr. C. SHORTEN, of Ipswich.

Mr. SHORTEN commenced his address by observing that although he promised compliance when requested to undertake the introduction of the subject for the evening, it was not without much reluctance, caused not by unwillingness to contribute according to his ability to the furtherance of the objects of the club, but from an instinctive conviction of his want of ability to handle the subject in a manner at once pleasing and profitable. He begged to state that in the remarks he was about to make he entirely disclaimed any attempt to place before them anything approaching to what might be called a lecture, and that he only aimed at a plain and colloquial statement of the information he had acquired relative to those diseases which were sources of such great anxiety to all possessors of flocks and herds. He hoped that the experiences of the several members present would be abundantly brought out in the discussion, and that something useful to all would be elicited therefrom. Of all diseases to which cattle were subject, that popularly known as the "lung disease" had been, in the British isles, at once the most prevailing and the most destructive for the last twenty years. In continental countries it had been in existence much longer. It had its seasons of aggravation, raging at some times with greater violence than at others. He feared it must be regarded rather as one of the established diseases of cattle, than as one likely to be soon expunged from the list of bovine maladies. He dwelt upon the earnest attention which had been paid to the disease by the veterinary boards, from the professor down to the humblest practitioner, and of the pains taken to investigate its nature. Their knowledge, notwithstanding, was far from satisfactory, as the disease still remained an opprobrium to cattle pathology. Its infectious character was strongly insisted upon, and the opinions of eminent British and continental authorities were read. Measures calculated to prevent its spread were shown to be more deserving of attention than vainly hoping for a cure of universal application, which, at the risk of being thought rash, he would declare would never be discovered. The day of specifics had passed by, and disease must be combated by a rational application of means varied according to the stage of the attack, the temperament of the subject, and other circumstances which would be ever changing. Repudiating as he did a specific remedy, he would not dwell upon the head of treatment, it not being possible to detail all the minutæ so as to meet all the probable phases that might be assumed by this affection. Therefore he could not, if he would, make his hearers independent of their veterinary advisers. He should, however, be happy to answer any question on that head to the best of his ability. He pointed out next the importance of strictly isolating the affected animals, and to pay particular attention to all means calculated to prevent the spread of the contagion, by the prompt use of clarifying agents. With respect to the diseases of sheep, he frankly

admitted that his experience was only limited; he was, however, willing to avail himself of opportunities of becoming better acquainted with them, and so he doubted not were other local members of his profession. Whether their usefulness was to remain restricted, or to become extended, it must rest with the owners of flocks to decide. All diseases must be seen to be understood, and with respect to the diseases of sheep, the opportunities of observation afforded to veterinary practitioners were very limited. He had recently examined the carcasses of some lambs, which had died from the prevailing disease. It proved to be of a parasitic character, and he exhibited some specimens of the different entozoa, and explained the locations severally selected by them. Thread-like worms (filaræ) were numerous in the air passages. Others finer yet were found in countless numbers in the fourth or true digestive stomach, and likewise, in diminished numbers, in the small intestines, while in the large intestines, particularly in the cæcum, were found many specimens of a very curious entozoon, that called the hair-headed worm. For the destruction of the worms in the air passages, the inhalation of dilute chlorine gas, or the fumes of burning tar, were recommended, accompanied with the internal exhibition of vermifuge medicine, such as oil of turpentine mixed with linseed oil, followed by the use of tonic medicines, such, for instance, as the sulphate of iron. A considerable quantity of earthy matter was found in the stomach of the intestines of the lambs he examined, which it was probable the animals had instinctively taken to allay irritation; it was suggested that rock salt and chalk should be freely supplied, so that the lambs might lick them at pleasure instead of swallowing sand and pebbles, which were liable to accumulate in large quantities, and to be permanently injurious to the animals. In conclusion, the introducer thanked his audience for the kind attention with which they had listened to his very imperfect remarks. He had not attempted to compose a systematic lecture, for to that he felt himself unequal, even if his daily duties did not present too many impediments to his pursuing the requisite study. He had endeavoured to make a few observations which should form the basis of an after discussion, and he invited all the gentlemen present to relate their personal experience and opinions on the subject before them. He would much rather have been a listener than a speaker on that occasion, for he felt strongly how little it was in his power either to interest or profit them. He, however, also felt that by refusing to contribute in his turn to promote the very desirable object of that society, he might expose himself to the charge of being either unwilling or under the influence of narrow motives, both of which feelings he wished most distinctly to repudiate. (Cheers.)

The discussion which ensued partook very much of a conversational form, being carried on in the shape of question and answer. The following were some of the cases related:

Mr. H. BIDDELL referred to a dairy of nine cows kept by him some years since at an off-haul farm. They had all been on the farm for several years with the exception of one, which came from a farm where the disease had never been known. The disease broke out, and the whole either

died or had to be slaughtered. He had heard of the benefits of homœopathic treatment. One morning when he went to his farm he found two cows down with the disease; he separated them, and treated one homœopathically—the other according to the old system. The cow treated homœopathically died; the other recovered sufficiently to allow of her being got into condition for the butcher. He could not help thinking if the case had been *vice versa* how the power of homœopathic treatment would have been cried up; as it was, nothing was thought of it.

Mr. J. A. HEMPSON detailed cases where the disease broke out in bullocks which had been healthy, and had not been exposed to contagion. He had had it, too, in his dairy. Those cows near calving, or which had recently calved, never recovered. In the case of the cows which died previous to calving, the lungs of the foetus were found diseased; where the cows died after calving, the calves died in a few days from the disease. Speaking of the disease of sheep, he observed that the particular affection under consideration this evening was known only in lambs. It showed itself in them most when feeding clovers the second time; he had never known park-fed lambs affected. In clovers, as a general rule, the shorter the feed the better for the lambs. When the disease visited him, he lost fifty lambs out of a hundred. No sheep would take it—not even shearlings; he put some with the lambs on purpose to try it; but while the lambs were dying fast, the sheep were not at all affected. He had examined many after death; all the vital organs appeared healthy; he could find nothing but the worms.

Mr. SHORTEN mentioned that, in the case of some lambs he had examined, he had found the liver very much deteriorated, presenting a clayey appearance, and breaking very readily to pieces.

Mr. HEMPSON said he had seen lambs affected so; but the most of those he had lost did not present this appearance.

Mr. NEVE expressed his thanks to Mr. Shorten for the readiness and the ability with which he had served the club. He thought we could hardly discuss a subject of greater importance, either to the farmer or to the public. On whatever scale we farmed we suffered by the ravages of these diseases. Their prevalence, too, probably had much to do with the high price of meat. The lamb question appeared to him even more serious than the lung disease. The greatest diversity of opinion appeared to exist with reference to the cause of this disease. Some attributed it to feeding young layers, some to old, some to red clover, some to white. It was remarkable that it was confined to lambs. We weaned lambs earlier than formerly, and forced them more in feeding; he suggested whether these things might not have some influence in weakening their constitutions. The fact of lambs only being subject to the disease, he thought indicated that the food did not originate it. The lung disease he had been fortunate enough to escape for many years, but last year it had found him out. From what he had seen, it appeared to him to be very capricious. From some cases we were led to conclude it was contagious, while other cases led to an opposite conclusion. He had known a lot of bullocks bought at a fair, and when they were brought home, divided into three different lots and sent to three different farms; two lots were visited with the disease; the third entirely escaped: of the two lots affected, one began to fall off about Michaelmas, and the second about Christmas. The lot was bought in September. In another case, a lot of thirteen was bought; the disease appeared; four or five had to be slaughtered, and the rest were immediately sold: they went to a

farm about four miles distant, where they were fattened, and did well.

Mr. ALLEN RANSOME mentioned a case of four cows which had never been in the way of contagion; the disease appeared, and they all had to go.

Mr. HEMPSON, in answer to a question from Mr. Biddell as to the disease in lambs, said he had never known it break out when they were on turnips. It had always visited him earlier; it appeared to strike the flock all at once like a blight; some died quickly, and some lingered long; so that some died when feeding on turnips, but they were affected before.

Mr. SKEET expressed his thanks to Mr. Shorten, and thought that gentleman's remarks were quite just, that if the farmer did not consult his veterinary surgeon when new and peculiar diseases appeared, he was injuring himself by depriving such gentlemen of the opportunity of becoming acquainted with such diseases. The first lambs he had lost were from the heads of the flock; these had always lived well, had been frequently shifted, and looked thrifty up to the time of seizure. The rest of these lambs had gone on well. Those taken gradually dwindled. It broke out again in the tails of the flock. An old shepherd told him that if he examined the affected lambs he would find worms in their lungs. The shepherd's theory was, that the worms were bred in the stomach, that they crawled up the swallow, and then down the windpipe into the lungs. He examined several; he found no worms in the first stomach, but found some in the fourth. He found worms in the windpipe, in different places; in some there were no worms in the pipe, but only in the bronchial tubes. In some, where he could not find worms, there was a thickening of the lung at its extremity.

Mr. T. HAWKINS, respecting lambs, had had considerable experience. He had had the disease in lambs that had uniformly lived well and in lambs that had lived low. He had had it amongst some valuable ram-lambs: they did not gradually waste, as was the case generally, but died quickly. These lambs had lived particularly well. The cause could not be in early weaning. Hampshire farmers had long been accustomed to wean much earlier than we, and the disease had only very recently appeared amongst them. His shepherd thought the potato disease had something to do with it, or rather whatever caused the potato disease caused the disease in lambs. He grounded his opinion on the fact that the two diseases appeared about the same time in different years, sometimes earlier, sometimes later, but always both together. As to a remedy, he had found in three successive years that putting the lambs into early coleworts to feed checked the progress of the disease; in fact, it cured the lambs. He felt very confident we might rely upon this remedy. As to the "lung disease" in cattle, he was persuaded it was infectious.

Mr. B. SPURLING had had some experience of the lamb disease. He had some superior lambs to all appearance in perfect health; he put them into a piece of second-crop clover, where the feed was abundant. In a day or two the lambs began to alter; he removed them directly, but they still kept dying. He was confident early weaning had nothing to do with it, for he had known lambs affected while on their mothers.

Mr. SHORTEN stated that he had known cases resembling the experience of Mr. Hawkins, where coleworts had proved very beneficial in arresting the disease.

Mr. H. ORFORD related some cases of lung disease in cows which had come under his observation, where the

disease had broken out amongst cows which had been on a farm for some years, and had never been near others excepting as they were driven along the road passing the meadow where the cows to which he referred were feeding. In a few cases the cows recovered. One cow, which had recovered, immediately after calving was taken again, and died.

Professor SIMONDS (who had entered the room during the progress of the discussion) then rose, and was greeted with long applause. The following is an outline of his lengthened and very lucid address, which was listened to with eager attention by those gentlemen who were fortunate enough to be present. The Professor, on rising, expressed the pleasure he felt in being permitted to join in the discussion of the very important subject they had before them that evening. He explained that the pleasure was to him an unexpected one, and entirely owing to the kind invitation of his good friend, Mr. Allen Ransome. He regretted much that he had not been able to arrive in time to listen to the paper by which the subject had been introduced. They had two subjects before them this evening—pleuro-pneumonia and the diseases of lambs. First, as to pleuro-pneumonia, he might say in the outset that this was a misnomer, and the erroneous name had done not a little to mystify the subject. The name of a disease should always correspond with its nature. Pleuro-pneumonia signifies inflammation of the pleura and the substance of the lungs; the disease itself was really not of an inflammatory character. Is it contagious? cases have been mentioned which appear to prove that it is, and that it is not. We had but too strong evidence that it was contagious, and, unhappily for the country, this fact had been too much lost sight of. In fact this disease was an epizootic. In August, 1842, just previous to the alteration of the tariff, the disease came to us. It was then new to us, but it was not a new disease in foreign countries. Owing to the coincidence of the outbreak of the disease with the free admission of foreign cattle, it has been thought by many that it was an imported disease; but such was not the case, it was an epidemic. It had raged throughout all the continents of Europe, Asia, and Africa; but until the last few years it had not appeared in America or Australia. Recently, it had appeared on those continents also; and its arrival there could be traced to contagion. Many diseases were disseminated both ways. The morbid matter entered the system, and when seated there poisonous exhalations were given off. This was the case in small pox; after the disease had reached a certain stage, pustules were formed, and each pustule contained the same morbid matter as was originally inhaled. It was not the case that all animals exposed were infected, any more than it was with man. There must be a susceptibility as well as a cause. Some constitutions would resist more than others, just as men were differently affected by strong drinks; what would intoxicate one man would take no effect upon another. This opened the way to speak of *secondary causes*, and how farmers might help nature to resist the disease. Animals were rendered susceptible by *over-crowding*. Hence, in the London dairies the disease was more rife than anywhere else. Damp and wet yards were also to be avoided, and keeping cattle in places where much muck was fermenting, especially if animal matter was present. There were some pastures which in dry weather were unexceptionable; the same pastures in autumn, when exposed to fogs and damp, would engender it. To use plain language, we must have our wits about us. The malady itself: it was not an inflammatory, but a local and specific one. The morbid matter enters into the blood by respiration, and then concentrates itself in the lungs. This affection was in many

respects very peculiar. It is an eminently *fatal* disease. We were often twitted with our inability to stop its ravages, while cases were reported in which some ignorant cow-leech had treated it successfully. In explanation, we might say that it is not every farmer who is able to recognize the presence of the disease in its early stages—indeed, they were not easily distinguished by the regular practitioner. In those cases where these marvellous cures had been effected, the truth was, the disease had not been present at all; but the farmer was not sufficiently acquainted with its early symptoms to be able to detect the deception of the man who said that the affection he had cured was this disease. Bring any of the boasted remedies to a genuine case—one fully established to be such by the testimony of competent persons—and they invariably failed. The lungs were aurifying organs, and, both in cattle and in man, nature is unable to remove the deposits caused by the disease, and to substitute sound tissue in the place of that destroyed. It always was a fatal disease, and it always would be: the more we know of it, the more positive we were of this. In no one case was an animal ever been cured: the disease is sometimes arrested, but never cured. It often happens that cattle are sold appearing well; when slaughtered, the lung is found diseased. Sometimes, in the centre of an apparently healthy lung, a diseased portion is found which is dead and insulated by nature from the living part, being surrounded by a layer of lymph. In no case was the mischief done by the disease upon the lung ever repaired. When does its contagiousness cease? is a question upon which there has been much discussion, and which is still undecided. As soon as the animal sickens the disease is contagious. If it was arrested, it was not easy to say how soon the animal might safely mix with others. The legislature might, with much benefit to the country, take this matter up. On the continent, the measures taken by Governments had done much to stay the ravages of the disease. In some countries, if a herd were affected, it was compulsory to separate it immediately; the proprietor was compensated by the Government, whose officers took possession of the herd; those badly diseased were slaughtered, and those that were not affected or had recovered were branded on the horn so as always to be known. By the adoption of such measures as these much had been done to lessen the severity of this scourge. The principles of treatment: These could only be properly put into operation by a veterinary surgeon. As a farmer himself, and addressing farmers, he would recommend, when the disease was decided, to spend nothing in physic. Get rid of the beasts as soon as possible; the first loss was the best. There were some preventive measures which might be put into operation with advantage. When it entered a herd much might be done to prevent its spread, by remembering the contagiousness of the disease, and that a certain state of the system was necessary before it was taken. Sometimes it was dormant in the system a long time before it broke out. When this was the case the morbid matter might be got rid of. In this respect this disease differed from all others. The first thing to be done was to remove the healthy animals; this was decidedly better than removing the affected, as there might be something in the place where the disease first appeared to induce it. In altering the circumstances we might remove some secondary causes. Next, as to bringing the system into a healthy condition, and, if possible, to rid it of the morbid matter: first, a mild purgative should be employed, to induce action of the bowels; second, some agent to act on the urinary organs. The nitrate of potash ($\frac{1}{4}$ to $\frac{1}{2}$ an ounce daily, for two or three days) was as good as anything for this purpose. Thus the

system would be gently cleansed. Third, for the encouragement of the production of pure and healthy blood, some kind of stimulant might be used, as sulphate of iron, or the oil of turpentine. Fourth, feed the animals generously. The early adoption of these means would often rid a herd of the disease. To sum up, the disease is contagious; it is an epidemic, or epizootic; it is never cured; it had many secondary causes. Amongst these he would mention the travelling of animals. Irish beasts were often driven from fair to fair, and were most likely to catch it in one place or another. He would recommend when fresh beasts were brought, that they should be kept entirely away from other stock for three weeks, by which time the disease would manifest itself. If it broke out, let it be remembered that it was a fatal disease. Passing to the second subject of the evening, the prevalent disease in lambs, it was clearly caused by parasites, and was by no means new: it was as old as the hills, and no part of England has been exempt from it. Many circumstances connected with it were new to us, but only because we looked deeper now than formerly. Not only lambs, but all young animals were subject to the attacks of parasites. They were all subject to worms in the windpipes, colts, calves, lambs, pigs, and even undomesticated animals. All young animals were most subject to the attacks of parasites. It was now known that no organ of animals was entirely free from the attacks of these creatures. Every organ had its own peculiar species. The intestines, however, were more subject to their attacks—a strong presumption that they entered the animals from without. As to those in the bronchial tubes, it was asked, were they inhaled? This was a difficult question to answer. With the natural history of many species they were still unacquainted, and until this was understood it was difficult to answer such questions. Lambs affected

with worms in the bronchial tubes naturally coughed much, from the irritation produced by the presence of the worms: by coughing, it was probable that the ova might be evacuated, and lie on pastures, &c., for a great length of time uninjured, until they again found their way into the animal's system. This hypothesis was strengthened by the fact that a very hot and dry summer was always most prolific of these creatures. The variety in the formation of these creatures was very wonderful; in some the two sexes were distinct, in some they were blended in the same individual; some brought forth their young like large animals, some deposited ova. The ova of some underwent many changes before becoming like the parents. He mentioned the case of the flukes causing rot in sheep (which, by-the-by, was, unhappily, likely to be prevalent this autumn and spring, owing to the excessive wet), and entered into an interesting account of the various gradations they underwent, from egg to perfect development. Again, what was called "dunt" in sheep was caused by the existence within the brain of an hydatid, looking like a small bladder of water: these were tape worms in another form. It was a remarkable fact that a tape worm, such as was found in dogs, would, if swallowed by a sheep, change its form, and cause "dunt," and *vice versa*. From this we might gather that it was not wise for a shepherd to have a lot of dogs following at his heels. Professor Simonds gave a further lengthened and most interesting description of the natural history of the insect causing "seale," and of several other varieties of animal parasites.

A vote of thanks was passed both to Mr. Shorten and to Professor Simonds, and the members of the club separated, feeling that the kindness of Mr. Ransome had furnished them with a treat such as is but rarely enjoyed by the members of a provincial club.

THE MECHANICAL CONDITION OF THE SOIL FAVOURABLE FOR THE GROWTH OF SEED.

BY PROFESSOR TANNER.

[Prize Essay.]

(Concluded from page 294.)

OATS.—This grain is usually sown either after roots or else upon a fresh-broken turf of grass or clover ley. The natural energy of the root of the oat is much greater than that of barley, so that this plant rather resembles wheat in its powers of penetration. This circumstance has a great influence upon the preparation which is desirable: when oats are to be sown after roots, the ground is usually ploughed once, and time given to the surface to become mellow under the action of frost, before sowing. There is scarcely any difference between preparing grass or ley for oats, the chief modification being earlier ploughing, in proportion to the toughness of the turf. An old turf, which must necessarily have got very tough, should be

broken up not later than December; whilst a two or three-year-old clover ley would not require to be ploughed so early. It must be admitted that early ploughing of the turf is in no way objectionable, and in many respects advantageous, as the vegetable matter becomes rotted by the action of the weather.

In ploughing turf up for oats, the skim coulter should be used, so as to favour the entire covering of the grass; and it is often found that the land-presser is also of service for the more complete laying of the turf, so that the furrow may have a solid bearing, with no hollow spaces beneath it. After the turf has been turned over and fairly established, either with or without the aid of the

land-presser, the ground may be left until the seed-time comes. During this interval, frosts are almost certain to have crumbled the surface, and produced a nice light mould for the seed: such land will then present the most desirable seedbed for oats—a soil well charged with vegetable matter, firm beneath, yet easy of penetration for the rooting of the plant, with a surface light and free in its character for the germination of the seed. This firmness of land for the root must be distinguished from the hardness with which wheat will contend after it has once made a fair growth.

I have known instances in which portions of fields have been so fearfully trodden during the winter (by no means an unusual circumstance in hunting districts, when a large number are in at the death), that all vestige of the wheat plant has been destroyed; and yet at the following harvest the crop on such portions has been very superior. This the oat could not stand against; for, whilst it requires a firm soil, it cannot flourish in a hard soil. Nothing suits the oat better than a turf ploughed down; and, conversely, as a general rule, there is nothing preferable to the oat for strong turf. In the north of England, where the turf even of a clover ley becomes too rank for wheat, the oat comes in as the substitute; and cases are very rare in which either wheat or barley can displace the oat from old and rich turf, newly ploughed up. I do not here include clover leys and such artificial grass turf; but I think, with these exceptions, there is no corn crop which will penetrate and break up an old turf as well as the oat. The reason is, because turf presents just that condition of soil which meets the requirements of its roots; and, if the seed requires a light covering, this is generally produced by an exposure of the soil to frost and a light tillage of the land. To favour this result, the turf should be ploughed whilst moderately moist; but the surface should not be broken down for sowing until it is in dry working order. The same degree of moisture which favours the solidity of the turf would, if the surface be cultivated at the same time, render it close and adhesive, and quite unfavourable to the germination of the seed.

The sowing of oats commences in February, and in some of the midland districts as early as January, but the great bulk is sown in March. There is a very general feeling in favour of early sowing, and the practice is certainly altering in that direction. When oats are sown upon turf, it becomes much more necessary to sow early, than when they follow a root-crop or bastard fallow. The great objection is the influence of frost, which frequently gives a bluish tint to the blade, but, if the land is in fair condition, will not materially injure the crop. A larger proportion of oats than of any other grain is sown broad-cast, chiefly because an earlier seed-time can thus be secured. It often happens that the ground will harrow well when it is not dry enough for drilling; and in wet districts, with the uncertainty of spring weather, waiting for the drill frequently involves a considerable loss of time, and thus much is sown broad-cast even where the drill would in some respects be preferable.

Upon land which is foul, and especially on old grass-land, it is very important to drill the seed, as we thus secure an opportunity for destroying the weeds, which would otherwise materially injure the crop. After the seed is sown, the land should be well harrowed so as to cover the seed thoroughly. The use of the roller depends much on circumstances; if the ground has been ploughed late and is not in a favourable condition, the roller will be employed to reduce it to a fine tilth, but this will precede the sowing. As a general rule (and especially in the case of early sowings), the ground is better not rolled down smooth after the seed is deposited, but should be left rough from the harrow. This roughness will be attended with a double advantage; for it will protect the plant from the severity of the cold winds, and by the time these are passed and the oats are ready for rolling, these rough portions of the soil will be nicely mellowed, so that the crop will then be improved by the fresh soil as well as by the pressure. Upon some of our blowing sands this roughness of the surface is the chief protection to the crop. I have known the greater portion of a crops of oats blown off the ground, simply from the field having been rolled instead of being left rough from the harrow. Upon such land the seed must always be buried deeply—say, two inches, for this gives the plant a better opportunity for securing itself to the spot.

The quantity of seed will vary according to local requirements, but the variable character of the seed-oat in a great measure explains the difference in the quantity sown. As the oat degenerates in character, so it becomes longer and less plump than good seed; for this reason, inferior seed weighs less and numbers less to the bushel, than a sample of close and sound seed. Thus, whilst some use from ten pecks to three bushels, according to the time of sowing, others put on from four to five bushels of seed-oats to the acre. This difference cannot, however, be entirely traced to one cause; for when the climate is wet, and there is a great tendency to produce straw, a thick seeding favours the yield of corn.

PEAS.—The cultivation of peas is seldom practised as part of any regular rotation of crops, and they must rather be considered as a catch crop. The preparation will necessarily vary in detail, according to the preceding crop. A corn-stubble is more generally selected for this purpose, but a young clover-ley, on which the plant has partially failed, is by no means unfrequently used. The system of cultivation generally approved commences with cleaning the surface of the land in the autumn of the year, after which the farm-yard manure (if any is to be applied) is spread upon the land and ploughed in before winter. In this state it remains until the arrival of the seed-time in the spring. If the land during this interval has become close and adhesive, it receives another ploughing in the spring, immediately before the sowing of the seed; but this only becomes necessary in the stronger class of soils, upon which peas are not so frequently grown. The peas require a free and loose soil for its successful growth, and it is upon soils of this character that it is chiefly cul-

tivated. The land can scarcely be rendered too free for their growth, and hence soils which do not need to be ploughed a second time are improved by the use of the cultivator in the spring, unless the manure is thus brought to the surface, in which case a drag will be preferable. The seed-bed best suited for peas may therefore be described as a deeply-worked and well-cultivated soil, fine in texture, loose and free; the seed should therefore be sown when it is dry, so as not to prejudice the condition of the land.

The depth at which the seed should be sown will vary from two to three inches, according to the time of sowing and the nature of the land; the earliest sowings and the lightest lands having the seed deposited at the greatest depth. Drilling is, beyond question, the best mode of depositing the seed so as to allow of cultivation between the rows during growth. The plan of double rows, nine or ten inches apart, with an interval of 18 or 20 inches between them, is advisable because of the greater facility for cleaning the land and the greater support which the peas gain from the neighbouring row. Three bushels of seed to the acre is the usual quantity sown. The early sowings may be commenced in February upon dry and light soils, and be continued up to the middle or end of March, by which time the seed should all be in the ground.

BEANS.—This crop requires a soil of strong and adhesive character, as much for the supplies of food which it requires as for the mechanical qualities which such land offers to the plant. In this last respect beans do not differ materially from wheat; for a firm condition of the land appears in each case to be equally necessary, and our preparation for this crop is regulated accordingly. Beans are almost always sown upon a corn-stubble, and even in exceptional cases the treatment adopted is directed to the attainment of the same condition of soil. The practice of different districts necessarily varies much in detail, but the following system is that which is generally adopted, and may be taken as illustrative of the most suitable kind of management. The stubble should be cleaned in the autumn as well as circumstances will allow; the manure should then be spread upon the land, and the land ploughed up deeply and laid as rough as possible for the winter: in this state it lies until the seed-time has arrived. But some prefer to reserve the manure until it can be applied in a well-rotted state early in the spring, and then plough it in; but this does not suit the crop as well as the earlier use already described, especially on true bean-land. If the dung is ploughed in before winter, the land has time to become sufficiently settled before the time for sowing, whilst the manure below prevents it from becoming too consolidated for the plant to make a vigorous growth.

The bean flourishes best in a deep but strong soil, and the penetrating powers of its root are well adapted for extending into and through a firm soil; hence the great importance of the cultivated soil being well settled before the seed is deposited. This is secured by the early ploughing of the land, whilst the exposure of the surface makes it free and easily worked and secures a light covering for the seed, open to the influences of air and heat. When

the land is not prepared before winter, we often find the seed ploughed in without the furrow-slice being broken. Four bushels is an average allowance of seed for the drill, and the beans are thus deposited about three inches from the surface.

The practice of dibbling the seed is quite as general as the employment of the drill, and it has many advantages: one of these (besides the saving of seed) is the earlier sowing which it enables us to make upon the strong land ploughed up before winter; for such ground will often admit of hand-labour of this kind when it would suffer much from the working of a drill. Beans are dibbled and drilled at various widths from 9 to 27 inches, but I prefer double rows at the distance of 6 or 8 inches, with 20 or 24 inch intervals. This width between the rows is especially important if we consider the bean crop (as we ought) to be a fallow-crop. When the seed is sown, nothing more is required but to cover the seed, either by hand or by harrow; but after the beans are well above the ground the roller is serviceable, as it consolidates the soil and prepares the bean for an early commencement of the blossoming. This may be advantageously followed by the use of the horse-hoe and stirrers in the intervals, when the beans have sufficiently firm hold upon the land which is immediately beneath them. The time of sowing beans extends throughout February and March, but; as far as climate will allow, an early preparation, followed by an early sowing, will produce the most satisfactory results.

In the growth of winter beans the same objects should be aimed at. The ploughing of the land should be finished by the middle of September, and a month allowed for the ground to settle. The seed should be drilled as near the middle of October as possible, after due care has been taken to get the ground firm. It is want of firmness in the soil, and late sowing of winter-beans, that have prejudiced the minds of many against their more extended growth. A firm seed-bed is as important for the stability of the bean as we have seen it to be for the wheat crop, but this point is frequently overlooked. In sowing this variety of bean, the wider intervals are eventually necessary for the purpose of horse-hoeing.

GRASS and CLOVER SEEDS.—Under this head we may include both natural and artificial grasses. These seeds are small in size, and proportionately weak in their powers of growth; for which reason they require the greater care to secure their healthy germination. A depth and condition of soil which may be suitable for larger and more vigorous seeds is really destructive to their growth. Some experiments which have been reported* on the germination of seeds are so satisfactory and conclusive that I have introduced them here as they furnish us with decided evidence respecting the growth of seeds under highly favourable circumstances.

Column No. 1 shows the depths at which the largest number of seeds grew.

Column No. 2 shows the depths at which one-half of the seeds grew.

Column No. 3 shows the least depth at which none grew.

* Morton's "Encyclopedia of Agriculture," vol. i. p. 999.

Botanical Names.	Trivial Names.	No. 1.	No. 2.	No. 3.
<i>Agrostis stolonifera</i>	Florin grass	0 to $\frac{1}{4}$	$\frac{1}{2}$ to $\frac{3}{4}$	1
<i>Aira caespitosa</i>	Hair grass	0 to $\frac{1}{2}$	$\frac{1}{2}$ to 1	$2\frac{1}{4}$
<i>Alpecurus pratensis</i>	Meadow foxtail-grass	0 to $\frac{1}{2}$	1 to $1\frac{1}{4}$	$2\frac{1}{4}$
<i>Anthoxanthum odoratum</i>	Sweet-scented vernal-grass	0 to $\frac{1}{2}$	1 to $1\frac{1}{4}$	2
<i>Arrhatherum avenaceum</i>	Common oat-like grass.....	$\frac{1}{2}$ to $\frac{3}{4}$	$1\frac{1}{2}$ to $1\frac{3}{4}$	4
<i>Brachypodium sylvaticum</i>	Wood fescue-grass.....	0 to $\frac{1}{4}$	$\frac{1}{2}$ to $\frac{3}{4}$	2
<i>Dactylis glomerata</i>	Cocksfoot-grass.....	0 to $\frac{1}{4}$	$\frac{1}{2}$ to 1	$2\frac{1}{4}$
<i>Elymus arenarius</i>	Sea-sand lyme-grass.....	1 to $1\frac{1}{2}$	2 to $2\frac{1}{2}$	5
<i>Festuca duriuscula</i>	Hard fescue-grass	0 to $\frac{1}{4}$	$\frac{3}{4}$ to 1	$2\frac{1}{4}$
„ <i>elatior</i>	Tall meadow-grass	0 to $\frac{1}{4}$	1 to $1\frac{1}{4}$	$2\frac{1}{2}$
„ <i>elatior, gigantea</i>	Gigantic meadow-fescue	0 to $\frac{1}{4}$	$1\frac{1}{4}$ to $1\frac{1}{2}$	3
„ <i>heterophylla</i>	Various-leaved hard-fescue	0 to $\frac{1}{4}$	1 to $1\frac{1}{4}$	$2\frac{1}{4}$
„ <i>ovina</i>	Sheep's-fescue	0 to $\frac{1}{4}$	to 1	2
„ <i>pratensis</i>	Meadow-fescue	0 to $\frac{1}{2}$	to 1	$2\frac{1}{2}$
<i>Glyceria aquatica</i>	Reedy sweet water-grass	$\frac{1}{4}$ to $\frac{1}{2}$	to 1	$2\frac{1}{4}$
<i>Holcus lanatus</i>	Soft meadow-grass	$\frac{1}{4}$ to $\frac{1}{2}$	$\frac{3}{4}$ to 1	$2\frac{1}{2}$
<i>Lolium italicum</i>	Italian rye-grass.....	0 to $\frac{1}{4}$	1 to $1\frac{1}{4}$	$3\frac{1}{4}$
„ <i>perenne</i>	Perennial rye-grass	$\frac{1}{4}$ to $\frac{1}{2}$	$1\frac{1}{2}$ to $1\frac{3}{4}$	$3\frac{1}{2}$
<i>Phleum pratense</i>	Meadow cat's-tail	0 to $\frac{1}{4}$	to 1	2
<i>Poa nemoralis, sempervirens</i> ...	Evergreen wood meadow-grass ..	0 to $\frac{1}{4}$	$\frac{1}{2}$ to $1\frac{1}{2}$	1
„ <i>trivialis</i>	Rough-stalked meadow-grass ..	0 to $\frac{1}{4}$	$\frac{1}{2}$ to $1\frac{1}{2}$	$1\frac{1}{2}$
<i>Psamma arundinacea</i>	Sand-reed	$\frac{1}{2}$ to 1	1 to $1\frac{1}{4}$	4
<i>Achillea millefolium</i>	Yarrow	$\frac{1}{4}$ to $\frac{1}{2}$	$\frac{1}{2}$ to $1\frac{1}{4}$	$1\frac{1}{2}$
<i>Lotus corniculatus</i>	Bird's-foot trefoil	0 to $\frac{1}{4}$	$\frac{1}{2}$ to $1\frac{1}{2}$	$1\frac{1}{2}$
<i>Medicago lupulina</i>	Black medic or nonsuch	0 to $\frac{1}{4}$	to 1	$1\frac{1}{2}$
<i>Ornobrychio sativa</i>	Saintfoin	$\frac{3}{4}$ to 1	2 to $2\frac{1}{4}$	$4\frac{1}{4}$
<i>Plantago lanceolata</i>	Rib-grass	$\frac{1}{4}$ to $\frac{1}{2}$	$1\frac{1}{4}$ to $1\frac{1}{2}$	$2\frac{1}{2}$
<i>Poterium sanguisorba</i>	Common salad-burnet	$\frac{1}{2}$ to $\frac{3}{4}$	$1\frac{1}{2}$ to $1\frac{3}{4}$	4
<i>Trifolium filiforme</i>	Trifol.....	0 to $\frac{1}{4}$	$\frac{1}{4}$ to $1\frac{1}{2}$	$1\frac{1}{4}$
„ <i>hybridum</i>	Alsike clover	0 to $\frac{1}{4}$	to 2	$1\frac{1}{4}$
„ <i>pratense</i>	Common red clover	0 to $\frac{1}{2}$	$1\frac{1}{4}$ to $1\frac{1}{2}$	2
„ <i>pratense perenne</i>	Cow-grass	0 to $\frac{1}{2}$	$1\frac{1}{4}$ to $1\frac{1}{2}$	2
„ <i>repens</i>	White clover	0 to $\frac{1}{4}$	$\frac{1}{2}$ to $1\frac{1}{4}$	$1\frac{1}{2}$

The inference which may be fairly drawn from these results is, that seeds of this class should be laid as near the surface as possible, so that the covering of the soil shall be of the thinnest character. A slight covering, however, is desirable for the purpose of retaining moisture; for seed placed upon the surface is naturally subject to the drying influence of the air, which, after germination has commenced, may so check the growth as to prove destructive to its existence. In field-culture we cannot rely upon the germination of seeds which are uncovered, because we cannot regulate the supply of moisture; still we see that the depth of the covering has an important influence on the thickness of the plant, and must shape our proceedings accordingly. This explains the variations in the success attendant upon different modes of preparing for grass seeds.

As these seeds are usually sown with a corn-crop, the early preparation of the ground is carried on without regard to their special requirements. They are sometimes sown immediately after the corn is in the ground and the land has been well harrowed; but, unless in the case of a late sowing, this plan is objectionable, because they then sprout and show their tender leaves above the ground too soon, being exposed to injury by the cold nights at the end of April and beginning of May; also because the ground is then in too loose a condition to secure the seed from sinking too deeply into the

soil. If the soil has been worked to a very fine condition and is then rolled, the seed may be sown without much loss, a cross-rolling being sufficient to cover it when sown. This extra rolling, however, in case of much rain, might be very prejudicial to the growth of the seed-corn. As a general rule, it will be far better for the grass-seeds to be sown after the corn is well rooted in the ground; the soil will then become settled, and there will be less disposition to allow these small seeds to sink between the particles of the soil beyond the proper depth. The benefit of a slight covering in a great measure explains the greater thickness of the clover-plant when sown upon barley-land which has received extra tillage, and has thus been brought to a fine tilth, for the seed thus sown is well placed for immediate growth.

If the surface is at all crusted over, a very light harrowing should first be given; after this the seed may be sown and then rolled down. Should the surface be free and slightly rough, so as to crumble readily beneath the pressure of the foot, the seed may be sown without previous working and then rolled in; but in case the surface is judged to be too rough for this treatment, it must be rolled lightly, harrowed if necessary, and again rolled after the seeds are sown. A careful use of the roller is generally the best means for covering the seeds, but it must always be done whilst the ground is dry and works freely. Another great advantage

gained by sowing after the corn is up, is the shelter and protection given to the seeds and also to the young plants. A moderate degree of firmness in the soil beneath the seed is not objectionable, as the roots are powerful in piercing the soil, and a sufficient degree of freedom is usually possessed by land sown with spring-corn.

TURNIPS AND SWEDES.—Various as is the practice of different districts in preparing land for these crops, still all agree as to the condition of soil to be attained. These crops flourish on deep and free soils, and especially the turnip, which is far less calculated for strong land than the swede. Upon soils which are naturally strong and adhesive, by good cultivation and manure luxuriant crops are grown; but the great point still to be secured is that fineness and looseness in the condition of the soil which enables the roots of the plants to gather nourishment and make their growth. By ploughing the stronger class of soils before winter, and by active tillage in the spring of the year, these necessary conditions are secured, and thus the tenacious and adhesive qualities of many soils are, for a time at least, changed, and deep tilth is secured, well adapted for the extension of the roots in search of food and moisture. The lighter class of soils are brought into a proper mechanical condition with much less difficulty, so that, instead of the preparation having to be commenced before winter, it is often found desirable to grow a crop of spring feed upon the land, in the expectation that after it has been consumed, one or two ploughings will prove sufficient to prepare for the turnip-crop. It is by no means uncommon for the land to be prepared as if for being sown, fourteen or eighteen days in advance. The land in such cases is harrowed down fine and left in this condition, so that the seeds of any weeds may make a growth, which will be destroyed when the surface is moved in the sowing of the turnip-seed.

Respecting the cleanness of the land and its friable condition as a preparation for these crops, there will be scarcely any difference of opinion; but as regards the moisture of the land there will be considerable diversity observable; whilst some cultivators endeavour to get their soils as dry as possible, others regulate their proceedings so as best to preserve the moisture in the soil. Thus, in the practice just mentioned of working the land fine and leaving it undisturbed for a time, so that the seeds of weeds may sprout, some would plough the land up and let it dry for the reception of the seed, whilst others will be equally particular not to move it farther than by harrowing the surface, for fear of drying it.

It is not only in this particular instance that there is such contradictory practice, but it pervades all the preparation immediately preceding the sowing of the seed. I have had a fair share of experience in the growth of turnips and swedes, and have always found the dry seed-bed to be decidedly preferable. The cause is not difficult of explanation. When seed is deposited in a soil which has been properly cultivated and there is a moderate degree of moisture, it speedily germinates. The hot weather which we are accustomed to have at this time, causes a rapid growth, and the

young plant quickly appears above the surface; but the warmth which has thus far been productive of apparently good results has probably by this time robbed the soil of so much of its moisture that the supplies to the plant decrease at the most critical time of its existence, and unless rain falls the crop is lost; or if the turnip-beetle should commence an attack there is but little hope of the plant gaining a mastery. The case is very different when the seed is deposited in a dry soil: there it lies uninjured, waiting for rain, and does not begin to germinate until it gets it. The rains in June generally afford a tolerably liberal allowance of water when they do come, quite sufficient to carry the seed well through its first stages of growth, until it has a rough leaf and a strong root. The delay is immaterial as regards time, but not so as regards the safety of the crop. If the seed does germinate during those intervals of dry weather, *its existence is really dependent upon a timely supply of rain*; but so long as growth has not commenced no fear need be entertained for the crop. Dryness at the time of sowing becomes of greater importance as the land gets lighter in its nature and more easily dried by the heat of the sun.

The quantity of seed sown to the acre varies from 2 to 6 lbs., according to circumstances. One very frequent cause of failure is mixed seed, of which only a portion will grow. This is easily detected by growing a given number of seeds in a pan. When the seed is of good quality, an allowance of 4 lbs. per acre is ample, but not excessive; indeed, I consider that the risks which the plant runs in its early days render a decrease in the quantity of seed very poor economy, and this becomes evident when we consider how large an outlay is dependent upon the safety of the plant. A liberal supply of good seed gives a far better chance for some to escape the turnip-beetle, because unless it is a very wet season, it is more than probable that the seed will not all germinate at one time, and for this reason patience often does as much good as a second sowing of seed.

The drill is the best implement for turnip-sowing, and if artificial manure is applied at the same time, as is very desirable, the arrangement of our best drills for getting a layer of earth between the seed and manure is very important.

The ravages of the turnip-beetle render dibbling quite unsafe. The seed grows most satisfactorily when deposited about half or three-quarters of an inch beneath the surface: this is shallow enough for a safe growth without causing any unnecessary delay. After the seed has been sown, harrowing once is sufficient to leave the land in proper order, but rolling should in general be avoided. There is a greater variety of opinion as to the time of sowing swedes than any other root-crop. Early sowing, which is favourable—I might say essential—for some districts, is altogether unsuited to others. Thus, from early in May to the middle of July, swedes are being sown according to local opinions. The principal cause of this is the mildew, which the swedes suffer from if their growth experiences a sudden check; but, whilst local peculiarities do exist and exert their influence upon the time of sowing, yet I am bound to say that as the

system of cultivation is improved and the land is more thoroughly worked, the sowings may be made at an earlier date with far greater safety.

MANGOLD-WURZEL.—This root is better adapted for strong soils than the swede, and possesses greater powers of growth through a retentive soil than any of our root-crops. The looseness and friability of soil, which were necessary for the turnip and swede, are not necessary in this case except in a very reduced degree, and for this reason a course of preparation answers very well for the mangold which would not do for any other root. There are two modes of preparing for this crop. The one is a complete autumn preparation, so that the dung is ploughed in and the land ridged up for the seed before winter, whilst the other leaves the application of the manure and the tillage of the land to be finished in the spring. Each of these plans has its respective advantages.

The autumn preparation influences the mechanical condition of the land by exposing the surface of the land to the winter frosts, whereby it is crumbled into a fine and loose seed-bed, whilst the manure beneath prevents the soil from becoming too consolidated, with the additional advantage that you are ready to sow in good time, and can ensure that the land shall be in good condition for the seed even when other ground cannot be touched. The surface soil, which the winter has brought into such good order, generally retains its character, unless it is worked by some implement which smears and glazes the surface, but this must be carefully avoided. This autumn preparation is easily completed in unfavourable seasons by dibbling the seed by hand. If the spring weather is unpropitious, there is great difficulty in then completing the necessary preparations for sowing in good season, and especially in securing a nice fine covering for the seed, which is not the less essential, because at a later stage the roots luxuriate in a strong soil, such as cannot always be brought to a fine tilth by spring culture. On such soils this is often a great difficulty.

Early sowing is of great importance for this crop. The usual season is from the middle of April to the middle of May, and for the heavy crops we must not trust to late sowings. The growth of the seed may be promoted by steeping it in water for a few hours before it is planted. This will soften the skin and render germination more rapid. After this has been done, it should be kept moist until it be placed in the soil, and then be lightly covered by fine soil to the depth of from half to three-quarters of an inch. It is usual to run a light roller over the surface after the seed is sown, unless the soil is too moist to allow it to be done. The best mode of sowing the seed is by means of the hand-dibble, especially in the case of strong land, upon which it often enables an early sowing to be secured, when waiting for the drill would have made it late.

CARROTS AND PARSNIPS.—A deeply-cultivated soil is necessary for each of these roots, but they differ in the soils for which they are best adapted. The carrot flourishes best in a very loose and friable soil: the parsnip prefers stronger land, and can be successfully grown on soils which are too stiff for carrots. The best mode of cultivating them is after

another root-crop, as they require the land to be kept very free from weeds during their growth. When they follow a corn-crop particular care must be taken to have the land well cleaned in the autumn, and ploughed (if possible subsoiled also) before the winter. Thus the labour in the spring will be brought within moderate limits for securing that condition of soil which these crops require, viz., a deep and thoroughly-cultivated soil, with a fine surface; when this has been obtained we may consider that we have completed the necessary preparation.

Carrots should be sown early in April, and the parsnips early in March; for producing heavy crops the seeds must be sown in good time. The progress of the parsnip and carrot may be much favoured by mixing the seed with some damp sand a few days before it is to be sown, and laying it out shallow in a warm room. When this is not done, the carrot-seeds need other preparation, because they cling together so much; a good rubbing between the hands, followed by the admixture of as much as three bushels of ashes to the acre, is probably the best means for favouring its distribution on the land. When this precaution is taken, the seed can be very easily drilled, and this is by far the more frequent mode of sowing both these crops; but many prefer sowing both carrots and parsnips by hand, especially after germination has been encouraged. It is a very good plan to mix some corn with the seed, so as to indicate its position for the early guidance of the horse-hoe.

The seed is usually sown in drills, from 12 to 18 inches apart; and about 6lbs. of seed per acre, gives a sufficiently thick plant. It should not be buried more than three-quarters of an inch from the surface. When the sowing is completed, the land should be lightly harrowed, if corn has been mixed with the seed, but otherwise it will be better to roll the ground, so as not to destroy the drill-marks; but, if the land be at all adhesive, a light harrowing is preferable.

RAPE OR COLE.—The general requirements of this crop are similar to those of the turnip, and need not be repeated; but I may add to former remarks that the peculiar characteristics of some of our soils which are favourable for growth of rape, but not of turnips, arise from their composition rather than from their mechanical condition. The preparation necessary in each case is the same; but the time of sowing extends from April to September, according to the succession of food which may be required. The rapidity of growth varies much with the climate, richness of the land, and method of cultivation; but the sowings in April and May will generally be ready for feeding in August and sometimes in July, whilst the August and September sowings come in for spring use. As the principal demand for rape is in September and October, the corresponding seed-time is June and July; still the influence of climate will often render the growth slower, and necessitate an early sowing. From two to four quarts of seed per acre will be necessary, according to the suitability of the soil and climate, care being always taken to increase the allowance of seed as circumstances become unfavourable.

SPRING-FEED.—The crops which are usually sown for this purpose (with one exception, which I shall subsequently notice) all require a similar preparation to be given to the land for the reception of the seed, however varied may be the soils for which they are in a special degree adapted, and however this character of the soil and the succession of food required may influence the choice of the crop. They are sown upon the corn-stubble, and the class of soils selected for their growth are generally dry and free in their nature. Their growth upon strong soils is exceptional, and never to be recommended except in dry climates. After the corn is cut the cleaning of the surface should immediately commence, and, as soon as this is done, the land should be deeply ploughed (for we have to prepare for the succeeding root-crop as well as for the present one); after it has lain a few days the sowing of the earliest spring-feed may take place. Nothing further, besides rolling, will be required before the seed is sown, for these soils are not difficult of cultivation. Rye is one of the earliest crops for spring-food, and usually forms the first sowing. It is generally sown broadcast, at the rate of four bushels to the acre. The next sowing will be rye and vetches, or else winter oats and vetches mixed. For these the same preparation will be necessary. The usual allowance is one bushel of rye or oats and three bushels of vetches per acre, either sown broadcast or by the drill: thick sowing is always advisable for spring-crops. For these crops rather stronger land may be selected than for the rye, and they are also more likely to receive manure, as they require more nourishment from the land, and, if so, the roller will be necessary.

The sowings will be commenced in September, and continued at intervals to the end of October. Vetches may be sown about the middle of October, without any mixture; but they will not be ready for use as quickly as the mixed seeds. In these cases rolling will be found advisable, especially when the soil is not covered with a fine mould, which is very necessary for the growth of these seeds. It is also desirable, after the use of the drag, to give some pressure to the soil, as they do not thrive well when the ground is too loose; with rye this is not so material as with vetches. A dry time should be selected for sowing the seed, and after this the land should be left harrowed and not rolled.

FRENCH CLOVER OR TRIFOLIUM.—This plant is somewhat peculiar for the excessive firmness of soil required for its successful growth. It is usually sown after a corn-crop, and, for its culture, a clean stubble should be selected upon land which is tolerably stiff. If this is twice harrowed it will produce soil enough to cover the seed, and this seems to be all that is requisite except a light rolling. This may appear to be a slovenly mode of farming; but it is decidedly the best plan, for, when the stubble is pared and the land cleaned, and especially if it should be ploughed, the trifolium will not thrive so well. As regards the appearance of the stubble, provided a clean stubble be chosen, no doubt need be entertained that successful practice will justify from every charge of neglect, when

in the spring the stubble disappears amidst the luxuriant growth of the clover. About 20lbs. sown broadcast will be found a sufficient quantity of seed to the acre. When the soil has been loosened more than by moderate harrowing, the roller must precede the sowing, otherwise much of it will run down into the soil too deeply for germination, and a thin plant will be the consequence.

I have thus noticed the special requirements of each of our principal agricultural crops, so far as regards the mechanical condition of the land, and other circumstances connected with the successful germination of seed. So far as my limits have allowed me, I have endeavoured to show the chief variations in practice; but it must be remarked that local peculiarities of soil and climate will occasion exceptions from these general rules in minor points of management, which are still of the greatest importance for obtaining a successful growth. I do not, therefore, pretend to say that the conditions named will be *invariably* applicable; but, from a rather extended experience, I have reason to consider that they represent the most successful systems of management.—Queen's College, Birmingham.—Journal of the Royal Agricultural Society.

UNDER THE ORCHARD TREES.

Under the orchard trees,
 In Summer's golden prime,
 When skies were blue, and hearts were true—
 Oh! 'twas a merry time.
 Such merry songs were sung,
 Such merry games were played;
 Light-hearted and gay through the live-long day,
 We romped in the cooling shade,
 Or sat on a moss-grown stone,
 Watching the butterflies pass,
 And the gay sunlight in patches bright
 Fall on the dewy grass.
 How pleasantly murmured the breeze
 Through the old apple trees!
 And the brook sang as it hastened along,
 On its way to the distant seas.

Under the orchard trees,
 In those days of long ago,
 Chasing about, now in, now out,
 Amid the branches low;
 And when through the trembling leaves,
 Down in a shower of white
 Came the snowy bloom with its sweet perfume,
 How we shouted in pure delight!
 Then away down the sunny slope,
 To the side of the little brook;
 For well we knew there the violets grew,
 And hid in a shady nook.
 Oh! dearer by far than gold,
 Or mines of wealth untold,
 Is the memory of those hours of glee,
 In the pure happy days of old.

NOTES ON MEADOWS AND PASTURES.

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In our last number we sketched out a kind of classification of the weeds which prevail in pasture, which was made dependent rather upon the influence which interlopers to the meadow exercise upon the crop whether of hay or pasturage, than upon the natural affinities of the plants themselves, and we now venture to remark upon the five classes as there laid down, and in doing so we shall offer lists in each category, which it should be stated are not meant to be complete as embracing them all, but only as containing the more prominent species.

1st. *Plants which are Weeds in Pastures, without adding to the Crop either of Grass or Hay.*—There are few pastures without a varied selection of specimens, which have this effect, which is produced in two different ways: first, by plants which grow so flat on the ground that the scythe does not touch them; and secondly, that by reason of their early growth and short existence they are dead before hay-making. These are clearly indicated in the following:

TABLE I.—PLANTS WHICH TAKE UP SPACES, BUT YIELD NO PRODUCE.

<i>Botanical Name.</i>	<i>Trivial Name.</i>	<i>Remarks.</i>
<i>Plantago media</i> ...	Broad-leaved plantain.	The leaves of these grow too close to the ground to be eaten off by cattle or becut by the scythe.
<i>Leontodon taraxacum</i>	Deua de Leon.....	
<i>Bellis perennis</i>	Daisy.....	
<i>Primula veris</i> ..	Cowslip.....	These take up room in growing, are not eaten by cattle, and being dead before hay-making add little or nothing to the rick.
<i>P. vulgaris</i>	Primrose.....	
<i>Orchis morio</i> ..	Green-winged orchis..	
<i>O. mascula</i> ...	Early purple orchis..	

In remarking upon the influence which the plants of this list have upon pasture, it may be premised that each species has its own peculiar history, which we must indicate rather than fill up, as thus. We have just been examining a pasture on the Forest marble clay, full of the three first species of the above list. Of the plantain we made out as many as twenty-five roots in the square yard, varying from 2 to 6 inches across; we removed them, and bare patches to the extent of a quarter of the surface was the result. Of the dandelion we have as many as six tufts in the square yard, each more than half-a-foot across: we remove them, and in so doing have sown some hundreds of flying seeds over the rest of this field, or sent them to our neighbour. And now for the "wee modest crimson-tipped flower," looking so bright with its silvery stars dotting the green

field; surely this is not a weed? Alas! yes, "all is not gold that glitters," or silver that is bright, and on the spot where the daisy is growing a grass root is not, and we have just stepped out to look at a meadow half daisies. However, as regards these three plants, there is no doubt that the two first are the most mischievous, and the question of how to keep plantains and dandelions out of the pastures, and still more out of lawns, is one worth more attention than has yet been given to it. With respect to the plantain, we know of no better method than absolutely cutting them up with a common knife, and dropping a bit of salt in each hole, as without this they sprout up again from any part of the old crown that might be left in. Mr. Bailey Denton invented an implement for this kind of weed destruction, which would eject a caustic fluid as it cut up the plants, and he named it the "scorpion spud." We should, however, conceive that the knife, as recommended, would be sufficiently simple, and though it would appear to be an onerous and expensive matter, yet we have found that a boy can easily clean pastures very foul with plantain, (and dandelions should be removed at the same time, and in like manner) at one shilling an acre, a cost which would be amply covered by the first hay crop, for it would indeed be a comparatively small admixture of plantain that did not take up the space that would grow a hundred weight of hay, to say nothing of the pasturages. As regards seeds for laying down permanent pasture, care should always be exercised to prevent this plant from being sown, as a few seeds will soon stock the ground; for as the new pasture is left pretty much to itself, for some two or three years the plantains increase very rapidly, when it is considered that a single root may in one year produce from three to six thousand seeds. From the closeness with which the *Plantago media* grows to the soil, only a few leaves are cut with the scythe, and hence it may be said to add nothing of importance to the rick; the other species, *P. lanceolata*, has a more upright habit, and does contribute slightly to the bulk, but still of matter far inferior to grasses; and both, if they are cut, are objectionable, as taking so long in drying; a crop of hay which would otherwise be made is thus often jeopardized, as, unless care be taken to have the plantains thoroughly dry, they may cause the firing of the rick, and it is from this circumstance that the plantain is popularly called "fire grass." Care should be taken to prevent the seeding of dandelions in way-sides and waste places—a matter of some importance when we consider that each flower head may produce as many as 170 seeds, and we have seen as many as twelve heads to a single root at one time, and they keep on forming for several months; it is indeed of consequence always to prevent weeds seeding if possible, and such

figures as we here present shows the great significance of the old saw :

“ One year's seeding
Seven years' weeding.”

The rest of the plants of the foregoing table mostly die out before grass cutting ; but still, as they grow with the grasses at the most critical time, as far as yield is concerned, they naturally take up space, to its hindrance ; they are, besides, evidence of poverty, but fortunately they are all of that kind which can only exist in bad grass farming. Cultivate on proper principles, a meadow in which they occur, and the amount of success will be indicated by their more or less rapid decrease.

2nd. *Plants which, though innocuous, yet take up space, and so dilute the Quality of the Hay, and injure the Productiveness of the Pasturage.*—This offers a somewhat large list, as all the plants found in pastures, which have a tall growth, and have neither spines nor other mechanical hindrances, nor any poisonous qualities, must be ranged under this head. These are injurious simply because they take up space which might be better appropriated to the growth of grass or some nutritious herbage ; for, though these have no qualities to cause them to be eaten by cattle, so in the hay they do not nourish, but simply dilute the bulk. Some of these are arranged in

TABLE II.—PLANTS WHICH TAKE UP SPACE, AND SIMPLY DILUTE THE HAY.

Botanical Name.	Trivial Name.	Remarks.
Rumex obtusifolius	Blunt-leaved dock.	All three rather common meadow plants, especially in damp places.
„ crispus...	Crisp-leaved dock.	
„ palustris ..	Marsh dock	
Arcetium lappa...	Burdock	The borders of fields.
Petusites vulgaris..	Butter burr.....	By the side of water-courses.
Hea:acleum sphondylium	Cow parsnip	These two umbelliferae are very common, & most unsightly.
Anthriscus vulgaris	Wild beaked parsley	
Cardamine pratensis	Ladies'-smock....	In wet meadows.
Rhinanthus Crista Galli	Common yellow rattle	In very poor meadows.
The several Composite	The Hawkweeds & others	Everywhere.

These, though only offered by way of examples, yet in themselves make up a formidable list of plants injurious to the pasture. Their large leaves and tall stems (in most) take up much room, to the injury of the grass ; and though it is quite true that they go far in making up weight in the trusses of hay, yet the hay will always be of an inferior description : and in fields where plants of this character prevail we shall often have a good pasturage for cattle—that is, the animals will get on well on the *grasses*, of which only they will partake ; and then one is too apt to be astonished that good feeding meadows should yield a poor hay ; but the truth is that hay, with a fourth of its bulk and weight of these objectionable plants, is diluted to that extent by rubbish in plants of no feeding qualities, and well in-

deed is it, if they do not many of them contain positively injurious principles.

How, then, are we to get rid of these pests ? The simplest answer, with regard to the docks and umbelliferae, will be—Let them get tolerably strong in their stalks, and then take the opportunity, when the ground is soft, to pull them out of the land. They must not be mown, as in this way small branches, or buds that will make branches, will seed before the summer is over ; and then fifty new plants will appear, for one old one that we have destroyed : but by pulling, we take out the crown, and usually enough root to destroy it.

But now, as regards pulling docks when the flower has advanced, it is but right to caution the farmer against the practice of putting them in a corner of the field, out of the way ; for the thick, succulent roots will have sufficient vitality, and especially if kept moist by companionship, to ripen a great portion of the seed ; and then birds or winds, or some other cause, will spread them over the field. With weeds they are never safe, until they are burnt. Even their rotting is an uncertain process, as all may witness who will observe the hosts of weeds that will spring from the top of a manure-heap, or that will at once come up where a manure-heap has been, or indeed that immediately spring up in any place where a dressing of manure has been applied. We have several times noticed, where the seeds of black mustard and charlock have been consigned to the manure-heap, that these plants were thick enough for a crop to the extent, where such manure had been spread.

The butter-burr is soon destroyed by preventing its leaves from growing, which may be done by pulling or cutting, and especially if the field be drained as a preliminary process. Drainage, too, will destroy the ladies'-smocks. We have seen them disappear in one year by this process.

The yellow rattle is to be killed by whatever will tend to fertility ; for it is itself an evidence that little grass is destroyed where it grows, as, indeed, it will usually be found in soils too poor to yield anything like a good herbage.

It is, then, in this way that the plants other than grasses, which occur in our pastures, are evidences of what the pasture requires. One points to wet, another to drought, and a third to poverty ; and well would it be if our farmers would but study their habits. Nay, even grasses themselves teach us the same lessons ; for many of the species and their allies should be put in the category of those just adverted to, as they, adding to the risk but not to the quality, indeed only assist in the dilution of the hay. Such are the sedges, and the coarse grasses which will always be found in their company. Both are indications of wet and poverty ; and both will be made to give way to the better sorts, with careful cultivation. Hence, then, we see that much is to be done in the cultivation of meadow ; and, if we only know how to read the lesson the meadow-plants can teach us, they will be our best instructors as to the processes we should call to our aid.

LAND DRAINAGE AND OUTFALLS.

SIR,—As the season for the county agricultural meetings is commenced, and county members are looking about them for topics to speak upon, allow me the opportunity of suggesting a theme which may save them from the necessity of touching upon forbidden political matters. The object I am about to suggest is not, it is true, so seductive as the forbidden ones; but, as it has considerable bearing upon the first steps in agricultural advancement, and concerns nearly every landed proprietor in the kingdom, it is possible it may find some advocates who will not be daunted by its magnitude and difficulties. I refer to the crying necessity for a general measure for the improvement of outfalls. Last year at this time several popular speakers endeavoured to amuse the tenant-farmers who assembled to hear their speeches, by declaring that the drought which then prevailed in the Midland and Eastern Counties was the result of the over-drainage of England! and they elicited a cheer by this direct evidence of what they were pleased to call, with a sneer, the “misapplication of science to agriculture.” One year has sufficed to show how shortsighted such observations were. It is impossible, in fact, to conceive a more perfect answer than the frequent rains of the last twelve months have given to that piece of after-dinner philosophy. It would not be surprising to find these same speakers, this autumn, pointing out the insufficiency of the drainage they before ridiculed, and gaining even more emphatic cheers from their audience by reversing their former declarations. And in doing so they would be very much nearer the facts; for, in truth, the frequent rains of the past summer have served to exhibit results which earnest students of scientific facts will do well to study.

The drought of the summer of 1859 was the result of a comparatively dry summer succeeding a winter (October to March, inclusive) in which only 6½ inches of rain fell in the Midland and Eastern Counties, the rainfall of the 12 months ending June 30, 1859, closely approximating 21 inches (taking the mean of the Midland and Eastern Counties). How different has been the state of things in the 12 months ending the 30th of June, 1860! The fall of rain during the last winter (1859-60) was nearly double that of 1858-59—viz., 12 inches; and the total rainfall of the year ending June 30 last will be found to exceed 33 inches; and as Nature is a sure pay-mistress, she will not be satisfied till the balance of former years is struck. The past summer has shown with unmistakable decision the immense advantage of under-draining the cold, retentive clays of which this country has so large a proportion. Undrained lands of this description have produced crops which are literally not worth harvesting, if they are ever in a state to be carried; whereas lands of precisely the same nature, but which have been drained, have produced some of the best wheat and beans, and have allowed of the wheat crops being already cut and carried, and, in some cases, thrashed and sold. I know of several instances in which the difference in value of this year's produce of the same land, drained and undrained, would pay the whole cost of draining.

But however great the simple difference between drained and undrained lands, that difference has been greatly increased where the land has been deeply cultivated and the furrows got rid of. Where the furrows have been retained,

the water has been occasionally seen in the growing crops, even on some of the best drained lands where the natural form of the ground leads to its collection at particular spots; but where steam cultivation, or conviction of mind, has led to the flattening of the surface, no such evil has existed. The past summer has also proved with equal clearness, though not with the same difference in value of the crops produced, the superiority of deep over shallow drainage. In one particular case which I have examined, the difference was as much as two to one in quantity in favour of the former, and as much as a week or ten days in point of time; and having myself 100 acres of corn now standing in the field with every prospect of being spoiled, I can speak feelingly on the advantage of a week's advance at harvest. There can be but little doubt that the superiority of deeper drainage in the earlier ripening of the corn is due to the higher temperature of the soil as the depth is increased, and which at 4 feet is found to be 2 degs. higher than in undrained land at 2 feet.

I do not make these remarks to provoke discussion upon the oft-disputed point, *the proper depth for under-drainage*, but to draw attention to the data afforded in the present season for determining the nature and extent of a measure so long promised, and daily becoming more and more required, for the improvement of outfalls. The floods that have covered the valleys and silted the grass, and spoiled thousands of acres of meadow hay, have given self-evident proofs of the necessity of remedial measures with respect to the main arteries. By the various unconnected works of under-draining already executed which form but a very small proportion of what will some day represent the drainage of this country, vent has been given to pent up waters previously dispersed by dribbles and evaporation. They have converted bogs and beds of free soil, in which water stagnated, into filters of rapid action, and have compelled tenacious clays to let go their hold of water, which had hitherto been claimed solely by the atmosphere. These waters of drainage have been got rid of regardless of the fact that water set free from above commits injury below, unless it is securely guided to its ultimate discharge; and thus it is that under-drainage, at certain seasons of the year, has augmented the floods in particular valleys, and will continue to augment them still more, as the practice (which may be said to be only commenced) extends.

But I do not desire to occupy your space at this moment by dwelling upon this branch of the subject. I prefer confining my observations to the obstacles we have to contend with, in under-drainage itself, from the want of effective outfalls where no engineering difficulties present themselves, but where the rights of interposing private property, and the weakness of the law with respect to existing public ditches, impose a positive veto to sound and creditable works. In Lombardy, where irrigation is carried to perfection, every irrigator has the right to bring water through the property of his neighbour upon payment of due compensation. In England, where we talk of drainage as the foundation of our superior agriculture, we cannot convey the water of drainage to the natural outfalls, if the land of an objecting landowner intervenes; nor can we deepen or straighten a public water-course passing through a neigh-

bour's property, nor can ninety-nine proprietors desirous to improve an unprofitable unhealthy marsh, effect their object if one negative voice is raised. Ought we not to have some general and facile means of overcoming such patent evils as these? It may be the opinion of many that each evil should command its own remedy, and that a special act of Parliament should be obtained for each bit of district drainage and each separate outfall; but those who have had to pay for such acts, and those who have tested the practical difficulties resulting from the incompetent character of the tribunals before whom such measures are brought, will agree with me that confusion will only become worse confounded if we be left to such remedy.

The statistics of the cost of Parliamentary proceedings

in the matter of drainage are not inviting. The cost of the Norfolk Estuary Acts was £40,112 10s., while Messrs. Peto and Betts' contract for the works was £142,000! The cost of the Neve Valley Drainage Acts has been £30,083 0s. 10d.; the extent of land proposed to be benefited is 16,000 acres; so that nearly £2 per acre has been expended in Parliamentary proceedings alone. The average cost of under-draining is £5 per acre, as it is executed under the Drainage Commission, the administration of which does not exceed 2s. per acre—a cost it will be well to compare with the Parliamentary expenses I have quoted, when it is considered *how* the remedy is to be applied.

J. BAILEY DENTON.

Woodfield, Stevenage, Sept. 24th, 1860.

W H E A T S O W I N G .

PREVENTION OF SLUG DEPREDATION—ROOTING OF CEREALS.

In the case of moist autumns, absence of frost, and consequent generation of myriads of slugs (the small grey snail), much damage has occurred by their eating out the bursting eye or developing germ of the sown wheat, or cutting the braid at the surface of the ground. More than fifty years ago, in a moist autumn, I caused a cart-load of powdered quick-lime to be spread thin from the cart across the middle of a newly-sown wheat field after the harrowing was completed—the wheat having been sown after a crop of peas and beans. During the winter the limed portion appeared a broad green balk across a grey field, and in the spring there were more than three plants in the limed portion for one in the unlimed. Since that time I have repeatedly given, with marked success, from four to ten bolls per acre (six bolls of unslacked lime being about a ton) to my autumn-sown wheat after legumes, in moist autumns. It is well known that a very little quick-lime thrown into streams or pools kills the fish, and the first shower after application of the lime, forming lime-water and pervading the ground, kills the slugs. Besides, the lime so applied is useful as a manure or stimulus to the crop, and is the best or only known preservative from blight. I may mention here, that what is termed pickling the seed with lime or blue-stone does not prevent slug-depredation. We also find that lime thus exposed on the surface (not mixed with the soil, except in the small dissolved portion) is the best mode of application. The quick hydrate of lime in considerable quantity mixed with the soil, in the case of sown wheat, is often injurious. In the highly new-limed field, where the braid appeared sickly and stunted, I have dug up the plants, and found the roots brown and shrunk up, or turned in, like the contracted toes of a dead or dying crow, the contraction of the rootlets being caused by the acrid hydrate. After exposure for a year on the surface of the ground, the lime, by extracting carbonic acid, &c., from the atmosphere, becomes a mild manuring carbonate. When the roots are thus contracted by the corrosive hydrate, the plant is the more easily thrown out by the winter frost, or becomes so weak and sickly in spring as to be killed by the dry frosty winds. Perhaps, in no case should lime in the caustic hydrate state be mixed with the soil, except where peat or other effete carbonic matter abounds.

The process of primary and secondary rooting in cereals, I am sorry to say, is not generally known to farmers. In the germination of wheat and other cereals the primary root, or radicle, pushes downwards, and serves, along with the seed

itself, to nourish the plant in the first stage of its upward growth. This, however, is only a provisional supply. The primary root soon decays, the seed-supply of nourishment is exhausted, and what is termed the navel-string rots away; while, however deep the seed and primary root may have been, a knot is formed at the surface of the ground, and new or secondary roots, sideward and downward, strike out from this knot, penetrating the soil like radii from a centre, but endowed with a discriminating instinct to push out strongest in the direction of the most nutritive food-supply, and in the larger, or tree-vegetation, mechanically, in preference to the windward side.* It is when in cold, unpropitious weather, the secondary rooting lingers, and is but imperfectly developed, and the primary dying, or becoming weak, before the secondary are well established, that danger to the plant by throwing out, or dry frost-nip, is most to be apprehended. In the case of throwing out, the frost fixes the plant at the surface of the ground to the surface-earth, and the expansion by freezing, and in many soils the much greater expansion caused by the open honeycomb freezing-arrangement of the earth below the surface, upheaving the surface-earth with the stem of the plant fixed in it, pulls up the primary root, or fractures the navel-string, before the secondary rooting is sufficiently developed. Of course, by repeated frosts and thaws, the damage is greatly increased. It follows that in ground disposed to throw the plant, it is better to sow a little early or late—either that the secondary roots may be well developed before the winter sets in, or the navel-string young and strong enough not to be easily fractured: the latter is to be preferred. Consolidating the ground well by treading, rolling, or by pressing, in soils disposed to throw the plant, is advantageous. More than fifty years ago, before the invention of a pressing-machine, I have kneaded the sown fallow-wheat with horses, and, previous to sowing, driven a half-loaded cart over all the ground, making the wheel-pressed roots about nine inches separate. This was after summer-fallow, when the soil was dry, loose, and very friable.

PATRICK MATTHEW.

Gourdie Hill, Carse of Gowrie, Oct. 10, 1860.

* This surface-rooting is a general law, though sometimes departed from exceptionally where the earth has been deep dug, and lying very loose in large clods, so as to be much permeated by the air; where, indeed, the plant could not well discriminate where the surface of the earth was. I have found it here form a plurality of knots and root-centres downwards.

THE DINNER OF THE SOCIETY.

It has been an annual duty with us, for some years past, to protest against the way in which time is cut to waste at the dinners of our different Agricultural Associations. How the real business of the meeting is carefully kept at arm's-length till "you have 'cheered the chairman'—and 'the county members'—and 'the town members'—and 'the town council'—and 'the dean and the clergy'—and 'the railways'—and 'the turnpike trusts'—and 'the canal companies'—and the hundred and one similar ceremonies which seem inseparable from such an occasion." It was only last week, as we instanced at Bedford, that we sat down to an entertainment comprising five-and-twenty toasts and five-and-forty speeches, not half of which had any reference whatever to farming or farmers. Or if they had, such coarse fare was, as usual, politely kept back until the company, having been duly surfeited with lords and commoners, had neither stomach nor patience for more. The committee, indeed, would appear to have got into a conventional round there is now really no breaking through. But it shall not be for the lack of knowing better. A smart little volume recently published by Ridgway, of Piccadilly, abounds in the quaintest and boldest of HINTS TO LANDLORDS, TENANTS, AND LABOURERS. Cut into short chapters and short sentences, full of maxims and modern instances, the author tells the world how he tried to turn a bad estate into a good one, and how far he has succeeded. Mr. Finney himself is, we believe, a banker by profession, so that he had the first great item in the requirements of modern agriculture at his command. But it is not our purpose here to inquire with how much judgment he may have employed such an aid, but rather to show the vigour and raciness of his style in attacking an evil, or perhaps more properly, an absurdity we have ourselves had so often to complain of. It is with bitter experience that we say, nothing can exceed the tedium of the majority of these rural feastings, when the better part of the evening is devoted to "the customary toasts," and we have just at last "one half-penny worth of bread to this intolerable deal of sack." Mr. Finney would reform it altogether. Let him speak for himself:—

I think it not inappropriate here to say a few words on the local agricultural shows and their dinners, or rather the speeches after the dinners. The main object of these societies seems to me to be to encourage competition in producing the best article, either as stock or crops, without the least regard to the cost. Nothing to me can be more ridiculous than to place the produce, either of roots or corn, of a man who holds the best description of land to grow such articles, with a man whose land is either of the poorest, or most tenacious quality, and not at all adapted to grow such articles without much labour and cost. Again, a man who grows only four or five acres to be allowed to compete with a man who grows forty, fifty, sixty, or a hundred acres, wherein it is not possible to nurse this quantity of ground as you can the four or five acres; surely

there can be no sense in this. According to my opinion, what we all desire, and ought to strive for, is the greatest quantity, combined with quality, for the least money. To do this the land on which the crops grow should be classed as well as the crops, and let each man compete with the like ground. The quality of the land, the entire expense of cultivation, as well as quantity, should be taken into consideration. The argument against this is the expense; then, I say, if you cannot do a thing well, do not do it all. I am quite sure it would pay the landlords to subscribe liberally to carry out this plan. With respect to the stock, this seems to me more foolish than the awards on the crops. A man in the locality can purchase an ox one Christmas, give £30 or £40 for it, put it in an attic, and show it for a prize the next Christmas. Much should I like to be enlightened on the benefit this man does to agriculture. He competes with men who toil and expend their money, and this attic gentleman takes the prize. In this, as in the crops, the true benefit to society at large is the greatest quantity, combined with quality, for the least money, and not the animal that produces the greatest waste both to the butcher and consumer, but more especially to the latter. The subscribers would do well to themselves, and to the community at large, to insist upon the owner of every animal sent to the show to compete for a prize, ticketing the animal with the particulars of breed, or purchase, and food consumed. If bred by the exhibitor, the age and entire cost of the animal should be specified; if purchased, the cost and date of purchase, and the consumption. This would not only encourage the breed of stock, but show the necessity of combining quantity, for the price. By several farmers, to whom I have suggested this, I have been met with the following reply, but I feel almost ashamed to write it, it casts such a heavy reflection on the farmers as a class; the reply to my suggestion is, "That you will never get the truth." Surely the farmers cannot be so ignorant as not to be able to keep such accounts, or so dishonest as to compete under false colours with any one, but more especially with their neighbours, with whom they are in almost daily communication. This reply, most assuredly, implies that it would arise either from ignorance or dishonesty. Now, I do not believe it for a moment, but if such a black sheep were found let him be disqualified for ever showing again, and looked upon as a man with whom no fair dealings could be had. As to the speeches after dinner, they, to me, seem so misplaced, and so ridiculous to the purpose of the day, that I cannot help making a few remarks and suggestions on them. The principal toasts of the evening now are, the Queen, the Royal Family, the Army and Navy, the Bishop, the County Members, the Borough Members, and the like, which are, with the exception of the Queen and Royal Family, all rubbish to the purpose of the day. I should think the *Landlord* and *Tenant* much more appropriate than the Army and Navy; the *Schoolmaster* than the Bishop; the *Chemist* than the County Members; the *Botanist* than the Borough Members. Most certainly those drunk now are foreign to the purpose of the day, and only open a field for political subjects, which are the last subjects that should be introduced at an agricultural dinner: they only create a bad feeling, and are most certainly no information to the farmer. The

real object of these societies ought to be, to produce the greatest amount of corn, roots, and meat at the least cost : to produce anything at a cost beyond its value is, to me, the height of folly. These societies should be for the instruction of the farmer; and who better can do this, at these dinners, than the men who gain the various prizes? Under this impression, I will just throw down a few toasts for an agricultural dinner:

1st.—“The Queen and Royal Family.”

2nd.—“Success to the Association.”

This toast should be given to a man who would base his speech on the advantages of such societies:

3rd.—“The Secretary.”

It would be his duty to introduce the rise and progress of the society, and the advantages that have been derived from it, with its future prospects and success.

4th.—“The Health of the Judges.”

Which should be replied to in dilating on the various articles and stock that have obtained prizes; and they should point out any improvement that might benefit the locality.

5th.—“The First Prize for the Best Ox.”

The gainer of this prize should reply to this toast, giving every particular of the ox and the food consumed, with his opinion of the best sort of ox to fat, and best description of food, and the best way of giving it, so that the most meat may be obtained for the least money.

6th.—“The First Prize for the Best Horse.”

The gainer should reply with every particular relating to the horse, and his opinion of the best description of horse for the various descriptions of soil.

7th.—“The First Prize for the Best Pen of Sheep.”

This should be replied to in the same way as the ox.

8th.—“The First Prize for the Best Pig.”

This should be replied to in the same way as the ox and sheep.

9th.—“The First Prize for the Best Roots.”

Here is a wide field for the gainer of this prize to enlarge on the best description of root to grow, the best sort of that description, the best sort of land to grow it on, the best way to feed it, the best system of cultivating the land for it, that description of food that will grow the best quality, the best time for sowing, the best time of year for the plant to gain the most saccharine matter, and the best way and time of storing them.

10th.—“The First Prize for the Best Sack of Wheat.”

11th.—“The First Prize for the Best Sack of Barley.”

12th.—“The First Prize for the Best Sack of Oats.”

These three to be replied to in a similar way to the roots.

13.—“The Chairman.”

He says what he likes, but by so doing does not waste the evening.

I think, by adopting a rule, or course, such as the above, you would much enlarge the societies, and many more farmers would rally round them, and give greater attention to their business, because they would then have the desired information thrown down before them; besides which, they are a class of men who are particularly tenacious about receiving information from any but their own body, consequently every encouragement should be given to bring their *own light* out. The upper classes should be more liberal with their subscriptions, and not quite so profuse with their speeches, and give greater inducements for the farmers to compete one with another, in giving the best information on every bearing of agriculture.

At the dinner of the Worcestershire Agricultural Society on Wednesday, Oct. 3, Sir John Pakington addressed himself to the same point. It is seldom we have seen anything more admirably put, and we quote his speech as a model for other county members. Surely the Agricultural Dinner can no longer continue to be carried out on the absurd system which has so long and so generally characterized its conduct:—

“He rather lent to the opinion that these societies were tending somewhat to too much speech-making. He was happy to say that these agricultural associations were becoming very general, but one result of their so becoming general was that it really appeared that a part of the agricultural produce of the country was a large annual crop of speeches. Of course this crop varied a good deal in quality. He would not say that the crop contained a good deal of ‘chaff’ (laughter); but, no doubt, it was adapted to different markets. One of the rules of these societies was that politics should be avoided in their discussion. The rule was no doubt an excellent one, but unluckily the practice was all the other way. He trusted the rule was better than the practice. He did not approve the practice of introducing politics at these meetings. But still there might be subjects political in their nature to which it would be almost wrong if they did not refer. The object of members of Parliament attending these meetings should be not to court constituencies, but to pay their respects to that mother earth from which they endeavoured to extract as much as they could. His right hon. friend Mr. Disraeli had set a wise example in this respect, in his own county of Bucks, where he had addressed an agricultural meeting without touching on politics, and he (Sir John) could wish that those who drew up the lists of toasts at these meetings would not give the members of Parliament for the district so conspicuous a position in these lists. Their object at these meetings should be to disseminate agricultural knowledge. He knew there were some parts of Worcestershire in which they might see some very good farming, but let them face the truth, and they must admit that that was not the general character of Worcestershire farming. They did not stand high in agriculture in Worcestershire, and their first object should be to communicate knowledge to each other, and so to turn the agricultural associations to real practical objects. He would say that for his part he would rather hear one good practical speech on farming from a practical farmer than he would listen to the best political speech that a member of Parliament could give them.”

THE POTATO DISEASE.—A correspondent of the *Bristol Times* draws attention to a method employed in Russia to prevent the potato disease. Professor Bollman, of St. Petersburg, planted some potatoes which had been accidentally dried near a stove, till they were so greatly shrivelled that it was thought they would be quite useless for seed. They grew, however; and whilst all the other potatoes in the neighbourhood were very much diseased, these remained sound. The Professor afterwards adopted the principle of drying his seed potatoes at a high temperature, and the plan has never failed. His example was followed by various other persons with the same success; and on many estates drying-houses have now been built to carry on the process. It is said that the progress of the disease on potatoes partially attacked is completely checked by the heat. The experiment is very simple, and it has this advantage, it may be tested without any serious amount of trouble or loss.

THE NEW YORK GRAIN TRADE.

The New York Corn Exchange is the Mark-lane of the United States. It is not the stately London building, but a capacious street-floor, fronting Broad-street and South-street, and accessible from several doors. Unless pointed out to the stranger, it would inevitably be passed by unobserved. Internally, it is equally unattractive. There are no stalls at which the leading members of the trade preside; and glanced at from the street, a miscellaneous crowd, such as that at the Royal Exchange at four o'clock, is alone visible. A closer inspection shows that the provision dealers form one extreme portion of the crowd, the dealers in grain the centre, and the dealers in flour the other extreme. The flour dealers are examining samples in small green boxes, or mixing small quantities of flour with water, and testing the strength and colour of the dough. The grain dealers are handling and chewing and scattering wheat and corn upon the floor from small cotton bags taken from the pocket; and the provision dealers, having no samples, do their business by unassisted conversation. In one part of the room the English and American and Canadian newspapers, devoted to the grain and provision trades, are filed regularly; and conspicuously posted up in the centre of the room are the daily receipts at tidewater, and Buffalo, and Chicago, and other points; the comparative shipments from New York; and the latest telegrams, and price currents, and reports from Liverpool. The room is open daily from twelve to two o'clock.

Those engaged in the grain and flour trades may be divided into three classes: first, the mere speculators and brokers; second, the merchants; and third, the receivers. The receivers, as their name implies, are a class of men, usually the most reputable, who receive grain and flour from farmers or others, with discretionary power of sale. Their understood business is to sell what they receive to the best advantage, and to refrain from buying and selling on their own account. Usually the receivers are drawn on by the senders to an agreed-on extent; but not infrequently the consignments come into their hands free, and are accounted for as soon as sold. Probably not less than three-fourths of the whole grain and flour receipts at New York pass through the hands of receivers; and it may be of service at the moment to remark that contracts with receivers may generally be depended on.

The second class—the merchants—divides itself into those who buy on European account, those who make advances on European account, and thirdly into those who make advances to Western speculators, and realize the shipments on the corn exchange as soon as received. The difference between this last class and the receivers proper is, that they are traders also on their own account, and have usually advanced the full market value of the shipments. This class of business—advancing to the full value—has always been regarded as unsafe, even in New York, and it is in it that the break-downs usually occur. The other class, those who make advances on European account, monopolize a large portion of the export trade; and it may be remarked, that in this department of the New York trade there are several English firms of high standing. To this class those apply who have not sufficient standing in New York to sell their own exchange, or who have no facilities in England for effecting sales. The persons in this position are quite numerous, and in such a season as the present, when advancing prices will be looked for, they will be found

to control no inconsiderable portion of the western crop. The remaining class of this subdivision, those who buy on European account, are neither a numerous nor an influential class, and their operations are necessarily circumscribed. Limits are usually placed into their hands which cannot be always filled, and their operations come into competition with the advancing European houses.

The first class—the mere speculators and brokers—are the most numerous and obtrusive of the members of the New York Corn Exchange. To become a broker no qualification is required, and to become a speculator it too often happens that capital is not required. Hence the unlimited number of both classes—men becoming grain brokers and speculators when they are precluded from engaging in any other business. The extent to which these classes influence the range of prices is scarcely credible: they are, in fact, strong enough to set aside the ordinary law of demand and supply, and to rule the market by sales and purchases which are based upon no transfers of property but upon mere promises of transfer. Their practice is to buy and sell for delivery on a future day, and, as the saying is, to work the oracle that, when the future day arrives, they will merely have differences to receive. This, it need scarcely be observed, is trading on the sporting principle, and there is little doubt that the "books" of many parties will make up handsomely with the large orders sent out recently from this country in anticipation of a bad harvest. Incredible as it may seem, so influential is the mere speculative element on the New York Corn Exchange, that the presence of a stranger, who may be reputed to be an Englishman or a Frenchman, and who is suspected to be a buyer, is sufficient to advance the price of wheat and corn from five to ten cents a bushel, and flour from twenty-five to fifty cents a barrel.

Beside these peculiarities in the operators on the New York Corn Exchange, there are some noteworthy peculiarities in the grain supply. The three great sources of New York grain supply are the Erie Canal, the Southern States, and New York State. The last is the least important of the three, in consequence of the thickly-peopled condition of the state. The great bulk of what the State of New York produces is consumed in the state, and what is exported is mainly drawn from other sources. Into that source of supply it is therefore needless to inquire. The supply from the Southern States is received in the winter months when the southern temperature admits of grain and flour being transported without heating. When therefore the New York market is cut off from other sources of supply, it receives a continuous, although diminished, supply of wheat and corn and flour until the frozen canals are again open. The quality of southern grain and flour is usually superior to that of the Western States, and enters largely into consumption in New York. But it is in the supply by the Erie Canal that anything exceptional occurs. There is not, as might be supposed, a continuous supply of wheat and corn by the Erie Canal; but the supply of each is alternate, and while the one is being received there may be said to be a suspension of transactions in the other. Nor is this a merely arbitrary arrangement. It arises from corn being harvested late in the autumn, when the channels of communication are about to be closed for the season; while wheat is harvested early in July, and is in really better condition than it is in some

months afterwards. When, therefore, the season opens, the supply of corn which has been on hand throughout the winter is sent forward to the almost entire exclusion of other kinds of grain, and when the wheat movement of the new crop is ready to begin in July the supply of corn has nearly failed. Nor is it to be forgotten that the bulk of the wheat received by the Erie Canal is light spring wheat, while that received in the winter season from the Southern States is heavy winter wheat.

It remains to add that the demands upon the supply of grain in New York are always numerous. The New England States are not self-supporting, and draw a large portion of their supplies from New York; whence the British provinces

of Newfoundland, Nova Scotia, New Brunswick, and Prince Edward's Island may be said to draw the hulk of their supplies. So with the West India islands; and considering the limited character of the New York supplies, should it be necessary to supplement our own harvest by direct purchases of grain, it will be necessary to give attention to the other markets of supply in the United States, namely, to Chicago, Buffalo, and Montreal.

The grain exports from New York, for the year ending 1st September, have been as follows:

Flour	616,166 barrels
Wheat....	4,572,228 bushels
Corn	1,724,955 bushels.

ON RAISING AND GROWING SEEDLING POTATOES.

BY DAVID MOORE, F.L.S., M.R.I.A.,

Curator of the Royal Dublin Society's Garden, Glasnevin.

It will be in the recollection of some of the gentlemen present who attend more especially to agricultural matters, that during the first years of the potato disease a theory was advanced as the cause of that mysterious malady, which found favour with many at the time, namely, that the stock from which seed was then produced had become worn-out through age and continued subdivision of the tubers. This led to the growing of seedlings by many persons as a panacea for the evils we were then threatened with, they considering that if a fresh stock, with "new blood," as they called it, were once more established to procure seed from, the plant would be able in consequence, to withstand the disease as well as it had previously done. Others, who did not believe in this theory, grew seedlings also, for the purpose of disproving it. Through both sources a large number of seedlings were consequently brought under cultivation in the Botanic Garden, by way of experiment, some of which were grown there from the seeds, and more were sent by gentlemen who raised them elsewhere, among whom I may particularly mention the name of John Anderson Esq., of Fermoy, county of Cork, who alone sent 115 kinds in March, 1853, of which we still grow about 50 distinct varieties. As I have already reported on some of those experiments, in so far as having found that seedlings are fully as liable to be affected with the disease as most of the old sorts, I need not refer to them farther, it being now a well-known fact to all who have fairly proved the matter. I even went a step beyond that of seedlings, and had some of the tubers of the original stock sent from South America, which were very early and virulently attacked the same year they were planted, though they were kept apart from other potatoes; thus clearly proving that the disease was not the consequence of a worn-out stock.

So far, nothing more was proved than negating the theory; but, in following up the experiments, results of another kind were obtained, which are of more public importance. During the first year of those seedlings the crops were light, tubers small, and quality bad; consequently they

were only grown for the purpose of trying whether, as they advanced in age, they would become better able to resist the disease. Great care was, however, bestowed on their cultivation by Mr. M'Arde, the foreman who had charge of them, and yearly we had the satisfaction of seeing them improve in produce as well as in quality. In the early stages of their growth they were solid after being boiled, waxy and unpleasantly flavoured; and on cutting a slice from the tubers sufficiently thin for examination under the microscope, it could be seen that the starch granules were comparatively few in the mass, and not well developed, as I several times observed when looking for the mycelium of the fungus among the cells. This will go far to account for the soft, waxy state of seedlings at first, as well as for their not bursting their skins, as properly matured tubers do when their chemical constituents are fully developed. The unpleasant flavour continued as long as the tubers were soft; but so soon as they became floury and burst in boiling, the taste improved, and some are now equal to, if not better than, many of our old sorts. I sent 44 samples of the best kinds to the late exhibition, where they might have been seen on the stand near the middle gate, on entering the court-yard, without any notice attached of the source they came from. It required ten years' cultivation to bring those samples to the state of perfection they were exhibited in, during which period they continued to improve gradually every subsequent year; and that is one of the principal facts I have to state in connection with this subject, which, simple though it may appear, and no doubt it is, when known, like most other things, it yet contains the principle of managing seedlings to a successful issue. Here we have carefully made experiments, showing that no small amount of patience and perseverance ought to be exercised with seedling potatoes before they are given up as worthless; and further, that such is really necessary to prove them.

The brief history I have given of those plants is applicable to all seedling potatoes. They are naturally soft and waxy at first, which is, unquestion-

ably, one of the reasons why we see so few good seedlings brought extensively under cultivation to take the places of inferior sorts. Their culture is, nine cases out of ten, abandoned before their merits are properly ascertained, and no doubt many valuable kinds have, in consequence, been lost. In proof of this, I may ask, where now are the immense quantity of seedlings which were raised in the year 1851, and three following years? What has become of the many samples of seedlings exhibited year after year at the Royal Dublin Society's annual exhibition of agricultural produce? Assuredly, they are not to be seen in our markets; and, judging from the samples of potatoes sent to the late show, I must say that neither my brother-judges nor I considered there was any great improvement in that department. It is, therefore, to be feared that in most cases their culture has not been persevered in as was necessary, which is much to be regretted, because in none of our root crops is there more room for improvement, nor in any are the means for such more at command.

We shall now briefly notice the next topic of importance in the raising of seedlings, whether potatoes or other vegetables, namely, the means to be used in order to obtain desirable results. I have stated that more than one hundred kinds of potatoes have been grown in the Botanic Gardens from seed, and half of them brought to a state in which they can be cultivated safely as crops of that vegetable; yet I doubt whether much good has been done to the cause of agriculture in consequence. None of the sorts yet exceed in quality that of our best kinds already under cultivation; but some of them are very prolific, and show a degree of vigour and freshness which prove that there is something in the "new blood" after all. The inferiority of kind has, no doubt, to a considerable extent, been caused by want of proper means having been taken in procuring the seeds; and similar results will continue to show themselves until the raising and growing of seedlings be conducted according to rational and physiological principles. At present, for the most part, the operations are managed in a most empirical manner, simply by chance, or luck, as some say. The apples containing the seeds are collected when ripe, from any variety, kept during the winter, and sown the ensuing spring. Nothing can be more easy than this, although it be a process by which thousands of seedlings may be raised annually, each differing from the other in some slight degree. But this is not what is wanted, neither is it the way to go to work in order to obtain improved varieties. To be a successful operator, one must understand fully what he seeks to obtain, as well as something of the organs of plants, and the functions they perform. If these matters be lost sight of, very little real improvement can be effected—it being a well-known fact that seedlings raised from varieties of such plants as the potato, will not resemble the parent plant in one-third their number, if any be exactly like it. Let us suppose a case, for example, that one hundred seedlings are produced from the well-known Kemp potato; the chances are that not one-half of them will be kemps, or have much resemblance to them. Some will very likely be even red-skinned, or have

deep, hollow eyes, be smooth, and have different coloured blossoms from the true kemp. But suppose another case—that the blossoms of a kidney potato have been crossed artificially with those of the kemp, and one hundred plants raised from the crossed seeds; one-third of those, at least, will be of an intermediate form with the two kinds, if not nearly all. Or, if a late sort be crossed with one that is earlier, the prevailing portion of the seedlings raised will ripen at a different period of the season from either of the present plants. In this manner we proceed on well-known physiological laws, which are under our control, and sure to produce tolerably certain results. But further, seedlings may be much improved without resorting to cross-breeding, if due attention be paid in selecting seeds from sorts possessing some peculiar merits of excellence. Although I have stated that a large portion of the produce will depart from bearing much resemblance to the parent or parents, yet some will adhere closely to them, and possess their good or bad qualities, as the case may be, in a greater degree than the parents themselves. It is, therefore of much importance to be careful to grow only seeds taken from good sorts. To be able to reason properly, and act accordingly, are the chief requirements necessary to ensure success.

Having now stated what I believe to be the principal causes why so few seedlings of superior merit appear in our markets, and given some brief hints respecting the available means to be used for ensuring improvement, I need not dwell on the potato any further. I shall, however, make a few remarks on some other kinds of agricultural crops in connection with this matter, while the recollection of the great variety and excellent examples of farm produce so lately exhibited here are still fresh in our minds.

In the first place, I may mention that there are very few original species of plants which are cultivated extensively in this or any other part of the world, when compared with the great mass which are known to inhabit the globe. It has been computed that already more than 200,000 species are known to botanists, out of which not more than 100, at most, are extensively cultivated—in this country not more than a quarter of that number, if we exclude the grasses, which require to be sown as mixtures. This will, I dare say, appear a startling statement to those who have not studied the subject, and who have only been in the habit of consulting nurserymen's catalogues for the seeds of plants they cultivate. In those, the array of kinds set forth is, no doubt, very formidable; but the 30 or 40 kinds of turnips, and probably even more of cabbage tribe, are not original species; they are only varieties of three species, namely, *Brassica oleracea*, from which the cultivated cabbage tribe have originated; *Brassica Napus*, being the original of all the varieties of turnips, with the exception of the Swede, which is supposed to have sprung from the wild *Brassica campestris*. It is, therefore, on varieties we depend for the principal kinds of plants which are cultivated both on the farm and in the garden at the present time. In a communication such as this, I cannot enter fully into this extensive

and curious subject; but, having mentioned the origins of some of the remarkable produce lately exhibited, I shall only further state that the enormous carrots we saw had their origin in the wild carrot weed, which grows so abundantly on all our sandy sea-coasts; and the huge mangels—long red, yellow globe, red globe, &c.—are only varieties of the garden beet-root, which originated from a worthless weed, as it grows in a wild state in the south of Europe.

That splendid display of roots and cereals lately brought within those walls were chiefly the results of hybridizing, cross-breeding, and selection, thus showing the power man possesses over the vegetable kingdom when rightly used. They all originated, at some period and in some way, from the natural wildings of their original species; but by artificial breeding, as well as by taking advantage of peculiar sportings or departures from the original type, we have seen what has been accomplished, much of which has been done even within a brief period. One of the most singular circumstances concerning many varieties is, that their habit, after a few years' cultivation, becomes fixed, and seedlings raised from them will as surely resemble the variety as those raised from the original typical species resemble it. I need only refer to the varieties of coleworts, peas, oats, wheat, &c., to show that such is the case. Whether the merit of the variety depend on a greater development of cellular tissue, as in root crops, cabbages, &c., or on chemical action in the increase of peculiar constituents, as in the cereals, potato, &c., or mere vigour of growth, the offsprings of those varieties continue, for the most part, to produce their likes.

It has been said that the man who makes two blades of grass grow where only one grew before,

is a benefactor in his generation—an honour to which every intelligent person may aspire who knows how to take advantage of the opportunities nature affords him, and will act accordingly. I have stated that the merit of some varieties of plants depends chiefly on mere vigour of growth, which is especially the case with grasses and cereals. Now, there could hardly be found a field of any of those, in which seedlings may not be procured, varying from the mass in this respect. By selecting those, and saving seeds from them, the tendency to whatever point the good quality consists in will increase every generation, until a new variety, with fixed habits, will be the result. It is by the use of such means, along with those I have mentioned already in a previous part of this paper, that nearly all the superior kinds of agricultural and horticultural plants have been added to our stock within the last half-century; the effects of which, taken in connection with the superior skill manifested in their cultivation, we have so lately witnessed. I am fully aware that I have only stated familiar facts to some; but I also know that many of the cultivators, and only few of the amateurs, either think of or know the sources whence the plants they grow have originated, although such knowledge is so essential to enable us to appreciate and understand the merits of those remarkable examples of farm produce as they ought to be comprehended. The facts now mentioned regarding the growing of seedlings, and the means of improving strains of breeds from plants, may also assist in setting some of our clever agriculturists and horticulturists to work on this subject, so that we may, probably, yet see this country become as famous for producing good and pure strains of vegetables as she already is for animals.—Journal of the Royal Dublin Society.

THE GOLD FIELDS IN CALIFORNIA AND AUSTRALIA.

The discovery of the gold fields in California and Australia is an event of no trifling importance to the civilized world at large, and more especially to those nations in whose territories this has taken place. But, although the benefit will, more or less, be shared by all commercial countries, it is intended in the present paper to confine the deductions as much as possible to the influence and effects exercised on the commercial and the social position of the United Kingdom, into which, by one channel or another, the produce of the mines both of California and Australia manage to find their way.

Into the history of these discoveries it is unnecessary to enter, that having been already largely treated on. That the gold fields have hitherto yielded, and will, in all probability, for many years continue to yield, large quantities of metal, in proportion to the number of persons engaged in searching for it, is the great fact to which the reader's attention will be directed. As bearing upon the future condition of the country previous to these "diggings," the quantity of the precious metals in circulation as coin in Europe was

very circumscribed, and quite inadequate to the requirements of trade. This scarcity was less felt in the United Kingdom than in any other country; because public credit being well-sustained, a paper circulation supplied the place, in all large transactions, of a metallic currency, and was, in fact, found far more convenient. Still, the increase of the population and the extension of trade and commerce rendered it desirable, if possible, to procure larger supplies of gold and silver to be converted into coin. This was rendered the more necessary by the state of those countries in America from whence the chief supplies had been derived, and which, since the commencement of the present century, had been in a normal state of revolution, highly inimical to the working of the mines. And when it is considered that previous to the year 1800 the average produce of the Spanish American mines for two-hundred-and-fifty years was, according to Humboldt, from nine to ten millions a-year, it will be seen at once what a blank must be created in commerce by even a partial cessation of such a supply. Indeed, about 1820 they had almost wholly ceased working them; and

to this day the continuance of civil commotions has prevented that full development of the mineral riches of Mexico and Peru which their well-known capabilities would warrant us to expect.

Under these circumstances, the discoveries of which we are speaking were made at a critical period, while great indeed have been the results. Let us here take a glance at the produce of gold and silver since 1848, when California was handed over to the United States by the Mexican Government, and we shall then be able duly to appreciate the value of such additional supplies to the interests of commerce. The following are the accounts of bullion and coin imported into the United Kingdom during the twelve years from 1848 to 1859 inclusive:—

Gold	£240,740,824
Silver	115,522,522
	<hr/>
	£356,263,346

Of this, there has been re-exported in the same period, as follows:—

Gold	£112,521,890
Silver	105,340,871
	<hr/>
	£217,862,761

This leaves a balance of £138,400,585, which is thus accounted for:—

Coined in gold	£59,120,214
„ silver	3,527,846
	<hr/>
	£62,648,060

Add to this an average stock of bullion held by the Bank of England of £16,750,000, and it will leave a balance unaccounted for, of £59,000,000, which has probably in part been absorbed by artificers in gold and silver, or held by private bankers and others as security.

This marvellously rapid creation of wealth—for such it is—has been effected chiefly by a class of persons who, in ordinary life, have hitherto been excluded from a participation in the gifts of fortune. Such a fact is one of the most eventful circumstances of the age, and has exercised a powerful influence over the social and political condition of the two nations whose territories have been chiefly affected. Leaving, however, America out of the question, let us next inquire what have been the results in the United Kingdom. With this we have all much more to do, it being evident, from the above figures, that hither the great bulk of the gold and silver produced in the world comes—by one channel or another.

We have said that, as the raw material of which a metallic currency is composed, the permanent possession of large quantities of precious metal is *not in itself* a matter of consequence to us. Credit in England is based upon so solid a foundation, and its value is so well understood, that, for all the purposes of trade and commerce, paper money is preferred (especially that of the Bank of England) to specie, in transactions beyond a certain amount in value, as being far more convenient. To retain, therefore, an amount of bullion in the country

beyond what the coinage or the necessary stability of the banks require, would be useless. The surplus, like any other article of commerce, is consequently disposed of to those nations who, having no mines of their own, are restricted in the possession of a metallic currency. Thus, the Bank of France purchased in 1855 gold and silver to the amount of £27,360,000, at a premium of 1½ per cent., or about 1s. 2d. per ounce above the Mint price. Indeed, in the nine years from 1848 to 1856 inclusive, the French Government must have been very large purchasers of bullion, having coined to the amount of nearly £112,000,000 in gold and silver. We have therefore, by supplying our neighbours with bullion as an article of commerce, disposed of what would have been of no use to us, while we have furnished them with an absolute necessary of commerce, receiving from them adequate equivalents, and taking a profit by the transaction.

But this is far from being the whole or the chief benefit we derive from the influx of gold and silver. Its beneficial influence permeates into, and acts upon, every department of industry, by stimulating production, and thereby creating profitable employment for the population. It is hardly necessary to say that the gold that comes hither must be paid for by consumable articles, and that the large amounts now received will render necessary a great accession of hands to manufacture such commodities, with more ships to carry them, and more sailors to man the ships. The employment of such large numbers of operatives creates a greater demand for the necessaries and conveniences of life; and an extended consumption of these acts beneficially upon agriculture, by extending the market for its produce, and raising the price. Labour also, the mainspring of national wealth, feels the effect, and commands a higher rate, in consequence of both the increase of employment and the scarcity of hands. Thus wealth, instead of accumulating with a few as formerly, becomes diffused throughout the masses of society. We need but to look at the accounts of the savings' banks—the forty millions invested in those admirable institutions—and to the increased comforts enjoyed by the operatives, to be satisfied as to the way in which the influx of gold has benefited the country.

With respect to the actual amount of the rise in prices, there are so many disturbing causes in operation to counteract or enhance the effect of an increase of specie, that it is impossible accurately to estimate this. Whatever may be the extent of the diffusion of wealth, commodities of all kinds will still be subject to the law of demand and supply. If the latter is in excess of the former, prices will necessarily fall. We have had an illustration of this in the price of wheat; for the last two years, when, in consequence of two good harvests, rates have ruled unusually low, notwithstanding the very large importation of gold and silver. On the other hand, butcher's meat and every kind of animal produce have been scarce, and prices have risen to an almost unprecedented maximum. What portion of this advance is attributable to the influx of gold *directly*, it would be difficult to ascertain; but indirectly, by

an increased consumption consequent on that influx stimulating production, the cause is evident enough. The following was the estimate made by Mr. Tooke of the advance in prices in the year 1856, and which he ascribes directly to the increase of specie.

INCREASE OF WAGES IN GLASGOW, 1850 TO 1856.

Skilled builders	20	per cent.
Unskilled do.	48	”
Engineers	17	”
Furnace keepers (Iron-works) ..	60	”
Quarriers	30	”
Cotton spinners	25	”
Power-loom weavers	15	”
Farm labourers	40	”

COMMODITIES.		1848.	1856.
Sugar B.P. per cwt.	21s. to 31s.	...	23s. to 33s.
Do. Havana (do.)	15s. to 31s. 6d.	...	24s. to 48s.
Tea Congou per lb.	8d. to 1s. 8d.	...	9d. to 2s. 4d.
Do. Hyson (do.)	11d. to 3s. 7d.	...	1s. to 4s.
Tobacco (do.)	2½d. to 6d.	...	4d. to 11½d.
Cork butter per cwt.	70s. to 90s.	...	102s. to 112s.
Oil pale seal per ton	£24 5s. to £30 5s.	...	£50 to £26 10s.
Tallow per cwt.	44s. to 53s. 6d.	...	50s. 6d. to 58s.
Short English wool			
per pack 240lbs.	£11 to £12 10s.	...	£14 10s. to £19
Copper per ton	£79 10s. to £88	...	£107 to £126
Lead (do.)	£17 to £18	...	£24 to £26 10s.
Wheat per qr.	49s. to 53s. 4d.	...	68s. to 77s. 9d.

The first of these tables refers to the price of labour in only one section of the kingdom—Glasgow. But Mr. Tooke estimated that the advance throughout the kingdom averaged from 15 to 25 per cent., and that the bulk of the increase is expended in the purchase of articles of comfort, convenience, or luxury. These

furnish the immediate cause of the advance in price of the commodities in the second table. Still, as we have already stated, there are counteracting agencies at work, as is proved by the fall in the price of wheat after the year 1856, which continued till the close of last year 1859. Whether the price would have fallen still lower, had not the influx of gold taken place, it is impossible to ascertain. Still, it is certain, that such is the influence of that powerful regulator of commerce, the paper currency, the medium of all speculations in produce, whether British or foreign, that fluctuations are far less frequent than formerly, and infinitely less so than before the discovery of America and its gold mines. When wheat has been sold at one time at eight-pence per quarter, a short time after at £5, and in a scarce year has even risen to £17 per quarter! The effect, therefore, is greater upon labour than on those commodities, the supply of which can be increased in proportion to the demand.

At present, no advance has taken place in the price of gold, the demand for other commodities having furnished a ready outlet for whatever surplus may have been received. A time must come, however, if the supply continues as large for many years, when the wants of other nations will have been satisfied. In such a case a glut in the producing countries will cause a decline in the value of bullion, *that* in coin having already been effected in the advance of labour and produce. Upon any such a coming superfluity, it is idle here to speculate, and we leave the question to those whom it more immediately concerns.

THE FARMING OF DEVONSHIRE.

His Royal Highness was a practical farmer, of whom British yeomen ought to be proud. The Prince farmed about four thousand acres of land, and farmed them exceedingly well. He had been over most of the royal farms, and he honestly confessed he never saw better farming. He was informed that Prince Albert was in the habit of walking over his fields, and if he found the land was not properly farmed, he would not hesitate to tell his bailiff so at once. No one could have done more than His Royal Highness to improve the breed of stock. Upon one farm they found he had the best Durhams, the best Devons upon another, and the best Herefords upon a third; and he was ever one of the first and foremost to encourage the enterprise of the best cattle breeders of this country. He had been a farmer in his own county—Devonshire—for more than forty years, and although there was both good and bad farming to be found in most places, he believed that at the present time the land produced more than double the amount of the necessaries of life it did some fifty years ago. He had seen improvements going steadily on during the greater part of his life, which all tended to increased powers of cultivation. When he first began farming he was bold enough to buy a turnip drill, and he could assure them a very primitive sort of thing it was; and yet a very old and near neighbour of his had no hesitation in saying his (Mr. Turner's) father allowed him more money than he ought, if he was permitted to spend it in such foolish "nick-nacks" as that. And when he began the innovation of hoeing turnips,

and cut them out so as to leave the roots eighteen inches apart, that was looked upon as worse than sacrilege. The ploughing at that period was very primitive too, and nobody could see any work half so well done as the worst they had seen that day, so rude was the character of the implements employed. The altered state of things had arisen from the great stimulus given by these societies generally. Some of them knew what was the state of that district forty years ago; those who did not remember it had perhaps been told by their fathers, and he believed he was warranted in saying that fewer districts of the kingdom had advanced with the times more than that immediate neighbourhood. He knew thousands of acres of land there, when he came among them, not worth 5s. an acre, and now they found upon it as fine crops of corn, of turnips, and mangold as any man would wish to see. He advised his brother-farmers to grow less wheat, and more barley and oats, which were more wanted, and paid better. Moreover, while this country could depend on the foreigner bringing in wheat, the British farmer would find his account in growing more spring corn and more beef and mutton. The land, in fact, was sick of wheat, sick of turnips, and sick of clover, and he thought it high time for them to vary in some way the rotation of crops. He also strongly advised them to pay more attention to their young stock, and not sacrifice them in the future for the present doubtful advantage of fattening a few old cows.—Mr. GEORGE TURNER, at the Moland Meeting.

THE ROYAL VETERINARY COLLEGE.

If any evidence were wanting of the advance of the veterinary art, it would be found in the high tone which characterizes the communication between the Professor and his pupil. Sound practical men, such as Spooner or Simonds, would be not very likely to fall into the mistake of talking in a strain above their audience. On the contrary, the first duty of the tutor is to adapt himself not merely to the comprehension, but equally so to the habits of his class. He must not in any way ask too much of them, or his great aim, to make them feel with him, is proportionately impaired as he rises above their abilities and aspirations. If, then, we see the heads of the college adopting a certain refinement of expression, and impressing an elevated course of action, we may fairly look to the result from the premises. The student may not merely qualify as a veterinary surgeon, but he may rank as a gentleman. The somewhat dubious position he may have held, while the farrier was graduating into the duly-passed Master of Medicine, is strengthened every year the College re-opens. Whatever yet be the type of the medical student—"the rough," or the scapegrace that caricaturists have delighted to depict him—it will be the young veterinarian's own fault if he is not recognised as something more reputable. It is only the naturally evil spirit that grows worse from its association with the horse, while surely the proper study of that noble animal should be to only the more humanize the dispositions of those who devote themselves to his service.

It is so that Professor Spooner interprets his mission. And it is in thorough acquiescence with such a reading that we again give the inaugural address of the Veterinary College its place in our columns. Especially intended as this of course is for one certain "set", there are few but who may go through the paper with advantage. The relation, indeed, between the two arts is now too close for one to look on the other with indifference, and the names of Professor Spooner and of Professor Simonds are almost as well known to agriculturists as to the members of their own profession. Last season, as may be remembered, Mr. Simonds had the turn, and we look on him, in Hanover-square, as our great reference and authority for sheep and pigs. On this occasion, the gentleman who discourses is yet as famous for his knowledge of the horse. Never, certainly, was the ticklish question of unsoundness dealt with more boldly or more ably than by Professor Spooner at the Royal Canterbury Meeting. Prize stallions of but a week or two previous were at once condemned as suffering from constitutional or hereditary infirmity; and we have never heard yet that such disqualification has been impeached, however strong the emphasis with which it was enforced. The Professor dwells with much satisfaction on the good understanding still

existing between the national Agricultural Society and the Veterinary College; while he has to deplore in a strain of quaint, chastened sorrow, the little opportunity he and his fellows find on the Turf. "Are we too honest, or not honest enough to be consulted," when the favourite is fenced in by "secrecy and suspicion," or guarded like the beauties of an Eastern Harem?

But what we would chiefly impress as the point of this oration is that we commenced with—its tendency to elevate and humanize the minds of those who have heard or may read it. Nothing perhaps was a more distinguishing sign of the old, obsolete farrier than the coarse cruelty which, in his ignorance, he so often insisted on as one of the necessities of his practice. Nothing is now, happily, so little characteristic of the profession that has superseded him. True Science, in reality, is but the handmaiden of Humanity; and its first care is, or should be, to avoid all that heedless torture and suffering once sanctioned in such a cause. It is only to be feared lest such barbarities should again arise up amongst us. Professor Spooner anxiously warns us that this may be the case, while the French schools offer us the example they do. For, even in the study of veterinary art we are continually reminded by some of our own people how much more perfect "the course" is in Paris than in London. Our Professor has recently had to judge of this for himself, and it is thus that he speaks of what he saw:—"Two days a week, at nine o'clock in the morning, the doomed horse is cast; and then he is subjected to all sorts of surgical operations, such as furlug, neurotomy, cutting away pieces of the cartilage of the foot—operating as for stone in the bladder, extirpating the parotid and other glands, or the eyes, or any organ that forceps can pull, or that knives and saws can reach. Steel and fingers, guided by stony hearts, invade the poor animal at all points. These operations on the same horse last from nine o'clock in the morning until four in the afternoon; unless, indeed, he becomes unfit for the diabolism by dying in the meantime." But the Englishman witnessed these atrocities not with the object of imitating, but of denouncing them. He contended that the necessity for such fiendish practices was utterly absurd, and he went specially to enter his protest against them. Here, we are hopeful enough to believe that we have outlived such an era, and that with all our rage for anything French, it would be impossible even to propose so revolting an experiment. The story of Empires long since passed away assures us that a certain excess or devilish refinement of cruelty was one of the surest signs of approaching decay. The tone of society here in England, however, is far too healthy to countenance the acts of Alfort or Lyons—that we look on rather as the relics of a by-gone age, when men were burnt at the stake, bulls baited to death, and hounds impaled alive before the easel of the artist, that

he might catch the proper attitude for his picture. But Professor Spooner has done well to put us on our guard against the advance of such habits, at the same time that he calls upon one of the most laudable of our Institutions to join with him in altogether suppressing them elsewhere.

A word more upon this. Has not France a Humane Society of her own? And if so, would not any interference or expostulation promise to be much more efficient if offered by the French to their own countrymen than it could be by any other deputation that we might send over? There would with the latter be a certain sort of prejudice; a feeling, perhaps, of undue dictation to contend with, that would militate much against the object. And, if we mistake not, there must be such a Society in Paris, the attention of which has only to be duly called to the abuse. At the Highland Show at Aberdeen, in 1858, a French gentleman, of the name of Dutrône, was introduced with some ceremony as the Secretary for the French Society for the Prevention of Cruelty to Animals. He was in Scotland pursuing the laudable aim of that Association, and encouraging the breed of polled cattle; which, from their absence of horns, struck him as being an especially harmless race of animals. The gold medal of the French Society is, indeed, still continued on the North Country prize-sheet. The very forcible question that arises here is—Might not M. Dutrône be better employed at home in inspecting the schools of Lyons and Alfort, than in maintaining his mistaken philanthropy amongst us? And is not this the direction in which Professor Spooner should enforce his application? It would come here with the best of introductions; and the brave and merciful task he has undertaken would be set about, shorn of many of its difficulties and discouragements.

INAUGURAL ADDRESS.

BY PROFESSOR SPOONER.

The opening of the Session took place on Monday, October 8, when there were present—Professors Spooner, Simonds, Varnell, and Tenson; J. Wilkinson, Principal Veterinary Surgeon to the Army, and President of the Corporation; E. N. Gabriel, Secretary to the Corporation; Messrs. Robinson, Field, Pritchard, Harpley, Gresley, Carless, Withers, Poet, Woodger, and many other senior members of the Profession, the audience being larger than on any previous occasion.

The following is a full report of the address delivered by PROFESSOR SPOONER:—

Gentlemen,—To-day, at this, our Alma-Mater, we commence our session of 1860-61, and I am delighted to greet you all on this occasion. My position here, as delivering this introductory address, considering that I have now been a teacher in, or connected with this institution, for a period extending over thirty years, is in some sense a matter of routine; and yet the presence of so many whose faces I see for the first time reminds me that I have new elements to deal with, and new responsibilities to undertake. To my young friends, whom this day and this event more especially belong, I would say, you are the successors of a

line of pupils, to whom we can gratefully point back as having left a living memory of science, and a lasting spirit of study and attention within these walls; whom also we can single forth from many an honoured position in the world, from many a far scene and distant clime; and of whom we can proudly say to you, 'There! these sterling men once sat in your places; let their example burn within you towards what is noble and true, and let whatever is unworthy in you be rebuked by the consciousness that you are the inheritors and guardians of the fair professional fame of such predecessors.

To those who are here for the first time, the proceedings of this day must doubtless have a great interest, be deeply engraven on the memory, and probably surpass in importance those of many a preceding day of more stirring events; attention and curiosity are awake to the beginning of a new career, and the feelings are warm and impressible to the subject; permit me then to take advantage of this favourable opportunity, to strike while the iron is hot, to arm your curiosity with fresh means of improvement, and to fortify your good resolves from my experience and by my friendly counsel. Recollect that you are the depositories of the hopes of a whole professional circle, and each of you place your teacher under a responsibility, so far as in them lies, to inaugurate you sound and strong into the organization of that circle whose parts you are to constitute, whose usefulness you are to amplify, and whose humanity, spirit, and science you are, to the best of your ability, to cultivate and extend. Bear in mind that your profession stands around you, to watch and to hail the bright resolves with which you enter upon your first day's duty; and last, not least, the gathered and tender hopes of your families and your homes, fathers, mothers, brothers, and sisters, have flown here before you, and hover around you as a spiritual protective shield against the effects of the evil temptations of this vast metropolis. Are you not then surrounded by a vital atmosphere, which tends in all its pressure to incite you to be consistent with the excellence of your calling, and with the hopes of a professional generation, which, though passing away in itself, looks to be immortalized in you and those who are to come after you? You are come here to learn the veterinary art, and the sciences on which it reposes.

The "practice of your profession," gentlemen, is what may be termed the "veterinary art;" and of this you must lay the foundation by an unwearied observation of the practice of the college. Doubtless many of you have already had some experience in practice; you will, however, within these walls enjoy frequent opportunities of extending your knowledge in this department of your professional study. You will be able to profit by the remarks and practice of your professors; and by taking notes, and comparing them among yourselves, of the cases under treatment in the Infirmary, and participating with your teachers in their feelings of responsibility as to the well-doing of the patients, you will also be materially benefited. Let me entreat you diligently to cultivate that faculty of observation with which you are all endowed; and very important for this purpose you will find punctuality in your attendance here. A punctual pupil gives the first evidence of a determination to learn: he loses no opportunity, but watches the cases from day to day, and, leaving out nothing which experience can teach him, carries away a bright copy of it deeply engrafted on his mind, and useful for his future career in life. Therefore, gentlemen, I counsel you to be punctual in your attendance on the instructions given in the College. If there be any pupil who now hears me, and

whose conscience accuses him of deficiencies in this respect, let him henceforth turn over a new leaf; let him determine in future to be honest to his time; let the opening of this session be to him the beginning of a new mind and a more energetic course of action. It is not too late for amendment. The vigorous decision to do better will go far to enable him to make double use of time, and to accumulate useful information with double rapidity.

I have spoken of "the veterinary art" as meaning "the practice of our profession." Let us now say a few words on veterinary science, which is the support of art.

Scientific knowledge makes practice sound. The difference between the uneducated farrier and the veterinary surgeon is, that the former has, it is true, to a certain extent the art, but it is unsupported by science, and the practice of the art under such circumstances must indeed be both poor and dangerous; while the latter, by combining science with art, is enabled to pursue his practice with that confidence and success which cannot fail. Our profession, practised as a science, in this country, scarce dates back three-fourths of a century, which is but a short period for the growth and full development of a science. It may be said to have blossomed forth from agriculture, with which it is now so intimately connected, and forms so ripe and useful a fruit. In the year 1791, several noblemen and gentlemen, members of an agricultural society, called the Odilham Society, having the example set them by our Continental neighbours, who had already established several veterinary schools, subscribed a fund, formed themselves into a governing body, and founded the Royal Veterinary College. Up to the time of its establishment the sanitary condition of our domesticated animals was placed under the charge of grooms and charlatans, who had nothing to recommend them but their boasted experience and the recipes handed down to them by their forefathers.

The state of things now, however, is far different, and if we compare the present with those times, although we have not yet reached that position in the estimation of the public which we have a right to aspire to, and which it is my belief we are destined to attain, we nevertheless have great cause for self gratulation.

The governors of the College have no other object in view than the advancement of the profession; and their greatest anxiety is, so to conduct the affairs of this institution as to ensure the confidence and good-will of the body politic and corporate.

Anatomy, gentlemen, claims the first notice, and, if I may use the expression, breaks the ground of all medical science; in fact, without it the application of medicine and surgery, both to man and the lower animals, would be unworthy of the name of Science. Were it not for the exploration of the body by dissection, the existence of even the great organs within would be unknown. We should know that a horse had a skin, and certain other external perceptive organs; but that would be all. We should not be aware of the heart, the lungs, the liver, the brain, the intestines, &c.; and the diseases specifically affecting these parts would only be apparent to us as so many occult causes of decay, or of death. A haphazard remedy might cure, in such a case; but it is evident that you are more likely to cure, when by anatomical and physiological knowledge you are enabled to form a correct estimate of the seat and nature of the disease; and, by comparative reasoning, experience thus obtained will materially assist you in combating with similar symptoms in future cases. Therefore, I say, a knowledge of anatomy is the essential requisite of the persistently successful treatment of curable disease. And reasoning

onwards from this, the more profound the anatomical knowledge is, the more the body of our patient is rendered transparent in the almost spiritual light of science, the more clearly and intimately can we tell what the disease with which he may be afflicted is, and thereby place ourselves upon the correct path of treatment. For it is with the human mind, that when it has a piece of definite knowledge presented to it, it seems lighted up from that part in many directions, and definiteness of knowledge of the cause seems often connected by sympathy with rapid conceptions of cure. For this reason I regard the study of anatomy, the painstaking, memory-engraving study of it, as of inestimable importance in practical veterinary medicine. It admits you to the Freemasonry of the forms and functions of organization, and gives, as it seems to me, a right, in the name of conscience, to know something of cure, which the gazer from the outside remains without a claim to attain to. It shows you what can be done in surgery, and limits the path whereby it is done. By means of clear anatomical knowledge, a humane daring, as it were, becomes engendered, which simplifies and shortens operations, steadies our hands with the consciousness of safe knowledge, and saves our patients much danger and much pain.

Then, again, there is general anatomy, which investigates the constitution of the tissues of organs, and seeks to carry the torch of science into the most fairy-like avenues of organic frames. I believe the man who pays a due share of attention to this subject—provided he cultivates the other broader subjects in their own great proportion—has, again, a right and claim to know more of treatment, and to be a deeper and keener practitioner, than the man who pools-pools structural anatomy, and professes to practise without its aid. For, undoubtedly, many of the changes consequent on disease take place in the more minute structures of the body. Indeed, it is a question whether most, if not all the so-called functional diseases, are not referable to a disarrangement of the elementary or molecular particles of the organs they affect. To see those changes, even though it be through the eye of artistic genius, is at least to enable us to give the morbid symptoms with which they are associated a local habitation and a name.

Besides, I again say that the path of incessant investigation, of unwearied opening of the eyes upon nature, leads to the broad arena where discovery and invention are imparted, where struggle is rewarded, and where, when the toil of the way is suspended for a time, perchance quite unexpectedly some new light in science, spontaneously as it were, dawns upon the mind.

Therefore, full of hope, I implore you assiduously to prosecute your studies; diligently cultivate dissection, with a view to obtain experience and tact in the use of the scalpel, which you will find to be of great importance in assisting your surgical skill; lose no opportunity of attending *post-mortem* examinations, as by practical information thus obtained, you will be materially assisted in diagnosing disease, and prognosing its probable effects.

Turning to the living animal: the field of application is clinical practice. The daily experience of disease and treatment which you will have the opportunity of acquiring within these walls on this head, if you take advantage of it, will afford you a fund of information. All your other knowledge is valuable in proportion as it contributes to practice, but it must be considered as subordinate to it. Theory alone may admit you into the society of the learned and the rich, but it can never support you as veterinary surgeons, for without practical tact and skill you will be ridden over, rough-shod, by the charlatan and the groom. Disease seen with your own eyes is the book of

books for you all, in which, of course, I include treatment and its observed effects. I therefore conjure you, most earnestly, to lose no opportunity of observing every case which comes into the College. Investigate it for yourselves; verify the diagnosis; follow and make notes of the treatment. Keep close along the limits and landmarks of clinical practice, and of all the other departments which will be brought before you here, but constantly respect this as the centre in importance, and as indeed our very calling.

The agents you will see applied in the treatment of diseases are the subjects of two sciences—chemistry and materia medica. I mean the drugs; for we have other hygienic agents of great importance besides drugs. Chemistry is a science in itself, infinite in detail, marvellous in definiteness, promising substance upon substance for every conceivable use, medical, domestic, artistic, scientific, manufacturing. The study of it is, as it were, the opening of a new world, reaching from pole to pole of nature, and with a future before it inconceivable in the probable greatness of its effects upon civilization. Materia medica resides, as it were, within it, and partakes in some measure of its grandeur. These subjects will be brought before you in their general bearing, and also in their application to veterinary practice; and you will bear in mind that the more you know of them, the more easily your mind ranges over the multitudinous substances of nature, knowing their properties and affinities, the greater are your resources, and the more abundant the shafts of your skill. Nor must it be forgotten that all scientific power comes out of the growth and honest expansion of the mind itself, and that you cannot enter upon the consideration and knowledge of this science without growing and improving your condition by the mere fact of contact with it.

I may not quit this subject without alluding to one who has so long worthily filled the chair of Chemistry and Materia Medica in this institution; whose valuable life has for many years past been given to our service; in the excellent fruits of whose labours we have participated; who has left his profession far richer than he found it; who has been a true friend to its members, whether old or young; and whose example has tended to raise a profession the standing of which, in public estimation, depends almost entirely upon the moral and social character of its members. Gentlemen, it is not without emotion that I can allude to the retirement of Professor Morton.

It is, indeed, a ripe and a willing, and, for his own sake, perhaps a wise retirement. It is worthy of him to enjoy in tranquillity the retrospect of an honourable and useful life, and, I trust, long before the end, to seek promotion into the elder ranks of society and social friendship, unalloyed by the toils of scholastic duty. But, assuredly, none the less is his retirement an unavoidable regret to us here. To me, personally, it calls up a host of memories. We commenced together our career as teachers in this institution. Mr. Morton was the first who occupied the chair of Chemistry and Materia Medica in the College; and to him we are greatly indebted for the translation of these sciences to veterinary use. Indeed, we may truly say that he is the founder of the veterinary Materia Medica. Whenever the history of the progress of our profession shall be written, be it even in hundreds of years to come, the name of Morton will be found honourably inscribed on the tablets of our science. When we have all passed away, and the warmth of his heart is no longer known here, the works of his head will still be reported by Fame.

Let me say, then, in supplement to this voice of our history, that here Professor Morton has adorned his science with the eloquence of a warm yet legitimate fancy, and that in him

the voice of the gentleman has always been heard in our profession. I feel I am your representative when I bid him "All hail!" from the distance which now separates him from his former functions, and when I express a hope that he may be spared to our affectionate friendship for many a long year to come, and enjoy, as a bright anticipation of the future, all the peace and happiness this world can afford.

A kindred subject now suggests itself. Carried away by the thought of my novice pupils, I have said but little of the valued presence to-day of the senior members of our profession. This is because I have spoken, as it were, *from them* to my youngest friends, their latest descendants. I am, however, glad to have their sanction here, and to find in the College, on this occasion, a representative assembly of the whole veterinary profession. And I also would say to the senior pupils that, if I have not mentioned them more particularly, it is that I feel that words of good counsel never cease to be applicable to all. The admonition, the instruction, the warning aimed at one mark, like a ray of light, diffuses itself on every side; and minds and hearts catch it sometimes not the less influentially because it comes sideways. I would therefore only say in addition, to my old pupils, Persevere in diligence; let this session be more workful than the last; study together, be friendly together, be gentlemen together; and allow us the privilege of adding your names and memories to the lists of honour, to be thought of and alluded to hereafter, on occasions like the present.

Consequent on the retirement of Professor Morton the chair of Chemistry and Materia Medica will be filled by Professor R. V. Tuson, who has been selected from many candidates to fill this important office. His testimonials were most satisfactory and conclusive, and among them was one signed by 40 or 50 of his previous pupils; an earnest of grateful regard from those of your own age and standing. A new Anatomical Demonstrator has also been appointed in the person of Mr. William Pritchard.

The lectures on the other domesticated animals, excepting the horse, will be delivered by Professor Simonds as heretofore. Mr. Varnell, the Assistant Professor, will continue to deliver the lectures on the descriptive anatomy and physiology of the horse; and my own lectures will embrace the general subjects of anatomy and physiology, with veterinary jurisprudence, and the principles of shoeing. You will also have daily opportunities of observing the practice of the College, and of profiting by concurrent clinical instructions.

The books you will chiefly require are "Percival's Anatomy of the Horse," and his "Hippopathology;" "Blaine's Veterinary Outlines," and "Youatt on Cattle and the Dog;" also "Morton's Manual of Pharmacy," and "Simond's Treatises on the Dentition of the Ox, Sheep, and Pig," and on Variola Ovina." I must leave it to our new Professor of Chemistry to recommend to you the special work or works which he advises you to procure on that subject; but for myself I would recommend you, as I have often advised your predecessors, to study the very pleasing and profitable work of "Billing on the Practice of Medicine." You will also find in "Carpenter's Physiology," and in the works of Todd and Bowman, a complete record of the present state of physiological science; and in "Quin and Sharpey's Descriptive and Structural Anatomy," the structure of tissues answering to that of functions, is most elaborately discussed.

You will most of you, doubtless, become members of the Veterinary Medical Association, which possesses an excellent library, of which you will have the use.

So much for your part in this day's proceedings. Let me now congratulate the College upon the fact that our relations with other bodies are both maintained and extended. The Royal Agricultural Society of England still proffers its annual grant of £200 in furtherance of our objects, inseparably connected, as they are rightly felt to be, with agriculture.

I may here also mention that the late Professor Coleman made a bequest to the College for the emulation of the students in the pursuit of veterinary science; and from the accumulated interest of this bequest, the governors have determined, at the close of each session, to give medals and a certificate of merit for the best essay upon any subject, to be chosen by the professors, who also will have the awarding of the respective prizes.

It always gives me the greatest pleasure to signalize the union existing between the medical profession and our own, and I am happy to say that that union was never closer than it is at this moment. This is indeed what it should be. Humanity is, and ought to be, the boast of both. Nor are we degraded in the fact that in our humane calling science is applied to the alleviation of the sufferings of creatures lower than ourselves. The reality of the science is the same with us both, and even the general text books of our professions are the same. Our board of examiners is partly selected from the eminent men of the medical profession—a constitution which I believe is calculated, under the present circumstances, to contribute to the honour, the attainments, and the efficiency of our profession. I believe that this alliance of the Royal College of Veterinary Surgeons with the teachers of human medicine is a wise provision of the council of that body, whether it regards the social standing of our members or the general scientific progress of the examined. Our status is now, indeed, a recognized fact, for veterinary surgeons, as you are well aware, hold commission both at home and in India in the service of Her Most Gracious Majesty. Let me here pay a moment's tribute to a long-tried friend, I mean Mr. Wilkinson, the principal veterinary surgeon in the army, who, by virtue of his office, institutes a court of examiners for veterinary candidates for the army. For this post I believe him admirably qualified, a man, in short, in everyway calculated to raise his profession; gentlemanly, amiable, and humane, as those of you will experience who have the honour to appear before him. Mr. Wilkinson is also the present president of our corporation; and I know of no man in our profession better fitted to fill with becoming dignity and usefulness that high and honourable position. The veterinary profession now extends all over the civilized world, and it may be said that the sun never sets upon us. Nevertheless, there are nooks and corners in this country into which it is our legitimate province to penetrate, but where we are as yet but scantily admitted. The turf, methinks, with its splendid animals, representing great fortunes, yields us but a poor return of patients. The work of veterinary medicine seems there to be principally transacted by trainers and grooms. Are we too honest, or not reputed honest enough to be consulted in cases where great responsibility and confidence are involved? The possession of a favourite race-horse seems to plant a fence of secrecy and suspicion far around the stable; and only the uttermost confidence felt in the veterinary surgeon will enable him to pass within the barrier. It is almost like the care of an eastern harem, in which the ladies are kept under lock and key. We ought, however, to stand high enough to be privileged to enter, especially as the inmate, which is the centre of a thousand costly chances, holds the balance of probabili-

ties on his general good health and nervous tone, and consequent fitness for the race.

And now my task would be done, but I began these remarks by alluding to humanity as contributing, as it were, the very heart heat that evolves the true love of our profession, and ensures the efficiency of those who practise it. I am proud to say that I am a member of the committee of the Royal Society for the Prevention of Cruelty to Animals, and as such I feel it my duty to tell you that in May last I was selected to form one of a deputation to proceed to Paris, there to co-operate with a French society having similar objects, for the purpose of endeavouring to put an end to the horrid and revolting barbarities of vivisection which are practised day after day in the veterinary schools of Alfort and of Lyons. There, in these temples for the alleviation of animal suffering, for the scientific evolution of pity into good works—there, in the wide pleasure-places of an Emperor, who is the eldest son of the Church, and whose will rushes with succouring thousands to the bleeding Christianity of Syria—there twice a week is cruelty, under the hypocritical mask of science, perpetrated which is almost without a parallel in the history of this planet. A stream of blood seems to run from it over the whole veterinary profession of France, and ill comports with the white-robed ministers of the healing art.

The facts are these: At Alfort, which I visited, and still more I hear at Lyons, the pupils are instructed in surgery by cutting up living horses! Oh, then, is surgery fiendhood? Two days a week, at 9 o'clock in the morning, the doomed horse is cast; and then he is subjected to all sorts of surgical operations, such as firing, neurotomy, cutting away pieces of the cartilage of the foot—operating as for stone in the bladder, extirpating the parotid and other glands, or the eyes; or any organ that forceps can pull, or that knives and saws can reach. Steel and fingers, guided by stony hearts, invade the poor animal at all points. These operations on the same horse last from nine o'clock in the morning until four in the afternoon; unless, indeed, he becomes unfit for the diabolism by lying in the meantime. Now, that is what I went over to France to expostulate against. I fear, however, that our deputation made but slight progress towards effecting what I think you will all admit was, on the part of the society, a most benevolent object. To talk of the necessity of these horrors for the purpose of teaching surgery is, I contend, utterly absurd. Here, I am bold to say, we can operate when it is needful quite equal to the French veterinarian, though we have not learnt the art by these direful practices. Our human surgeons, too, are many of them men of consummate skill, though they have not learnt it by cutting and slashing living human beings. The same, indeed, may be said of human surgeons all over the civilized world; and yet if there is any necessity for it in one, surely there is the same necessity in the other. There is not, in fact, a pretext for these acts, but they stand revealed as naked fiendhood; and I hesitate not to say, that everyone who has systematically pursued them has become of necessity enamoured of cruelty, and is out of the possible pale of the healing art.

I hope, gentlemen, the voice of indignant Humanity will rise far and wide, from our profession and from the excellent society to which I have alluded—nay, and from all England, where compassion is ever quick to flow towards suffering—until this bloody spot on the veterinary schools of France is wiped away for ever. It is most painful to me to be forced to comment upon the proceedings of our

neighbours in terms so harsh, when a very high form of friendship ought to reign between us. But there is no help for it; and I feel that I should be doing the profession in France an injustice, did I not protest with all my heart, with all my mind, and with all my might against acts which are destructive of the best interests and tendencies of science, as well as shameful in civilization, and utterly hostile to every pretence of any maxim of Christianity.

Vivisection for physiological exploration may or may not be justifiable, in rare instances; but, if practised, it always ought to be done under some anæsthetic influence; and the doing of it should be avoided by every conscientious physiologist, whenever possible. I may add that physiological schools of vivisection, in which all sorts of animals are cut and slashed and sawn open, for mere repetition to the eyes of students, are as infamous in cruelty as Alford or Lyons. The Society for the Prevention of Cruelty to Animals must keep its eyes open to check the tendencies to these horrid

practices, which, it is to be feared, are budding forth in this country, and bring the public opinion and the law of England to bear, if necessary, to root them out (loud applause).

And now, gentlemen, adieu! Our profession, in which great diversities of opinion, and even, occasionally, some wars, have existed, reposes now, like a peaceful land, under the sceptre of the Royal College of Veterinary Surgeons; and this College, like a commonwealth federated to the whole body, pursues its avocations without fear and without favour. Unanimity may be said to reign. Reforms, as their necessity becomes apparent, are adopted; merit is, I verily believe, the chief step to success and promotion; there is great singleness of aim on the part of the members generally; and I think I may calculate upon the accordance of all here when I say, in conclusion, May the veterinary profession prosper, and increase in appreciation and usefulness, to the end of time!

THE STEAM PLOUGH AND THE PRESENT SEASON.

"It is an ill wind that bloweth nobody good luck," says the old proverb ("*etiam aconito inest-remedium*"); and if we are to have a wet as well as a late season, how will this affect the progress of the steam-plough? That it will be against the old system requires very little proof, for nothing does more harm to the land than the poaching of the horses' feet in a wet autumn. And besides this, when the harvest is several weeks later than usual, and the land as wet at Candlemas as it used to be at Christmas, both ends require consideration as well as the middle.

A late season of itself is obviously in favour of the steam-plough. The land must be cultivated, and time is necessary to perform the work, so that if Summer consumes the first of Autumn in the performance of what is due to her period of time—and this is just what the present summer has already done—and if Winter cuts off a slice from the other end of Autumn, as he is now threatening to do, the practical question, How is the work to be done when the natural period for its performance is thus curtailed at both ends? calls for a practical solution.

In the recent progress of agricultural science, autumn cultivation has received a very prominent place in the calendar of farm practice. This is no more than what it justly merits, for the more successfully the work is performed, the farther it extends its beneficial influences, so to speak, to the general improvement of the land, and the quantity and quality of the crops grown.

Looking, then, at the importance and magnitude of the work under the circumstances in question, viz., a late summer and early winter, the conclusion is manifest that it cannot be properly done by horses in the short space of time thus allotted for its execution. The land may be turned over, but in a manner unworthy the designation of autumn cultivation. We are not here alluding to the removal of weeds, or even their destruction; for under good farming, with successful cultivation at this and other seasons of the year, weeds are not grown. Before Mr. Smith of Woolston commenced steam-culture, his land was, we understand, full of weeds, simply because at that time it was expressly cultivated, so to speak, for their growth!

On the other hand, since he commenced the successful cultivation of his land by means of steam, weeds have, comparatively speaking, disappeared; while the weight of corn, and

other cultivated crops, have greatly increased. But because he has given up growing weeds, he has not ceased to smash up his lands in autumn, loosening and aerating his soil to a proper depth; all injury from the trampling of horses' feet being avoided. In other words, he has not ceased following that practice which scientifically merits the designation of autumn-cultivation; for were he to return to his old practice again, the upshot would unquestionably be the growth of weeds.

It may appear rather a strange doctrine to talk of cultivating land expressly for the growth of weeds. It certainly reflects somewhat discreditably towards the old system, and those who pursue its unprofitable practice. But the cultivation of land is plain matter of fact which permits of no mystification; so is the growth of weeds, and the growth of corn: and it is sometimes profitable to examine facts of this kind from a different point of view than the ordinary one. Now if one system of culture produces weeds, and another system corn and other cultivated crops only—and both these have been exemplified at Woolston—what is that characteristic of horse-culture that favours the growth of weeds? and that characteristic of steam-culture that favours the growth of corn? For we have here two practices, the one distinct from the other; and he who follows the former expressly cultivates his land for the growth of weeds, and he who pursues the latter expressly cultivates his land for the growth of corn. Both farmers may very possibly intend to grow corn. But good or bad intentions are not those matters of fact that distinguish one farm practice from another, much less weeds from corn.

Although science has not yet made sufficient progress in the chemistry, mechanics, and physiology of the subject to be able to tell us every one of those peculiar characteristics alluded to above, that favour the growth of weeds and corn, the inquiry for further information is nevertheless interesting. With many of those characteristics farmers are familiar, but they do not know the whole; and, therefore, it would be interesting to know the remainder. Mr. Smith, for example, can distinguish, to a certain extent, the artistic differences between the two systems of culture he has followed, *i. e.*, between ploughing and smashing-up; and he can also see the difference between the two results or crops. But when this is done, half the differences that exist still remain to be

discovered, for we cannot say how much the trampling of the horses' feet favour weeds, how much shallow culture, how much the unloosened subsoil, and so forth. Neither can we say, on the other hand, how far the removal of this trampling of the horses' feet promotes the greater fertility of the soil; while we know very little trustworthy, on either side, as to the many chemical and physiological questions involved in the subject.

The best of all schoolmasters is abroad, however, and the daily experience now being acquired in steam culture cannot fail very shortly to establish something like practical data for our guidance, as to the benefits gained by the absence of trampling with horses' feet, while the present season may possibly illustrate more forcibly than some are at present thinking, the actual damage done by horses' feet, with the other details of the old system, that exist as co-operative causes affecting the fertility of land and the growth of certain plants.

But a late season, whether the autumn is wet or dry, is always accompanied with those conditions of the atmosphere and soil that produce it, and the present season is very remarkable in this respect: spring and summer having been both more than ordinarily wet and cold, so that we commence the work of autumn cultivation under circumstances demanding special consideration—circumstances that manifest themselves the moment we enter a field, whatever may be the nature of its soil.

The excess of moisture during the past season has produced an unfavourable effect upon the drainage and aëration of land at present. This is more especially the case with strong tenacious clays whose soil and subsoil this year are many of them in a very unpropitious state for successful cultivation. Superficially examined the furrow, to the ordinary depth may turn over readily, and please the ploughman, who has no other interest directly in the matter than an easy-going plough and a fine "square furrow slice," better than when the soil is torn from the subsoil with a little crackling, tearing, smashing up action, and consequent shaking of his elbows. Although not very easily explained upon paper, yet those who have held the plough cannot but be familiar with the difference in the amount of "elbow-grease" required in wet and dry seasons; as it is the legs that pay for it in a wet season, the elbows in a dry.

The consequences of working land under such circumstances by horses, on the old plan, will be favourable to the growth of weeds, and unfavourable to that of corn and root crops. We are at present examining the subject from a mechanical point of view, and the rationale by which we arrive at this unfavourable conclusion relative to weeds, is the consolidation of the soil, destroying its drainage aëration, disintegration, fertilization, and temperature.

This long, dark catalogue of grievances may be disposed of at one stroke of the pen, as the reader must be familiar with the trampling and consolidating effects of the feet of horses on the subsoil, and also those of the pelting rains of autumn on the ploughed land, when the furrow-slices are squeezed together like wet unburnt bricks at any of our exhibitions, where the clay has to be moulded and moulded again as often as demanded by sight-seers. In a dry season, when clay soils are rent with fissures several feet in depth, the subsoil in autumn is yet hard and capable of supporting the feet of the teams, so that hardly any injurious consequences from consolidation are experienced. The staple soil may be soaked to the depth of the furrow-slice; and one of the most important elements of successful autumn tillage by horses, is to get the ground turned over or

smashed up before the process of soaking descends farther; but where soil and subsoil are both soft, the clay having imbibed its maximum of water, an article for which it has a strong affinity, the damage done by horses' feet is incalculable, the drainage properties of impervious tenacious clays being often totally destroyed until they (clay-soils) are again rent by the fissures of another summer. And when once percolation to the drains is thus prevented, and the rain-water begins to stand to the surface and flow off in the furrows, the injurious work of consolidation is soon completed—the atmosphere excluded, and heat carried off by evaporation from a continually moist surface throughout the whole of Winter, and not infrequently the greater portion of Spring.

From a chemical point of view, the cold wet season is also favourable to the preparation of the land for the growth of weeds, and unfavourable to that for the growth of corn and other cultivated crops, and in this case on all kinds of soil. In the last case we had to trace consequences to consolidation: in this we have to trace the injurious effects produced through a two-fold channel—chemical change at a low temperature, and chemical change with a deficiency of atmospheric air. Now, although chemical science has not made sufficient progress in the analytical investigation of the peculiar changes that take place in either case, yet we do know from experience that in both cases the result or produce is weeds, and also that decomposition of animal, vegetable, and mineral matters in the soil takes place, and that the products formed must of necessity be different as manure or food for plants from that formed under a higher temperature, and with a suitable supply of air from the atmosphere. To a certain extent chemistry has already confirmed this conclusion directly by analysis, and we can have no hesitation in saying that the analytical investigation now being set on foot in connexion with this important branch of agricultural science will prove that the proper cultivation of land has more to do with the chemistry of manures than the ammoniacal and phosphoric theories of the day; in other words, that the increased fertility of Woolston and Loia-Weedon is more due to improved systems of culture than to the quantity of manure applied to the land—these two "experimentalists," economising their superphosphate and guano by converting them into the food of corn and root-crops, instead of into food for weeds, as they both once did under the old system.

From a physiological point of view it is equally interesting to contemplate the seed of a weed lying dormant in a well-cultivated soil, and a seed of corn springing into life simply because touched by certain vitalising principles constitutionally adapted for its physical wellbeing and maturity of growth.

It is hardly less interesting, although not quite so profitable, to think of our guano and bone-dust and farmyard manure being metamorphosed into the food of weeds by a process not yet exactly known, and to see them (the weeds) thriving luxuriantly amidst sickly corn and root-crops, and even in our grass fields and fallows; so prone are they to grow where circumstances suit them.

On entering upon the autumn-cultivation of land this year there are many other circumstances peculiar to the season which farmers are called upon to experience—all acknowledging, as it were, the ten-fold superiority of steam in comparison with horses. But our space will only permit of merely enumerating a few of these—such as the shortness of the day. We have not only fewer days to do the work, but those days are shorter. Next, the teams are now soft and unfit for sharp driving, even on extra corn. Thirdly, the land is heavy to cultivate. Fourthly, from the softness of the ground, the root

crops, although they may not be heavy, are difficult to remove—carting, generally, is more heavy; while broken days, from bad weather, are more numerous.

We now come to the general conclusion from the foregoing premises, and we need hardly say how much it is in favour of the steam plough. In ordinary seasons, when there is plenty of fine weather to do the work of tillage at this season, COMMON SENSE may be allowed to view the subject from her purse strings, as to whether horses or steam can do the work for the least money per acre in the outset; but, even at the best, calculations of this kind only exemplify a very short-sighted penny-wise-and-pound-foolish economy, while in seasons like the present their absurdity is so gross as to render them wholly untenable. Not to give steam culture credit for

all the advantages gained, is unworthy the liberal spirit of the age; and intelligent farmers who keep the wire rope traversing their clayey lands this year, instead of the trampling consolidating feet of horses, may find at the conclusion of next harvest their balance-sheets amply sufficient to cover the whole outlay of starting a new engine, tackle, and implement. If estimated fairly, the advantages of steam culture must be represented by an increasing quantity—clay soils gradually increasing in depth, in vegetable matter, and general fertility, from a minimum to a maximum degree. Woolstou, for example, has improved thus; and we understand the annual increase of produce is now more than sufficient to repay engine tackle, and implement, so that Mr. Smith would be a gainer had he to renew them yearly.

X. Y. Z.

THE LABOURER'S COTTAGE.

Sir,—As a subscriber I venture to call your attention to the accompanying general suggestions with reference to cottage building, which is a subject now receiving considerable and deserved attention. Perhaps you may think fit to give the suggestions a place in your next.

Your obedient servant,

Oct. 13, 1860.

Y.

[My card is enclosed]

1.—No one plan can be a model for all families. Some families would have no occupant for a third bedroom, and some can only afford to pay half the rent that others can.

2.—Many people building will not, under any circumstances, be induced to lay out more, say than £150 on a pair of cottages. Plans should therefore be published for a low class of buildings, as well as for a higher, that those who will build none but the former may provide the most convenient and best arranged cottage that can be got for the money.

3.—All plans and elevations should be on one uniform scale of $\frac{1}{8}$ th of an inch to the foot.

4.—An elevation of each of the four sides should be furnished.

5.—A complete specification, separate bill of quantities, and estimate in detail of each kind of work should be furnished, similar to that given by Mr. Blackmoor, with his Yorkshire 1859 prize plans, published by the Yorkshire Agricultural Society.

6.—In competing plans, the estimates should be as for best common stock, or kiln-burnt bricks, at 24s. per 1,000 delivered. Owing to bricks varying materially in size in different localities, I should assume the Yorkshire size, as stated in their conditions, for this year's competition, viz, $9\frac{1}{2}$ by $4\frac{1}{2}$ by $3\frac{1}{2}$.

7.—Where Ashlar stone is proposed for dressings, it should be estimated at 1s. per cubic foot, delivered in the usual rough state from the quarry.

8.—Foundations of cottages should be assumed as 1ft. 6in. below the floor level, and of boundary walls and conveniences as 1ft. below the surface, except ash place, which must be taken at 3ft. below the surface.

9.—An air-drain or flue should be provided under the centre of each house, from front to back and immediately under the floor level, of an area equal to not less than 16 square inches. This may be either done in dry brick-work or drain-tiles, and 15s. might be taken as the cost thereof, including small air-grates.

10.—The roof to be estimated as blue slate, at 2s. 1d. per yard.

11.—One of the ground-floor rooms must have an area of not less than 120 square feet, and the smallest bedroom an area of not less than 43 square feet; a pantry or cellar must have an area of not less than 12 square feet.

12.—Excepting the pantry, the height of any ground-floor room, kitchen, or scullery, must not be less than 8ft., and of any bedroom not less than 8ft. to ceiling, if entirely flat. Where however any roof slope is contained in a bedroom, the height to ceiling in centre room must not be less than 9ft., and must be at least 6ft. 6in. to wall plate.

13.—Each cottage to have a separate privy and ash place, within a yard, the area of which shall not be less than 200 square feet, enclosed by a 9in. brick wall, not less than 3ft. high.

14.—The position and extra cost of a pig-stye to be shewn by dotted lines, in case any person building should consider such an addition desirable.

15.—Where there are three bedrooms, not less than two must have fire-places.

16.—Where there are only two bedrooms, at least one must have fire place.

17.—Each bedroom must have a Sherringham's or other convenient ventilator, to be estimated, including fixing, at 6s. 3d. each.

18.—Brick ovens and wood for fuel not being generally used in Yorkshire and many other counties, neither brick oven nor covered place for wood need be provided or estimated for, except supplementally and separately. Their position had, however, better be shown by dotted lines, to meet the case of localities where they would be desirable. They spoil the look of a plan very much if shewn in the ordinary way instead of being merely dotted.

19.—In many localities, and especially where colliers are concerned, it is of very great importance to collect all soft water obtainable. The position of a fall pipe, water butt, or iron tank, or other underground tank, should be shown by dotted lines, and supplementally and separately specified and estimated for.

20.—Foundations should be estimated as in brick, and the various rules laid down adhered to in any estimate or plan, for the sake of promoting fair competition on equal terms. It is well known that the cost of building the same cottage varies to the extent of 15 per cent., in different localities, even in Yorkshire, and to a greater extent still between cheap districts in Yorkshire and dear districts in some of

the Southern Counties. Hence it is rather desirable that any competitor basing his estimate on the prices and sizes of bricks, stone-work, roofing, and condition herein laid down, should append a supplemental paper to contain an estimate according to the prices of his own locality, and any suggestions or hints as to cottage arrangements and building he may consider worthy of remark, or any improvement in the conditions herein laid down—such as substitution of rubble walling for foundations, comparative advantages of wood, or stone, or tile flooring, &c. More elevations than one may, if thought fit, accompany each plan, the one being plain, inexpensive, and in accordance with limitation as to cost, the other as ornamental and expensive as the competitor may please.

21.—It is worthy of consideration whether slate and cement are not on the whole preferable to gas-tar, &c., as a layer to put on the walls, above soil level, to prevent damp. It is thought that gas-tar may smell unpleasantly for some long time after, especially when the adjoining room gets warm.

22.—In considering the desirability of wood floors on ground-floor rooms, it must be remembered that they take a great deal of keeping clean, and labourers cannot generally

afford the cost, wear and tear of carpets. Good tiles are warmer than stone.

23.—In any cottage-plan competition, cheapness of construction should be one principal quality taken into consideration in awarding the prizes, which it perhaps might be desirable to withhold from plans that are not at least 5 per cent. cheaper than the maximum cost fixed.

24.—Competitors will find many points of merit in the Yorkshire Agricultural Society's Prize Plans of 1859. They are, however, capable of being much improved, and reduced somewhat in cost. No doubt such a result will follow the competition for the new Yorkshire prizes just now offered, being three prizes of £25 each, and one of £10, with £5 for second. These plans are to be sent in before the 15th November, and it is believed that some cottages on the prize plans will be actually built in or near the Show-yard of the Royal Agricultural Society at Leeds, where the meeting of July, 1861, will be held.

A printed copy of the Yorkshire Agricultural Society's Conditions, as sent out to applicants, is appended. It will be seen they also offer two prizes, of £50 and £25, for the best plans of farm-buildings; the £50 prize being for a 500 acres farm, and the £25 prize for a 200 acres farm.

ON REMOVING FLOODS OF WATER FROM LOW-LYING LAND.

SIR,—There is no lack, in your valuable columns, of scientific dissertations on all subjects relating to the cultivation of the soil. Still, I think a common-sense view of one or two *essentials* may not be out of place. I select the treatment of water as the subject of this letter, and as I shall want no elaborate illustrations, I shall dash at the standing water, and see if some means cannot be devised to make it move. I would not touch upon drainage, for these small arteries have been over and over again laid open by abler hands; but when I see miles of fine meadowland flooded as I have seen it all over the country this wet season, I cannot help thinking that some people might *now* listen to common sense, that would at other times have turned away.

The fall, the force, and the friction are all to be taken into account, in removing floods of water from low-lying land. When a millowner has erected a weir across a river, and has made the ground-plan of it a segment of a circle, or in other words, has built an arch against the current, he has just made a quarrying machine ready to dig a hole of any depth just at the centre point where the segment dates from, for there assuredly all the rays will converge, and according to the force or fall so will the digging power be; whereas, had the weir been at right angles to the stream, the force would have been very differently applied, and instead of digging one hole at the centre as above stated, it would have hurried on and spent itself in going rapidly towards the sea. I might mention examples of water being made to torment itself, as at the sea-wall at Exmouth for example, where the wall is made to receive the wave and curl it so as to fall back upon the succeeding wave and destroy its force. I mention this to show the immense importance of direct lines and smooth surfaces in conveying quickly heavy columns of water. Every one must have observed that when accurate levels have been laid down for irrigation, the water scarcely seemed to move, although the section across the meadow showed a fall of some 20 feet, yet when the water was conducted in zig-

zags longitudinally, it could scarcely fall at all. I was going to mention here the road over the Alps, as an instance in point, of lengthening the inclined plane to lessen the resistance of getting up hill; but this is far removed from the text, which is the common-sense view, and not the principle of engineering skill.

When the farmer's horse, an old roadster, has to get home with a heavy load up a rough incline (for farmer's ways are frequently far from plain) before him, the sagacious beast betakes him to the zig-zag, and accomplishes by sagacity what he could hardly have done by strength. Now, if on the contrary we wanted to get water, or indeed any other weighty body, gently down hill, surely the system pursued by the farmer's horse would suit us; but we just happen to be differently situated, or, in common parlance, "the saddle is on the other horse," for although the sea is for the most part lower than the dry land, still the fall is sometimes so very little that we cannot afford to lose an inch by any mismanagement of our outlets. In the *Times* of yesterday there is an account of a railway in Turkey made through 25 miles of meadow, swamp, or by whatever name a carse occasionally flooded by a river to some 6 or 8 feet deep can be called. Well, the engineers embanked, or in other words confined the river to its proper channel, and the carse is carrying a railway, and is rendered dry firm land. Some years ago I had to do with a troublesome stream, which in stormy weather rose in spates, overflowing its banks, and taking haycocks, or indeed anything that was moveable, downwards; but its crowning act was with the assistance of some loose spars to upheave a fine stone-arched bridge and cut off the services of a main road. This double evil had to be cured, and prevented from occurring again as far as possible; and as this prevention clause has lasted now about 25 years or more, I may safely say that the system of direct lines in water-courses and smooth channels has had at least one fair trial, and with signal success.

A beautiful mill-lead had been made from the bed of the

river, and this mill-lead was always kept in excellent order; not so the original bed of the river, and as that which is not much used is seldom in good order for work, the crooked track of that which once was a mountain torrent traversed the plain from side to side exactly as the Alpine engineers or the farmer's nag above-mentioned would have mapped it, had it been rising ground. Now, I could point out some hundreds of rich meadows just now similarly situated with this one.

The proprietor balanced accounts with the old water-course, and counted how much earth and subsoil he would require from the new cut to fill up the old water-way so as to make good land (and good rental) of said water-way, for he had no confidence in the untried theory of levels, that the new cut being wider and deeper would thereby raise the land, or in other words depress the water.

The bed of the river was rendered straight in its ground plan, and about one-and-a-half times as wide as the original bed of the river, the river was shortened by about a third part of its length, and a permanent improvement effected on the land, for the river runs now on one side of the meadow, and not in the middle and from side to side as before, and the spates do not at all affect the crops.

Let it therefore be borne in mind that by shortening the length of a drain, brook, or river, by straightening it, you increase the fall; thus when it was 100 feet long and had 10 inches of fall and you made a cut which shortened it to 75 feet, you have altered the fall from 10 inches in four parts to 10 inches in three parts. It is quite lamentable to see the ruin occasioned to square miles of the finest deep meadow land for want of this common-sense view of the subject. It must originate with the owner; and unless some calamity such as the breaking up of a public thoroughfare as above-mentioned bring it home, I fear all other hints will be unavailing. It is the business of the journalist to point out the direction in which the treasure hid in the bank of earth lies, and leave the miner to hole for the nuggets as he on the spot seeth most convenient.

I remain, sir, yours respectfully,

ALEX. FORSYTH.

13, Islington Square, Salford, Manchester,
October 17th, 1860.

P.S. The above experiment was in Aberdeenshire, on one of the tributaries of the River Don.

THE FARMER'S DUTIES AND PROSPECTS AS PUT BY HIS LANDLORD.

There has been a very hard winter, a cold spring, and a wet summer, which have operated both against the crops and the cattle. As for the cattle, it has been stated at various agricultural meetings that they have degenerated. I think that is rather a hasty judgment. In the winter, as is well known, it was by great exertion that the farmers were enabled to keep their animals alive, and it was only by the importation of hay from Hamburg, Holland, and even London, that this was effected. I have seen myself, within ten miles of London, trucks filled with hay to come into this county. I have also made observations myself in Lowther Castle, in Westmoreland, where the cattle came for agistment, for in various pastures and parks I take in something like a thousand head of cattle, and I saw that they were only in the condition in the month of August that they ought to have been in in the month of May. Therefore, I say, it is no wonder that the number has decreased at the shows, because they were not in a condition to gain prizes at those meetings. At the present moment, various crops do not look so prosperous as they have in other years. There is no doubt that wheat will be rather deficient, and that it will not yield the quantity of flour that it has in former times; the oats and barley, I am glad to hear there is abundance of, in almost all the fields. But, however, that brings me to another subject which was mentioned by a great authority at Carlisle—that there is a great difference in the land that was drained and highly cultivated, and that old system of fallows and broadcast; that persons passing along the roads easily perceive the land that is drained and that which has not been. With all the bad weather, seasons are not invariably bad; and though we have had two bad seasons, we ought to calculate on the generality, and we may hope for two good seasons to come, that will remove all the depondency that in some quarters exists at present. This is one side of the picture—a certain degree of injury done to certain crops this year. But if you look to the other side of the picture, and at what has taken place during the last twenty or thirty years, you see the population gradually increasing—by some

statisticians it is said to be at the rate of 360,000 a year, or nearly 1,000 a day, and that there is greatly increased wealth in the country. We have also to look at the fact that the manufacturers have increased, that the manufacturers are getting rich, and there is no manufacturer who gets rich that has not an ambition to have what is called "a bit of land." There is gold from Australia, there is machinery gradually making progress every day; and it is to the saving of labour, and to production at a cheap rate, that we must look hereafter for profit to the farmer. This country, I may say, has an advantage in the articles of its growth; these are wool, meat (the manufacture of meat), and butter. I should say with wheat other countries can come into competition with us. Their climate is better suited; there is easy transport and cheap freights. The advice which has frequently been given to the farmers of this county is that they plough too much. I think they had better calculate on the produce of their stock, such as wool, butter, and meat, rather than on the growing of corn. The climate is not well suited to it. Much fear has been expressed at these meetings that there is a degeneration of cattle. I think that is a very hasty judgment, for the reasons I have stated before, on account of the hardness of the winter. However, a great triumph has been shown in having got rid of the longhorns and in getting supplied with shorthorns. I agree in the advantages of the shorthorn herd as coming to market so much sooner than the previous longhorns; but I wish they would take it a step further, and rejoice in the diminution, at all events, of the horned and blackfaced sheep. I think if people would attend to their pasture, and drain, and lime, and manure, and clear it of weeds, they would get a far better quality of sheep than we now see, for three-fourths, I may say, of the sheep of this country are mountain sheep. Now, the first requisite to improve your stock is, I believe, to improve your pastures, and I should like to see the species of stock to which I have alluded confined to what I may call their native element. That, I believe, is the true study of the landlord and landowner of this country,

for the landlord ought to assist in every way, as I have always been ready to do myself, in draining any parts the farmer may require. I have gone further, and have taken on my own judgment to drain land of which I boasted so much that some of it was called "forced drainage." Gentlemen, as we are on the subject of draining—I may say that since I inherited this property—I was looking the other day, and I believe I have drained above 10,000 acres. However, it has been greatly more on the other side of the county than on this. On this there is more dry land, and better climate, and the demands have not been so great as on the other side. But I have gone not only into draining, but into reclaiming land altogether. I have had many sympathisers during the progress, and they have said, "Oh, it will not pay; how can you spend your money in such a foolish thing?" Now, I believe there is not one acre that I have undertaken that has not more than realized the anticipations I had; and I can say there is only one difficulty that I got into, which is with a farm in the iron-ore district of this county, where the iron ore stopped up the mouth of some of the outfalls; but that is not more than occurred in the town of Whitehaven, which had some of its pipes stopped in the same way. But I believe that is to be surmounted. It is of no great matter whether it is or no, but I believe that is the only obstacle or difficulty I have ever encountered. There is one great, dismal, dreary waste, of which

the representative of the parish is now here, called Shap, which is of great extent, and always abused exceedingly by travellers, and there I felt my way, as I had no experience to guide me. There, during the last few years, I have drained and lined somewhere about a thousand acres. This has not been unobserved by my neighbours—for there are great wastes surrounding—and they have agreed to apply to the Inclosure Commissioners and to Parliament for the inclosure of these wastes, which are not less than 20,000 acres, and that is now in progress. What I have done I feel happy at, because it is, as I may say, adding so much territory to the country, and making an addition to its agricultural wealth, which would otherwise have lain dormant. Once these 5,000 acres at Shap used to feed 2,000 or 3,000 sheep. For the last few years, by putting these 1,000 acres into cultivation, it has fed and put into better condition than any other pastures in the county from 500 to 700 head of cattle. I have no doubt that, instead of these 2,000 or 3,000 sheep, in the course of a few years—for I have got into knowing what will remedy it, and having begun on speculation I had to feel my way by experiments with different means—I have no doubt in the course of a few years it will feed three bullocks where it only fed the half-starved black-faced sheep which it just kept alive a few years ago.—
LORD LONSDALE, at the West Cumberland Meeting.

THE KENT AGRICULTURAL SOCIETY.

PROPOSED AMALGAMATION WITH SUSSEX AND SURREY.

The annual meeting of the Kent County Cattle Show was held at Maidstone on Thursday, Oct. 18; Viscount Sydney (Lord-Lieutenant), in the chair; the Earl of Romney, Sir W. Stirling, Bart., Col. Scott, Col. Fletcher, Col. Cator, and Messrs. C. G. Whittaker, J. Whatman, J. G. Talbot, C. Whitehead, P. S. Punnett, E. R. Tanner, A. Warde, T. H. Pack, J. Paine, J. Allen, Oakley, F. Stonham, and G. Kennard were also present.

Col. CATOR spoke of the subject of an amalgamation with the Sussex society, and read the following letter from Mr. Rigden, of Hove, Sussex:

Dear Sir,—The question of an amalgamation of the Kent Agricultural Society with that of Sussex has often been mentioned at the meetings of our society, and I am quite of opinion that by uniting the three counties of Kent, Sussex, and Surrey together, a very important show would be the result.

I have had a good deal of experience in the working of these shows, and I have generally found that at first everything goes on prosperously, but after a few years the interest that was formerly taken in the show gradually fades away, and supporters fall off. It would be of little use for a person in my position to attempt to take any leading part in a matter of this kind. If a society should be formed combining the three counties I have named, it could not exist long unless it was well supported by the landowners. If they will show that they really feel an interest in it, the tenantry will be ready to do their part.

So far as this country is concerned, we are pledged to hold one more meeting of the county show, which will be at Rye next year. It appears to me that the best plan would be to get the leading men in your county to communicate with the Duke of Richmond and the Earl of Chichester, who are the principal supporters of our society; and if they take a favourable view of the matter, I think there would be no difficulty. For myself, I should have much pleasure in doing anything

that would further the object; but unless we could count upon liberal pecuniary support, it would be better not to attempt it. Such a society as proposed should have a considerable reserve fund in hand, as there is great uncertainty about the receipts at such meetings; unfavourable weather will upset all calculations. I can speak from experience of our last county meeting at Chichester, when, owing to the rain, the receipts for entering the show-yard were not one-fourth of what might have been fairly expected.

I think there is generally a feeling in favour of the proposal amongst the members of our society.

Hove, Sept. 8th, 1860.

E. Hales, Esq.

I remain, yours truly,

WILLIAM RIGDEN.

The committee thus report upon the proposition: "The committee have made further inquiries with respect to the subject of amalgamation with the Sussex Agricultural Society, so as to form one large influential and useful association for the south-eastern counties; but, although their advances have been received with favour, they are not in a position to report further on the subject. At the same time they are of opinion that an object of so much importance should not be lost sight of, and that it will be the duty of the committee to take all necessary steps to place the proposition fairly before the several societies interested."

In reference to the aid afforded this year by the local to the national society, the committee consider—"The course thus adopted aided materially in producing a more extensive exhibition both of county stock and of implements suited to Kentish wants. The field selected for the trial of Kent ploughs was very ill adapted for the purpose, and afforded a very indifferent opportunity for the display of the peculiar merits of that implement; for this want of judgment your committee were in no way responsible."

ON PRODUCING CHEESE PROFITABLY.

THE PRIZE ESSAY OF THE STAFFORDSHIRE AGRICULTURAL SOCIETY.

BY WILLIAM T. CARRINGTON, OF CRONDEN ABBEY.

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Mr. Bass having offered a premium of £25 for an essay on the most scientific and practical mode of producing cheese profitably in the counties of Stafford and Derby, I have been induced to compete for it; and, with the aid of such information as I have been able to obtain from the managers of some of the finest dairies in the two counties, I hope to compose a treatise which will prove of some benefit to my brother-farmers.

The subject which Mr. Bass has selected for his premium is one the importance of which, to most of the farmers in this neighbourhood, can scarcely be over-estimated. There is nothing which, with proper management, is so profitable in this grazing district as cheese-making; but the great variation in price between fine and inferior cheese, amounting in some cases to £20 per ton, makes all the difference between its being a profitable pursuit, and the reverse.

It is surprising that there are so few really fine dairies of cheese to be met with; but I believe this arises mainly from defective management, and is, therefore, capable of being remedied.

It is important that the masters and mistresses should be themselves thoroughly acquainted with the manufacture of cheese; for good dairymaids are yearly becoming more scarce. Where large dairies of cheese are made, it is desirable to get the men-servants to turn their attention to cheese-making, as they are better suited for it, in some respects, than the women. There is a good deal of lifting and heavy work connected with it, which would be more easily done by men; and it generally happens that, as soon as a dairymaid thoroughly understands her business, she gets married, and is disqualified for her situation: a manservant might continue to hold his situation after such an event.

Before proceeding to explain in detail the manufacture of cheese, I will endeavour to show some of the principal causes that prevent success. One great cause of the inferior quality of cheese is, that the managers will not allow it to retain its natural quantity of butter; but, by the vigorous application of the skimming dish, they rob the cheese of its quality. In my opinion, this is a most short-sighted policy; for the amount of butter obtained rarely compensates for the great deterioration of quality and loss of quantity of the cheese. At the latter end of the year, or when the cows are eating oilcake or other artificial food, and the milk is consequently very rich, it may perhaps be done, to a small extent, to profit; but as a general practice it should not be adopted. A great deal of the inferiority of cheese arises from its not being properly cured, when it is termed by the factors "sweet cheese," meaning that it is short of salt. Great care is requisite over the salting, in the summer time; for if any fermentation takes place before the salt is applied, the cheese will never be properly cured. For this reason, I think it better to salt it, to a certain extent, in the curd, whilst undergoing the process of grinding, which I shall describe hereafter.

It is a great mistake to apply too great pressure to the

cheese, especially in the first instance: it seals the outside of the cheese, prevents the whey from coming out, and makes it too close and waxy. A light lever press is the best to use during the making process; and the weight should be applied gradually. The presses under which the cheese is kept whilst it is being salted are generally blocks of stone, which are raised by a screw. These should not be too heavy. The first presses should not be more than 7 or 8 cwt.; but the one which is used last of all may be as heavy as 15 cwt.

All the vessels used to contain the milk, and all the utensils used in the manufacture of the cheese, must be well washed with hot water after each time of using, so as to keep them perfectly clean and sweet: the least sourness materially affects the cheese.

A regular supply of hot water is required during the cheese-making season: and a furnace of water should be kept constantly heated.

It is important that the dairy in which the milk is kept and the cheese is salted, should be in a cool situation, and be perfectly ventilated.

It is better with a north aspect, so as to be out of the sun; and, in summer, there should be a draught of cold air direct through it.

The temperature of the place where the cheese is made should be varied according to the heat of the weather. At the spring and latter end of the year, it should be made in a room in which there is a fire, or it gets too cold before it is finished, is more trouble to make, and does not close properly. In the summer time, the cooler the place the better.

The room in which the cheese is first kept, after it is salted, should be close and warm: it is better to have it heated with hot air, which is conveyed in pipes from the back of the kitchen fire. All holes or crevices in the window or door should be carefully stopped, as the young cheese is very liable to crack if it is at all exposed to a draught. Cheese should be kept warm from the time it is made till it is ready for sale: it ripens so much faster, and the quality is also much superior, when it has been kept warm from the commencement. In cold weather, the cheese rooms will require heating, either by a stove or some other means. The cheese rooms are better with boarded floors, which are warmer than plaster, and ripen the cheese faster.

Before cheese-making commences in the spring, the cheese rooms should be thoroughly cleaned, the walls should be whitewashed, and the floors washed with hot water, so as to destroy the mites, &c., which, without cleanliness is observed, increase very fast, and spoil the appearance of the cheese.

In the summer, care must be taken to destroy the small flies which blow in the cheese, or they will become very troublesome: the best specific to destroy them is an infusion of quassia chips. A little of this liquid, put on plates in several places in the room, will be found very effectual. Many dairymaids darken the cheese rooms, to

prevent the flies from damaging the cheese. If there are any cracks in the cheese, as will sometimes be the case with that made in cold weather, they should be filled up with some paste made of butter and flour; for if the flies once get into the cheese, it is very difficult to dislodge them.

We often hear it asserted that it is impossible to make good cheese on some land, but I believe (if properly managed), good cheese may be made on land of almost every description. I have known several instances in which the cheese has been bad, and the fault has been laid on the land; but when the farm came into other hands, and a different system of management was pursued, the opposite result was attained. Some land is doubtless more especially adapted for dairying; we generally find the finest cheese is made where the dairy pastures consist, for the most part, of fine old turf. Another fallacy that we often hear advanced is, that the application to the land of lime, bones, guano, &c., spoils the cheese. This may form a convenient excuse for those who are not disposed to lay out their money in improving their pasture land, but the application of these manures greatly improves the quality of the herbage, and thereby makes the milk richer. I believe the cheese may require more care in its manufacture; but if that be observed, its quality will be much superior. As a proof, I may mention that the winners of the three principal cheese prizes at the Royal Agricultural Society's Exhibition, held at Chester, in 1853, stated, in answer to questions submitted to them by the Committee, that their pasture land had been almost wholly dressed with bones, a considerable portion of it several times over. At this Society's Exhibitions, the cheese prizes have been almost always won by those members who have been in the habit of improving their dairy pastures by bones or guano. In fact, dairy pastures do require occasionally top-dressing with bones, or some other manure. There is a considerable produce in the shape of cheese goes yearly off the land, and unless it is returned, either by the direct application of artificial manure, or by the consumption of green crops upon the land, it will become worse instead of better. Bones will be found superior to anything else as a top-dressing for old dairy pastures, because they supply just those ingredients to the land of which it is deprived by the milk. Milk contains a certain amount of phosphate of lime, and other mineral matters, and land where dairy cows are principally kept becomes in time deficient in those elements of fertility, which no manure contains so abundantly as bones.

It is very important on a dairy farm that the pastures lie contiguous to the homestead; they should always be provided with shade, and plenty of good water. If the cattle have to be driven far to be milked in warm weather, they become heated, and the milk is sweltered, and this causes the cheese to ferment and heave.

It is found that the cheese is richer when the cows are well kept in the winter time, and are turned out to grass at the spring in good condition. Cheesemaking does not usually commence, to much extent, before April; it is better to have the cows calving in the month of March and April than sooner. They should have some cake or crushed corn, as well as hay, after they have calved: it prevents them losing their condition, as they often do so rapidly after calving, and they will give a larger quantity of much richer milk than they would without it.

Mangolds or grains will also be found to increase the quantity of milk at this season of the year. A cow's milk should not be made into cheese till four days after she has

calved, or it will cause the cheese to ferment. The cheese made in the early spring (when the cows are eating dry food) and at the latter end of the year, is inferior in quality to that made in the summer months, when the grass is the finest and best. The yield of milk will be much increased at the latter end of the year, when the pastures are fading, by giving the cows plenty of cabbage, awede tursips, or other roots. There is nothing better than cabbage for producing milk, and keeping the cows in healthy condition.

A dairy cow will repay good keep and attention, perhaps better than any other animal. It does not answer to keep many sheep in the dairy pastures—they pick out all the finest of the grasses; the cows will not give nearly so much milk, and the quality of the cheese will also be deteriorated. The dairy cows should have a plentiful supply of good grass throughout the summer, and should never be suffered to go short, for, if their yield of milk is once diminished, they will not entirely regain it. There is a considerable expense and trouble attending cheesemaking, and the dairy cows, whilst they are in milk, ought to have the best of everything, and be made to produce as much milk as possible.

It perhaps will not be out of place here, to mention the great importance of good milking. The cows should be milked as nearly as possible at regular intervals, from five to six o'clock in the morning, and the same time at night. They are very seldom milked more than twice a-day. The milk should be drawn away as quickly as possible, and care must be taken to leave none in the udder, for the last milk is much the richest; and if it is not all extracted, the secretion of milk gets gradually less, and the cow becomes dry much sooner than she ought to do. The average yield of cheese in this district is probably not $3\frac{1}{2}$ cwts. per cow; but where first-rate dairy cows are well kept, $4\frac{1}{2}$ and even 5 cwts. may in a good season be made.

It is a general practice with the large dairies in this district to colour the cheese with annatto. This does not at all affect the quality of the cheese, but (if the cheese is fine) the factors will generally give a higher price for it than when uncoloured. Cheese is coloured at a cost of rather less than sixpence per cwt. Some use the liquid colouring, and others the annatto in the lump; the liquid is the best and most regular in colour, but it is a little more expensive. It is sold in quart or pint bottles, and requires measuring exactly, so as to keep the colour of the cheese uniform; $\frac{1}{2}$ ox. fluid measure, or rather less than a tablespoonful, is about right for a cheese, which would weigh when ready for sale 26 lbs. At this rate a quart bottle would colour rather more than fifty cheeses. When the lump colouring is used, it should be carefully weighed, and dissolved in hot water, a few hours before being used; the weight of a sovereign is the right quantity for a cheese of the size before mentioned.

The rennet, which is used to turn the milk, is made by soaking the dried skins, which are bought for the purpose, in cold water which has been previously boiled, and in which some salt and a small quantity of saltpetre have been dissolved. The halves of three different skins, so as to secure uniformity of strength, are soaked in a gallon of water, and that should make enough rennet to turn rather more than twenty cheeses of the size before-mentioned; but of course it depends a good deal on the size and quality of the skins. One pint of this liquid should suffice for three cheeses. A difference of opinion exists as to whether rennet is better fresh made or not. I believe in Cheshire the rennet is made fresh every day, whilst in Gloucestershire it is customary to make sufficient in the spring to last through the summer;

in this district it is generally made fresh about every week.

There have been several machines invented within the last few years for the manufacture of cheese. The principal of these is Keevil's patent cheese-making apparatus. A similar machine, invented by Mr. Travis, of Mercaston, near Derby, is also used to some extent in Staffordshire and Derbyshire. These machines possess considerable merit, and I have no doubt that fine cheese may be made by them; but, from all I can learn, I do not think there is any saving in time and labour over the plan I am about to explain. If such be the case, there is no advantage, as I am sure quite as fine dairies of cheese are made by my own plan, and with quite as little loss of butter from the cheese; as the amount of butter gathered from the whey-cream does not exceed half-a-pound per cow per week, when the quantity of milk is greatest.

I am not at all prejudiced against these inventions, and did I believe that they improved on my own system, I should be one of the first to advocate their adoption; but I know several instances in which these machines have been set up, and afterwards the use of them discontinued.

It is the general practice in this neighbourhood, with the large dairies (at all events in the summer months), to make up the milk as nearly as convenient both morning and evening: and thus the cheese is made in a great degree of new milk. Where the plan of making the cheese but once a day can be conveniently carried out, there are some reasons in favour of its adoption. It is one of the principal objections to cheese-making, that it keeps the cheese-makers at work so late at night, when they are apt to hurry over their work, and not to bestow proper care and attention to it. Where this plan is carried out, the evening's milk must be thoroughly cooled before going into the dairy; and the dairy itself should be as cool and airy as possible, otherwise in warm weather the milk will not keep sweet, and the cheese will be spoiled.

Having made these general observations, which I hope will not be deemed out of place, as they are all of them more or less important in describing the profitable production of cheese, I will proceed to describe that method of cheese-making which I believe to be the most practical and scientific. It is a method by which cheese of the finest quality is made; and I have no doubt if the plan I recommend be properly carried out, fine cheese will be made. But, however good the theory acted upon may be, unless the greatest care and attention be bestowed in the practical working of it, complete success will not be attained; there are so many causes that may lead to failure. The cheeses in this neighbourhood generally weigh, when ready for sale, from twenty to thirty pounds each. They are better not made too small, and should not, as a rule, be less than twenty-five pounds each. It will be found that a gallon of milk will produce rather less than a pound of cheese, but it varies considerably, according to the richness of the milk. The milk should be put in the cheese-kettle at a temperature of from 80 to 86 degrees; it should be varied according to the heat of the atmosphere, and should be the warmest in cold weather. In summer it should not be more than 82 or 83 degrees. If the cheese is made almost entirely of new milk, a portion of it will require cooling. In cold weather, and when there is a considerable quantity of old milk, it will require heating to bring it to the right temperature. This should be done by putting a portion of the milk in a tin within a furnace of hot water. By observing this plan there is no risk of the milk being burnt or smoked, as there would

be in heating it over the fire. The cream should be taken off the old milk before it is heated, and put in the kettle, and the hot milk poured on it; by this means it is mixed with the milk and does not rise to the top, as it is otherwise apt to do. It is better, when it can be done conveniently, to have a certain portion of old milk in the cheese, perhaps about one-fourth. When the milk which is intended to be made up has been put in the kettle, and the temperature tested by a thermometer, the colouring (where used), and then the rennet, should be put in, and thoroughly mixed with the milk. A teaspoonful of saltpetre, finely powdered, should also be added to each cheese, as it checks fermentation, and prevents the cheese from heaving. The top of the kettle should then be covered with a cloth or wooden cover, and the milk be allowed to stand for an hour, when it will have become sufficiently firm to be broken down.

All the milk which is not made into cheese should be cooled before going into the dairy, and should not be put in large quantities together, or it will not keep sweet.

The best kind of curd breaker is fitted with knives or bars, instead of wire, which bruises the curd more and makes the whey richer.

The curd breaker should be lifted gently up and down till the curd is all reduced to small pieces, when it is ready for what is called gathering. This is best done by a cylindrical tin vessel, which is perforated all over with small holes; its diameter should be a little less than that of the kettle, and at the bottom it has a well for the convenience of lading out the whey. The gatherer should be dipped sideways in the kettle, and moved slowly round a few times, so as to collect the curd together in a mass; the gatherer should then be lifted out, and the curd allowed to sink to the bottom of the kettle. The operation of gathering is dispensed with by some, but I think that it forwards the work of cheese-making. The curd gatherer should then be floated on the top of the whey, which will ooze through the holes, and may be laded off into tubs.

The curd gatherer was invented by Mr. G. Carrington, of Creighton, and it is of great utility. It is found, when it is used, that the whey is very much poorer than when the cheese is made by the ordinary method. There is generally a considerable sediment of small curd at the bottom of the whey tubs, which ought to be in the cheese; but by the use of the curd gatherer this will be entirely prevented. When most of the whey is laded off, weights should be put inside the gatherer, and the whey laded off as before. The curd round the outside of the kettle should then be cut in pieces and laid on the middle, and the weights again applied; this process should be repeated two or three times, when the curd will be dry enough to put in the vat. A cheese-cloth should be spread over the vat, and the curd should be cut in pieces and laid in it, and the edges of the cloth folded over and tucked in, to prevent the curd from falling out. The vat should then be placed under a light lever press, and the pressure applied gradually. If the curd in the kettle is intended to make more than one cheese, it should be divided equally.

The vats which are used during the making process should have numerous holes in the bottom and sides to allow of the whey escaping from the curd. A round flat board, called a cheese shooter, is generally put on the top of the cheese vats, under the lever press; but some prefer a cheese shooter made in the form of a cross, which allows of the whey escaping more readily from the upper surface and middle of the cheese. When the cheese has been under the lever about ten minutes it should be taken out,

sliced in pieces, the outside pieces piled on the middle, and then again returned to the press. This process may be repeated two or three times, and it will then be sufficiently dry to be ground. A handful of fine salt should be spread evenly over the flat surface of the cheese, and it should then be cut in pieces and passed through the grinder; by this means the salt is regularly mixed with the curd. It is much better, in the summer months, to add salt at this stage of the cheese-making. It renders it much more certain of being cured; for if any fermentation takes place before the cheese is salted, as it is very liable to do in warm weather, the cheese will never afterwards take the salt. I believe, in Cheshire, the cheese is entirely salted at this stage. I am decidedly of opinion that it is right to grind the curd; it regularly breaks it in pieces without bruising it, and does it much better, and is much less labour than breaking it with the hands.

If the curd is much crushed and broken with the hands, a considerable quantity of butter passes into the whey; there is a great saving in this respect by the substitution of the knife and the curd-grinder for the hands. It ought to be the aim of the cheese-maker to retain as much as possible of the butter in the cheese.

The best kind of curd-grinder is made to fasten on the top of the cheese-kettle. A pan, within which a cheese-cloth is spread, should be put under the grinder, and the curd ground into it; the cheese-cloth should then be lifted into the vat, and a galvanized iron hoop, made for the purpose, placed round it; it should then be returned to the press, and the pressure gradually applied. In a short time it is taken out of press, and about two inches round the top edge of the cheese is pared off, placed on the middle, and broken into small pieces; the middle of the cheese is also broken a little, and it is then returned to the press. This process should be repeated with the under-surface of the cheese, and the cloth round it replaced by a dry one. It should then be put under the lever press, and be allowed to remain there six or eight hours. The cheese may, by the process I have described, be finished up to this point in three hours-and-a-half after the milk is put in the kettle. After the cheese has remained in the press the time stated, the cloth round it should be replaced by a dry one; this change may be repeated once or twice before the cheese is salted. The cheese-cloths which are used at this stage should be well washed with hot water, and dried after each time of using, as they are intended to absorb the moisture from the cheese:

The cheese should be salted about twelve hours after it is made. The cheese made in the morning should be salted at night, and the evening's cheese as soon as con-

venient the following morning. Before this is done, it is a general practice to scald the cheese, by putting it into a tub of hotish water, and letting it remain in it till the water is cold. This plan may be of service in the spring and autumn, when the cheese is most liable to crack, but it extracts some of the fat from the outside of the cheese, and the salt does not penetrate so well when the surface has been hardened, therefore I do not recommend it for general practice.

I will now describe the salting process. The cheese is turned out of the vat on a table, and a thin layer of salt is spread on each side and round the edges of the cheese. This is repeated night and morning for about three days, the cheese advancing a stage further in the press at each time of salting. The cheese should be put quite straight under the presses, or they will not press level. In the last press, little or no salt should be applied, or the surface of the cheese will be left rough and uneven. The cheese made at the spring and latter end of the year is often too salt. Cheese, like meat, takes the salt much more readily in cold weather, and therefore does not then require to remain in salt so long; but though a less quantity of cheese is then made, the presses are often kept full, and thus the cheese remains in salt a longer time than it does in summer.

When the cheeses have gone through the last press, they are immersed for two days in shallow cisterns filled with brine; they are then washed with warm water, and wiped dry, and taken into the cheese-room. They are generally put on shelves for the first week or two; they should be kept single for the first two months, and turned regularly every day. When they are nearly ripe they are better put two or three deep.

If the cheese is kept warm, it will be ready for sale in three or four months after it is made. It is better to sell it two or three times in the year; it loses weight very considerably if it is long kept, and the enhanced price rarely pays for the great loss of weight. The cheese made in the spring months should be ready for sale in August, when there is generally a brisk demand for new cheese.

It is a practice with many to rub and scrape off the natural coat of the cheese, but if the cheese is properly made (without being robbed of any of its butter), and is always kept warm, it requires little or no cleaning, and shows to most advantage with its natural coat.

I have now described that method of cheese-making which I consider to be the most practical and scientific. I have advocated no theories that have not been tried and found to be successful, and I have no doubt, if the plan I recommend be properly carried out, it will be found to ensure success.

A DAIRY FARMER.

THE NEW YORK CATTLE TRADE.

One of the reasons, in fact it may be said to be the only reason why the price of meat is so high, is the scarcity of store cattle. The supply is scanty, and the demand active, and farmers paying a high price for feeding cattle must necessarily receive a high price for fat cattle. What is wanted is a more full supply of lean beasts, and as that cannot be provided from within the kingdom, it must be sought for without. But a difficulty presents itself: there is no other obstacle in the way of cattle importation but the risk of the voyage; and if cattle are to be had cheaper else-

where, they would find their way to our markets, in conformity to a well-known economic law. It would, therefore, seem to follow, that at the present time we have the full benefit of the supply of the lean cattle of the Continent, in addition to what we produce ourselves, and that, in fact, all has been done that can be done, and the price of meat will be maintained. But it must be admitted that cattle are not received from some continental ports—for example, from the Spanish ports—because the risk of transport leaves no room for profit. The cattle exist in abundance,

and may be purchased at a price which would admit of their being fed by our farmers, and sold at a cheaper rate than the cattle now fed: but of fifty head shipped, perhaps not twenty would be received alive. Hence it is inferred, that unless lean cattle can be got nearer than the Spanish ports, they cannot be got at all. But what is the character of the transport provided from the Spanish ports? It is unquestionably worse than from other ports, and for this reason—that the Spanish shipments of fruits and wine are, in the one case, to some extent perishable, if shipped in large quantities, and in the other too valuable, and in too limited demand, to be shipped in large quantities at one time. The vessels employed in the wine and fruit trade are usually not more than a hundred tons register—a size of vessel quite unsuited for cattle transport, particularly when the stormy character of the voyage is considered. Had the requirements of the Spanish fruit and wine trade led to the employment of ships of one, two, or three thousand tons register, there would on the other hand, have been ships adapted for cattle carrying, and instead of the opinion being abroad that Spain is too far to go for feeding cattle, attention might have long since been turned to more distant parts.

These observations are a necessary preface to any observations on the New York cattle trade. We would have little practical interest in anything relating to that trade, unless there were some probability of its supplying ourselves with that description of cattle which we do not receive from other parts in sufficient numbers to bring meat sufficiently within the reach of the poorer classes. That there is such a probability, scarcely more is necessary to be said, in the way of proof, than that each of the Atlantic steamers carries a milch cow for the supply of passengers with milk, and does so in a safe and simple way. A box, with the inner end partly open, is constructed on the deck, with scarcely more width than allows the cow to turn; and the sides of the box are padded with a little straw. So secured, the cow experiences no inconvenience in the worst weather, and is milked three times daily. Obviously such an arrangement can be extended to any number of cows and cattle; and who will doubt that were a demand created for American cattle in the English markets, that it would be the interest of shipowners to adapt some of the larger class of vessels to cattle transport? On the Pacific coast of the United States, cattle have been carried with success a distance equal to half an Atlantic voyage, and might have made the return voyage, or the whole Atlantic distance, with very trifling loss. Cattle have also been brought successfully from Texas to New York, a distance not much less than an Atlantic voyage. These facts establish the practicability of the trade; and were the Great Eastern, as has been suggested, so employed, taking all the produce that could be had in New York, and filling up with cattle, there is no reason to believe that the loss from accident would be greater on the voyage from New York than from the Dutch and North of Scotland ports.

But a question here arises: is America a cattle-producing country? or rather is there a sufficient margin between prices here and prices there, supposing transportation possible? Of the fact there is no doubt. Nowhere are cattle produced at a smaller cost to the farmer than in the Western States; and nowhere, therefore, may it be supposed will a smaller price suffice to purchase them. The summer keep of as many cattle as the prairie farmer may choose to have costs nothing but the wages of a boy to herd them; and the winter keep of hay costs nothing but the labour of

mowing in the morning, and carrying in the afternoon. The prairie cattle roam at large on the boundless prairie, feeding on the grass; and the farmer may secure for winter use as much hay as he pleases. Practically there is no more limit to the production of prairie cattle than of prairie wheat and corn, and the production is largely on the increase. This year as compared with last, at the shipping port of Chicago, in the State of Illinois, the increase in fat cattle is already 70,000 head, and before the close of the year it is estimated that the increase at that one port will exceed 200,000 head. The increase is much the same at all the other Western shipping ports, and from these shipping ports the New York trade is in the main supplied.

Last year the receipts of beeves at all the New York city markets slightly exceeded 200,000. The average weekly receipts this year will bring up the aggregate to nearly 300,000, or an increase of almost a-half. This in a great measure is owing to the abundant harvest of the present season, and to the greater profit to be derived from feeding cattle with Indian corn than by sending the Indian corn to market. Still, 300,000 head of beeves is a comparatively small number to be sent to the great commercial emporium of the United States and scarcely invites the opening of a new trade. But it is sufficient for the existing demand, and could be increased indefinitely, and with scarcely any previous notice. The practice of the trade is to sell the cattle in the yards in the outskirts of the city, to which they are driven on their arrival from the country. Some of the herds are in the hands of drovers and some in the hands of brokers, to whom they have been consigned. The drovers have gathered their herds in Iowa, Illinois, Missouri, Kentucky, Ohio, Indiana, or Pennsylvania, and brought them by railway, and usually sell out at once at the market-price. The brokers, like the same class in the grain trade, make advances and exercise their discretion in the sale; and not a few of them supply the funds for carrying on the business. Those who supply the funds not unfrequently do so in connection with Banking Houses in fair standing, who seek to get their notes in circulation in districts from which they are not likely to return speedily to be redeemed.

Taking the average of the entire transactions of a recent week, September 18, the rates for beeves at dead weights were:

First quality, 4¾d. to 5d.

Medium, 4½d. to 4¾d.

Poor quality, 3½d. to 4d.

Poorest quality, 3d. to 3½d.

General selling prices, 3¾d. to 4¾d.

Average of all sales, 4d. to 4¾d.

One lot of Illinois steers brought £15 to £18. A lot of Ohio and Kentucky steers brought £20. Inferior Iowa and Illinois steers £10 to £12.

The receipts of milch cows is not large, about 7,000 in the year. The transactions for the week ending September 18th were few, and at irregular prices. For what are termed fancy cows, as much as £20 was paid. Good cows with calf ranged from £8 to £15, without calf from £7 to £9. Cows in poor condition were dull at £5 and £6. A "trick" complained of is the bringing of cows with strange young calves in the hope of realizing high prices.

Veal calves and sheep and hogs are received in great numbers. Heavy and coarse veal selling at 2d. to 2½d. live weight; sheep which would dress at 40lbs. 17s. each; and medium grain-fed hogs 4d. to 4½d. dressed.

These prices, it is scarcely necessary to repeat, are for what are understood to be fat cattle, the poorer beeves being in bad condition from the long journeys they have performed. Nor

is it necessary to repeat that what the farmers want are lean cattle. These would be brought from the prairies and not from the barn-yards of the farmers, and would be purchased at low prices. Recently the American railways have thrown an impediment in the way of this business by largely increasing the cost of transport, but this policy will not always be

pursued, and American railways have willingly made sacrifices to open up new fields of trade.

With whom the opening up of this new trade should rest it is not easy to say, but that it would benefit the English farmer and the English consuming classes if opened, no doubt can be entertained.

SHOWS AND SALES OF HEREFORD CATTLE—THE MONAUGHTY SALE, HEREFORD SHOW AND FAIR.

In a hale genial autumn there can be few pleasanter rambles than amongst the apple orchards, or along the winding streams of Herefordshire—extended as such a pilgrimage should be to the wild hills of Radnorshire, or the happy valleys of the Salop. There is a succession of rich "home" scenery in such a route too long neglected by the professional tourist—backed as this view is, or "pointed" rather, by the tribes of famous white-faced cattle, and the flocks of now almost equally renowned Shropshire sheep. His lot should be cast in pleasant places, who can follow out the pursuits of agriculture under such auspices; while he may unite with them, if he so choose, something of the kindred associations of a sportsman's life. He may find his fox in the most romantic of dingles. There shall be cock shooting in the woods, and trout fishing in the waters; with unbounded hospitality and smiling prosperity to complete the charm, and fill up such a picture as Old England alone can treat us to.

But stalwart, hearty, sunburnt Autumn has held his hand for once, and our week amongst the Herefords was known by chilly nipping breezes, rainy mornings, damp days, and early evenings. Fields of wheat yet waiting for the sickle everywhere met the eye; while the uncared shocks, sickening for home, bowed their heads in tears, or fell prostrate before the embrace of the unwelcome blast. The branches clustering with ruddy apples, or proffering, as it were, the tiny bronzing pear, would seem to tell a more cheerful tale. But "the fruit," like the mangold or the turnip, is not large enough to be worth much; and with a harvest home that promises to be kept about Christmas, and the gloomy look of "another wet day," even a Hereford yeoman or a proud Salopian might begin to quarrel with his fortunes.

If, however, there has been "no money to be made," there has been every opportunity of spending it. There was the sale of "the famous Monaughty Herefords" on Tuesday, Oct. 16; there was another sale at the Court of Noke on the Thursday, and there was the Hereford Show and Fair on the Friday and Saturday. The first of these fixtures for the week was well up in the Radnor Hills, where Mr. Rea has for the last twenty years been cultivating a herd of Herefords, which public success and real merit have now declared to be about the best we have. This, though, was by no means an unconditional sale, or general clearing out. It must be looked on rather as a draft or thinning down, even while the catalogue ran to no less than a hundred and fifty lots. The list included some prize animals, and a number of clever well-bred cows and calves that were pronounced to have sold well. The average, taking young and old, was about £20 a head, and the result of the sale consequently nearly three thousand pounds. A few of the last lots were not put up, as night was drawing on, and the roads, though picturesque enough, were scarcely trustworthy without

bright lamps and good memories. The sale appeared to be generally well conducted, but it was certainly not "without reserve," and two of the best animals, as it would seem, merely put in to make up the attraction. The Canterbury prize heifer, Diadem, showing unmistakable signs of "forcing," was knocked down to a son of the proprietor; and the hero of the entry, Sir Benjamin, wonderfully improved of late, and now supposed to be the best Hereford bull out, also fell to a bid of a hundred and fifty from the same quarter. He was, indeed, apparently sold to his own owner, as the bull stood in the catalogue of the Hereford Society on the Friday as the property *not* of Mr. Rea of Monaughty, but as Mr. Rea of Westonbury. It was, in fact, pretty generally understood that Sir Benjamin was not to be sold under two hundred; and one "customer" who came a long distance mainly to bid for him, actually left again before the animal was brought out. Mr. Russell, the auctioneer, received young Mr. Rea's offer of a hundred and fifty with this curious comment—"And I shall not allow you to bid again!" which was simply an absurdity, as one such bidding having been recognized there was nothing to prevent the same kind of thing going on. However, no one else seemed to care about it, and Lord Berwick's ultimatum by a letter to the auctioneer being exhausted, Sir Benjamin was gravely knocked down to his owner. The county papers carefully withheld the name of the purchaser, but it would have been all the better for the genuine character of the sale had this bull never been in it. We give the best prices in another column; Mr. Duckham, Mr. Monkhouse, Mr. Yeomans, Mr. Taylor of Stretford, Mr. Smythies, Mr. Edwards, Sir John Walsh, and Mr. Coleman for the Duke of Bedford, being amongst the chief purchasers. The Thursday's sale at Noke was consequent on a transfer of property from a mother to her son, and it rained steadily the whole day through. Any interest attached to it was so materially interfered with; and what with the weather and the times, prices were bad, and a matter of ceremony rendered yet more easy of adjustment.

Still, neither the weather nor the times did much to dampen the expectations of the breeders at the opening of the Hereford Fair on the day following. With a keen recollection of how well their customers must have done last year, people began by asking higher prices for worse things, and as a natural consequence, up to ten o'clock or so there was scarcely a beast sold. There was a noticeable scarcity of good steers, and, as it struck us, altogether a short supply of animals. There was comparatively little of that crowding, even in the main street. The very 'bussman threaded his way at but small sacrifice of temper or outpouring of expetive; while as rarely was a wandering white-face driven to seek the shelter of the Dragon Coffee-room, there to take his bite of cake and sup of drink in rest and quiet. But the trade got brisker as the day progressed, and as Here-

ford Fair "proper" did not really begin till Saturday, a better state of things was hoped for. But the Fair itself was duller still. Everybody and everything was "down," and whole droves of cattle having been treated to a sight of the city were straightway sent home again; or on to Islington, where hundreds of them stood out the Monday's market, still unsold.

The show of the Herefordshire Agricultural Society was as clearly not up to the excellence of last year. Perhaps in no one class of cattle was it so good. The best section, as it always will be the most interesting, was the first on the list—that for a bull, cow, and their calf in one entry. Two famous Herefords fought their battle o'er again, the first and second, in fact, of the Canterbury Show. Their positions, however, were now reversed, and Mr. Williams went first with Sir Colin, and Mr. Edwards second with Leominster. The judges generally commended the whole class, as they did the next of yearling bulls: but this was not up to the standard of last year, even with Mr. Perry, of Cholstrey, to again lead off. There was not that "constitution" about the young ones so remarkable on the last time of showing, although immense pains are taken to "make up" the rough, curly coat that told so much for Mr. Shirley's steer. You see the herdsman carefully brushing the hair the *wrong* way; or a yet more knowing old hand continually at work with a damp cloth. Indeed, like the stable-boy who was instructed that when he had nothing else to do he should drop down on his knees and hand-rub his horses' legs, the Hereford coman would seem to fill up his leisure in disheveling the love locks of his beauties. The best young bull was said to be on the outside of the Show-yard, where he was sold for 150 guineas to go to Australia. His breeder was recently disqualified from ever again exhibiting at the meetings of his own county, or the National Society and hence his animals not being in the lists. He brought, though, up to the edge of the precipice four young bulls, and one especially excellent steer, which was bought with the object of being fed up for the Christmas shows. The query is, whether such an animal will be suffered to enter at the Smithfield Club; that is, will the certificate of his breeder be received? In justice, not so much to the offender as to those who may deal with him, the sooner this point is settled the better. Four steers shown by Mr. Pitt, of Chadnor, were amongst the best things in the show, and Mr. Tudge's fat cow, "Victoria," the very pride of the yard. There has seldom been a handsomer Hereford—compact, perhaps almost small, with a sweet head, and a kind "cow" look about her, one cannot but regret the sad necessity that sends her to the shambles. She has not fed quite even; but still with a noticeable dip in the back, she should beat Lady Emily's leviathan of last year. There was only one milch cow, and the lots of breeding cows or heifers reduced to three would on no showing equal the telling numbers that in 'fifty-nine ran out the entry. We have already dwelt upon the merits of Sir Benjamin as the best bull of the yard, while Mr. Coleman bespoke his second of Mr. Tudge, for the Woburn Herd. and at a price that would read like a "bargain." White-faced short-wools, a few dubious Cotswolds, and some useful wethers from Mr. Roberts' flock, made up a sheep show altogether below what it should be. Our own notion is that the Society should shine in Hereford cattle and Shropshire sheep. How is it such men as Mr. Green, Mr. H. Smith, and others, cannot be brought to support it in this wise? Sir Velters Cornewall, and we speak with due caution here, sent some really clever fat pigs, and won his own prize with them. What we still object to is what would seem to

be the common pig of the county, and of which Lady Emily Foley sent an admirable illustration to the meeting—with its long hungry head and razor back, there should be a fine instead of a prize for breeding such brutes.

The horses were better this year. There were some very good cart mares, and a creditable entry of young hunters; Sir Velters, as one of the Masters of the Herefordshire, finishing first with two well-grown colts, that will be none the worse for not having been "overdone" so far. A Stone Plover horse took the premium, and a more stylish son of Pitsford followed him. We must let the prize list tell out the rest of the story. It has its weak places that may surely be strengthened; while the many sales of this season have told no doubt against the Hereford himself.

In future the Show of the Society is to be held on the Tuesday preceding the Great Fair, and the Fair itself on the third Wednesday in October. This alteration promises to be an improvement on the invariable "twentieth" of precedent. Nothing, for instance, could have come much more inconveniently than the meeting days of this occasion, driven as they were almost into "next week."

HEREFORDSHIRE AGRICULTURAL SOCIETY.

PRIZE LIST.

CATTLE.

JUDGES.—Richard Farr, Wormesley Grange, Hereford.

A. T. James, Mounington Court, Hereford.

Bull, Cow, and Offspring.

First prize of £20, J. Williams, St. Mary's Kingsland, Leominster (Sir Colin, Highlass, and Flower of Kent).

Second of £10, T. Edwards, Wintercote, Leominster (Leominster, Prettymaid, and calf).

Third of £5, J. Wigmore, Weston, Ross (Forester, cow, and calf).

The class generally commended.

Bulls calved on or after the 1st of July, 1859.

First Prize of £15, W. Perry, Cholstrey, Leominster (Wellington).

Second of 7 gs., W. Perry, Cholstrey, Leominster (Chelmsford).

Third of 3½ gs., T. Roberts, Ivington Bury, Leominster (Lord Warwick).

The class generally commended.

Bulls calved on or after the 1st of July, 1858.

First Prize of 5 gs., W. Perry (Cowarne).

Second of £3, T. Res, Westonbury, Pembridge (Sir Richard).

Highly commended.—R. Hill, Golding, Salop (Port).

Commended.—W. Vaughan, Cholstrey (Sir Oliver 2nd).

Bulls calved previous to the 1st of July, 1858.

First prize of 5 gs., T. Res, Westonbury (Sir Benjamin).

Second of £3, W. Tudge, Ashford, Ludlow (Carbonel).

To the tenant-farmer for the best lot of beasts, bred by himself.

The prize of 5 gs., William Tudge (245 acres,) 4 steers.

Pairs of Heifers, calved on or after 1st July, 1859.

First prize of 5 gs., W. Perry.

Second, of £3, Rev. Archer Clive, Whitfield, Hereford, (Dora and Duchess).

Highly commended.—T. Res, Westonbury.

Pairs of Heifers, calved on or after 1st of July, 1858.

First prize of 5 gs., P. Turner, The Leen, Pembridge (Ruby and Comely).

Second, of £3, T. Edwards, Wintercote (Red Rose and Violet).

Pairs of Steers, calved on or after 1st of July, 1859.

First prize of 5 gs., J. Monkhouse, The Stowe, Hereford.

Second, of £3, Henry R. Evans, jun., Swanstone, Leominster.

Pairs of Steers, calved on or after 1st July, 1858.

First prize of 5 gs., G. Pitt, Chadnor Court, Dilwyn.

Second, of £3, G. Pitt.

Highly commended.—T. J. Williams, St. Mary's.

Pairs of Steers, calved on or after 1st July, 1857.

First prize of 5 gs., Mrs. B. A. Papendick, Glasbury House, Hereford.

Second, of £3, J. H. Arkwright, Hampton Court.

Lots of Breeding Cows or Heifers, not under three years old, that have had a calf within six months, or shall be in calf at the time of showing.

First prize of £15, G. Pitt, Chadnor Court, (3 cows and calves, or in calf.)

Second, of 7 gs., W. Vaughan, Cholstrey, (4 breeding cows). Highly commended.—T. Davies, Burton (9 cows).

Fat Cows, of any age.

The prize of 5 gs., W. Tudge (Victoria).

Best Milch Cows of pure Hereford breed.

The prize of £5, J. Bosley, Lyde, Hereford (Young Blossom).

Fat Ox or Steer.—No entry.

SHEEP.

JUDGES.—H. Collins, Duffryn, Cardiff.

G. Turner, Barton, Exeter.

Pens of twenty Shropshire Down or short-wooled breeding ewes, under 3 years and 8 months, the prize of 5 gs. to J. B. Downing, Holme Lacy, Hereford.

Pens of twenty long-wooled breeding ewes, under 3 years and 8 months, the prize of £5 to J. Wigmore, Weston Ross.

Pens of five yearling wethers (long-wool), the prize of £3 to C. Kearsay, Glewstone, Rossa.

Pens of five yearling ewes (long-wool), the prize of £3 to T. Duckham, Baysham Court, Ross.

Pens of five yearling wethers (short-wool or cross-bred), the prize of £3 to T. Roberts, Ivington Bury.

Commended.—J. B. Downing.

Pens of five yearling ewes (short-wool or cross-bred), the prize of £3 to J. B. Downing.

Commended.—T. Roberts.

PIGS.

JUDGES.—H. Collins, Duffryn, Cardiff.

G. Turner, Barton, Exeter.

Three fat pigs, not exceeding 13 months old, the prize of £5 to Sir Velters Cornwall, Moccas Court, Hereford.

Commended.—C. Kearsay.

Boar pigs under 2 years of age, the prize of £3 to Sir Velters Cornwall.

Breeding sows that have brought a litter of pigs within 3 months, or in-pig, the prize of £2 to Sir Velters Cornwall.

HORSES.

JUDGES.—H. Collins, Duffryn, Cardiff.

G. Turner, Barton, Exeter.

Cart stallions.—No entry.

Cart mares and foals at foot, the prize of 5 gs. to Rees Williams, Pencelly Castle, Brecon (Darby and foal).

The class generally commended.

Three-year-old colts or fillies, suited for hunting purposes, the prize of £5 to Sir Velters Cornwall.

The class generally commended.

Nag mares with foals at foot, the prize of 5 gs. to J. Moore, Monkbury Court, Ledbury.

Highly commended.—J. Bosley, Lyde, Hereford (Surplice mare).

EXTRA STOCK.

£1 to Mrs. B. A. Papendick, Glasbury, for bull calf.

10s. to J. Davis, Webton Court, for ewe.

£1 10s. to J. Wigmore, Weston, Ross, for five fat ewes.

WHEAT.

Samples of white wheat, grown by a tenant-farmer in the county, the prize of 2½ gs., J. Wigmore, Weston, Ross (Australian).

Samples of red wheat, grown by a tenant-farmer in the county, the prize of 2½ gs., J. Bosley, Lyde.

IMPLEMENTS.

Collections of improved agricultural machinery and implements, first prize of 5 gs., F. Smith, Upton Bishop, Ross. Second, of £2, J. L. Stephens, Hereford.

10s. to Isaac James, Tivoli Works, Cheltenham, for liquid manure distributor, &c.

Highly commended.—S. Corbett, Wellington, for pulpers.

Highly commended.—Picksley and Sims, for chaff-cutter.

SALE OF HEREFORDS AT MONAUGHTY.

Mr. Rea's sale came off on Tuesday, Oct. 16. Mr. E. Russell acted as auctioneer, and the following are some of the best prices realized. It must be understood that the cows with their calves although brought into the ring together were sold in separate lots, and the figure given is the aggregate price for the two.

Prudence and her bull calf, by Wellington, 34 gs.
Rose of the Valley and her heifer calf, by Wellington, 30 gs.
Fairmaid the 4th and her heifer calf, by Wellington, 33 gs.
Gertrude and her bull calf, by Wellington, 30 gs.
Queen's Gilliflower and her heifer calf, by Wellington, 30 gs.
Marchioness and her bull calf, by Wellington, 36 gs.
Lily of the Valley and her heifer calf, by Wellington, 37 gs.
Dairymaid and her heifer calf, by Wellington, 31 gs.
Gweny the Second, by Chieftain, dam Gweny, by Regent, and her heifer calf, by Sir Benjamin, 32 gs.
Dainty and her heifer calf, by Wellington, 38 gs.
Dame's Violet, and her heifer calf, by Wellington, 31 gs.
Venus the Fifth and her heifer calf, by Wellington, 31 gs.
Winifred the Second and her heifer calf, by Wellington, 45 gs.
Dowager the Second and her bull calf, by Sir Benjamin, 40 gs.
Kate and her heifer calf, by Sir Benjamin, 57½ gs.
Lively the Second and her bull calf, by Wellington, 40 gs.
Grace and her bull calf, by Wellington, 47 gs.
Spangle and her bull calf, by Wellington, 30 gs.
Nectarine and her calf, by Sir Benjamin, 36½ gs.
Ginny and her calf, by Sir Benjamin, 32 gs.
Faithful, by Cambrian, dam Lively, by Gallant, and her heifer calf, by Wellington, 54 gs.
Heiress and her bull calf, by Wellington, 42 gs.
Diadem, by Regent, 50 gs. (The Prize Heifer at Canterbury).
Delight and her heifer calf, by Sir Benjamin, 43 gs.
Dore and her bull calf, by Wellington, 37 gs.
Diana and her bull calf, by Wellington, 49 gs.
Lucetta and her heifer calf, by Sir Benjamin, 42½ gs.
Spot and her heifer calf, 34 gs.
Melody and her heifer calf, by Wellington, 56 gs.
Lily and her heifer calf, by Sir Benjamin, 29½ gs.
Nena and her heifer calf, by Sir Benjamin, 43 gs.
Red Rose and her bull calf, by Wellington, 37 gs.
Prospect the Second and her heifer calf, by Wellington, 29½ gs.
Purity and her heifer calf, by Wellington, 29½ gs.
Gweny, 30 gs.
Constance, 40 gs.
Victress and her bull calf, Ploughboy, 33 gs.
Plum the Second and her bull calf, by Wellington, 36 gs.
Evergreen and her bull calf, by Wellington, 36 gs.
Rosebud the Second and her heifer calf, by Wellington, 45 gs.

BULLS.
Wellington (bred by Mr. Turner, the Leen, Pembroke), by The Duke, by Northampton, dam Miss Forester, by Forester, 58 gs., Mr. Edwards, of Brinsop.
Sir Benjamin (bred by Mr. Rogers, The Grove, Pembroke), by Sir David, dam Pretty Maid the Second, by Young Royal the Second, 150 gs., Mr. T. Rea.
Silvius, by Sir Benjamin, dam Lizzy, by Regent, 70 gs., Mr. Sturge.
Great Eastern, by Wellington, 35 gs., Mr. Monkhouse.
Castor, by Sir Benjamin, dam Spot the Second, by Cholstrey, 46 gs., Mr. Duckham.

HEREFORD GREAT FAIR.—The annual fair for the sale of cattle, cheese, butter, and hops, was held on the Saturday. There was a large number of Herefords in the market, and a fair amount of business was transacted, though at declining prices, and many breeders refusing to accept those offered drove their stock home again unsold. Fat beasts were nominally 1d. per lb. lower than a month ago, but stores were most difficult to dispose of, the high price of hay and the

shortness of the root-crops deterring would-be purchasers from investing. There was a tolerably good supply of horses in the fair, and prices asked were reasonable; nevertheless transactions were limited, the price of hay and corn again operating against sales. The hop market was well supplied with old and some few new hops from the surrounding district, but very little business was done for want of buyers, who mostly go to Worcester to make their purchases. Attempts have been made from time to time to establish a regular hop market at Hereford, which, as regards distance, is much nearer the centre of the "Worcester" hop district than Worcester itself. There are far more Worcester hops (as all from this district are called) grown in Herefordshire than in Worcestershire, but the proximity and convenience of Worcester to the great consuming district have always made Worcester the depot for hops of Herefordshire. Buyers attending at Worcester, of course the hops are taken there for sale. To-day transactions were extremely limited, only one or two buyers being in attendance. The butter market was very high, the general price of tub butter being 1s. 2d. to 1s. 3d. per lb.

SHORTHORN SALES.

SITTYTON ANNUAL SALE.—The sale of yearling bulls, bull-calves, and heifers, from this well-known and celebrated herd came off on Thursday, Oct. 11; Mr. Mitchell auctioneer. The following is the list of sales:

BULLS.		GS.
Barrister—Mr. Wilson, Fetterletter .. .. .	.. .. .	21
Duke of Kent—Mr. Anderson, Bog .. .. .	.. .. .	25
Superior—Mr. Morrison, Bahalgardy .. .. .	.. .. .	24
Baron Nonpareil—Mr. Strachan, Fingask .. .. .	.. .. .	34
The Squire—Mr. Sharp, Newton, Ross-shire .. .. .	.. .. .	28
Champion of Scotland—Mr. Milne, Haddo .. .. .	.. .. .	28
Lord Lancaster—Mr. Argo, Mill of Gaval, New Machar .. .. .	.. .. .	24
Lord Nelson—Mr. Argo, Braeside .. .. .	.. .. .	12
Christmas Rose—Mr. Stoddart, Airyburn .. .. .	.. .. .	20
Lord Collingwood—Mr. Stables, Craigie .. .. .	.. .. .	20
The Dial—Mr. Gray, Densmill .. .. .	.. .. .	17
Moonshade—Mr. Bruce, Inverquhrie, Longside .. .. .	.. .. .	61
Star of Peace—Mr. Maitland, Muirton .. .. .	.. .. .	45
Rising Sun—Mr. Maitland, Bahalgardy .. .. .	.. .. .	22
Leroy—Mr. Argo, Mill of Gaval .. .. .	.. .. .	21
Lord Wellington—Mr. Rosa, Nether Park, Drumoak .. .. .	.. .. .	55
Sackbut—Mr. Bannerman, Engliston .. .. .	.. .. .	32
Glentilt—Mr. Brown, Craig, Udny .. .. .	.. .. .	23
Star of Promise—Mr. Sharp, Newton, Ross-shire .. .. .	.. .. .	46
Royal Duke—Mr. Beattie, Cocklarachy .. .. .	.. .. .	25
Clarence—Mr. Reid, Daneston .. .. .	.. .. .	20
Earl of Gloster—Mr. Shepherd, Craigie .. .. .	.. .. .	22
Winepress—Mr. Moir, Tarty .. .. .	.. .. .	29
Gold Butterfly—Duchess of Gordon .. .. .	.. .. .	19
Thunderbolt—Mr. Shewan, Peathill, Keith Hall .. .. .	.. .. .	25
Royal Mint—Mr. Thomson, Leyton, Belhelvie .. .. .	.. .. .	18
Rowland—Mr. Grammie, Shotover House, Oxfordshire .. .. .	.. .. .	20
Vigilance—Mr. Garden, Mains of Tolquhoun .. .. .	.. .. .	15
Lord Marquis—Mr. Ogilvie, Maryfield, Banchoy .. .. .	.. .. .	20
Prince of Prussia—Mr. Bontwell, Berryhill, Old Machar .. .. .	.. .. .	19

HEIFERS.

Fragrant—Mr. Reid, Daneston .. .. .	.. .. .	19
Mildmay—Mr. Marr, Uppermill .. .. .	.. .. .	19
Welcome—Mr. Reid, Daneston .. .. .	.. .. .	20
Bridget—Mr. Mitchell, Anagathel .. .. .	.. .. .	26
Bellflower—Mr. Ross, Nether Park .. .. .	.. .. .	39
Princess Royal—Mr. Mitchell, Anagathel .. .. .	.. .. .	20
Cornflower—Mr. Scott, Glendronach .. .. .	.. .. .	26
Roseblush—Mr. Rennie, Mill of Coullie .. .. .	.. .. .	17
Matchless—Mr. Turnbull, Brunter .. .. .	.. .. .	20
Elegant—Mr. Gordon, of Parkhill .. .. .	.. .. .	18
Nonpareil—Mr. Campbell, Kinellar .. .. .	.. .. .	41
Queen Bess—Mr. Reid, Daneston .. .. .	.. .. .	30
Caroline—Duchess of Gordon .. .. .	.. .. .	16
Acacia—Mr. Cochran, Little Haddo .. .. .	.. .. .	24
Jessamine—Mr. Argo, Mill of Gaval .. .. .	.. .. .	24

MR. TURNBULL'S SHORTHORNS.—The sale came off at Bonhill Place, on the 5th October; Mr. Wetherell auctioneer. The attendance was very limited, and the prices realized were comparatively moderate. The following is a list of the animals sold, with the purchasers' names:

COWS AND HEIFERS.		GS.
Isabella, roan, calved Oct., 1848—Mr. Stobie .. .. .	.. .. .	19
Norna, roan, c 10th April, 1852—Mr. Jones .. .. .	.. .. .	27
Alma, red, c April 14, 1854—Mr. Richardson, Ireland .. .. .	.. .. .	27
Scottish butterny, red and white, c Jan., 1856—Mr. Nimmo .. .. .	.. .. .	35

Broomley, red and white, c May 7, 1855—Mr. Marshall .. .. .	.. .. .	24
Norna 2nd, red and white, c March 10, 1855—Mr. M'Gregor .. .. .	.. .. .	31
Norna 3rd, red, c 14th March, 1856—Dead .. .. .	.. .. .
Orphan, roan, c 6th January, 1857—Mr. Wetherell .. .. .	.. .. .	39
Red Rose, red, c 23rd January, 1858—Mr. Scott .. .. .	.. .. .	34
Lady of Bonhill, red and white, c 23rd Jan., 1858—Duke of Montrose .. .. .	.. .. .	57
Norna 4th, roan, c 15th February, 1858—Mr. Scott .. .. .	.. .. .	51
Broom Blossom, red and white, c April 7, 1858—Mr. Addie .. .. .	.. .. .	28
Lily of the Valley, red and white, c 1st May, 1858—Mr. Richardson, Ireland .. .. .	.. .. .	32
Norna 5th, white, c 22nd February, 1859—Mr. Nimmo .. .. .	.. .. .	24
Strawberry Butterfly, roan, c 8th Feb., 1859—Mr. Addie .. .. .	.. .. .	33
Helena, red and white, c 28th Feb., 1859—Mr. Hamilton .. .. .	.. .. .	16
Lennox Beauty, roan, c 17th May, 1859—Mr. Wetherell .. .. .	.. .. .	32
Carnation, light roan, c 6th June, 1859—Mr. Wetherell .. .. .	.. .. .	31
Minna (twin), red and white, c Feb. 6, 1860—Mr. Webster .. .. .	.. .. .	12
Brenda (twin), red and white, c 6th Feb., 1860—Mr. Webster .. .. .	.. .. .	10
Moss Rose of Bonhill, red, c 24th Feb., 1860—Duke of Montrose .. .. .	.. .. .	22
Bonhill Lassie, light roan, c 15th April, 1860—Mr. Wetherell .. .. .	.. .. .	22
Fair Lady, light roan, c 30th May, 1860—Mr. Jones .. .. .	.. .. .	16
Gainfodine, red and little white, c 9th July, 1860—Dead .. .. .	.. .. .

BULLS.

Blunt, red, c 20th January, 1859—Mr. Stobie .. .. .	.. .. .	31
Master Crofton, red and white, c 7th April, 1859—Mr. Nimmo .. .. .	.. .. .	22
Hotspar, roan, c 26th March, 1859—Mr. M'Kenzie .. .. .	.. .. .	17
Maccoll, dark roan, c 28th May, 1859—Mr. M'Kenzie .. .. .	.. .. .	17
Harlequin, roan, c 22nd May, 1859—Mr. Wetherell .. .. .	.. .. .	32
Lennox Lad, red and white, c 8th Feb., 1860—Mr. Weir, Ireland .. .. .	.. .. .	26
Satin Jack, red and white c 16th Feb., 1860—Mr. Stobie .. .. .	.. .. .	16
Star of the West, roan, c 20th Feb., 1860—Mr. Wetherell .. .. .	.. .. .	22
Fitz James, c 22nd April, 1860—Mr. M'Kenzie .. .. .	.. .. .	19
Roderick Dhu, roan, c 14th May, 1860—Mr. Duncan .. .. .	.. .. .	15

LORD MONK'S SALE AT CHARLEVILLE.—Modesty was purchased by Mr. Armstrong, of Enniacorthy, for 27½ gs.; Myrtle 5th, to Mr. Brady, for Lord Charlemont; Myrtle 6th, also to Mr. Brady, at 31 gs.; Baby, to Mr. Purdon, for 16 gs.; Myrtle 7th, to Mr. Kiall, for 58 gs.; Myrtle 8th, to Mr. Barcroft, for 33 gs.; Myrtle 10th, to Mr. Riall, for 33 gs.; Myrtle 12th, to Mr. Robinson, for Lord Powerscourt, for 20 gs.; Myrtle 14th, to Mr. Seaton, Black Park, Co. Tyrone, for 14 gs.; Myrtle 15th, to same buyer, at 21 gs.; Myrtle 16th (six months calf), to Mr. Riall, at 23½ gs.; Myrtle 17th, to Mr. Barcroft, at 13½ guineas. A pair of trained bullocks, 28 gs., to Mr. Robinson. The shorthorn bull Masterman Ready was not sold, Mr. Barcroft being the only bidder. Lord Monk however, directed that he should be declared the buyer, but that gentlemen declined to take him under the circumstances, well knowing that his bid was far under his value.

THE LENTON SALE.—On Wednesday, Oct. 3, Mr. Strafford offered for sale at Lenton, near Nottingham, the entire herd of pure-bred short-horned cattle, the property of the late Mr. Wilkinston. The popularity of the stock brought together a large and highly respectable company, and although the several animals were shown in their natural state, without any of that artificial forcing too frequently seen, they realized fair remunerative prices. It will be observed that thirty-two lots of cows and heifers realized £1,127 14s., and sixteen bulls and bull calves £441. In addition there were also twenty-one cows and heifers which had been used for the dairy, and which brought about £500. The Zeal tribe fetched the highest price—to wit, Zeal 8th, roan, c. Dec. 7, 1857; got by Lord George—Mr. Fryer, 59 guineas; Zeal, 9th roan, c. Nov. 27, 1858; got by Lenton Favourite—Mr. Wells, for Sir H. Des Vœux, Bart., 98 guineas; and Zeal 10th, roan, c. Jan. 17, 1859; got by Lenton Favourite—Mr. Heaton, 46 guineas.

CAPTAIN SPENCER'S SALE.

The sale of this herd, by Mr. Strafford on Friday, Oct. 5, has added another leading feature to the records of English Shorthorns, and the fine average is still more noticeable from the fact, that it is very little more than four years since Capt. Spencer began. An excellent luncheon was provided, and

among the company were the Earl of Lonsdale, the Earl of Airlie, and Messrs. Ambler, Atherton, Naylor, Drewry, Doig, Dickinson, McClaren (for Lord Kinnaird), G. R. Barclay, &c., and several Cumberland men. The weather in the morning was rather rainy and misty, but it cleared up towards twelve o'clock, and there was no shower to mar the proceedings, which went off with great spirit. This is the third great Cumberland average within little more than five years. None of Captain Spencer's cattle were exhibited at the recent Carlisle show, where only £26 were allotted to ten Shorthorn prizes!

Blink Bonny was stated to be so bad with rheumatism, and Bloom to be so completely amiss with cold, that they were not offered, and as Josephine 2nd, which Captain Spencer had originally intended to reserve, was dead, only 20 out of the 23 females were put up. Among the highest lots were, Lizzy, 130 gs. (Hon. Colonel Pennant); Leila, 105 gs. (Earl Airlie); La Valliere, 100 gs. (Lady Pigot); Castanet, 155 gs. (Lady Pigot); Lady Eagle, 105 gs. (Mr. Mitchell, of Alloa); Josephine, 155 gs. (Hon. Col. Pennant); Wild Eyes 28th, 100 gs. (Mr. Atherton); Miss Kitty, 185 gs. (Hon. Colonel Pennant); Maid of Orleans, 67 gs. (Lord Kinnaird); Slavonia, 52 gs. (Mr. Stevenson); Crown Princess, 51 gs. (Mr. Braithwaite); and Sultana, 46 gs. (Earl of Airlie). It will thus be seen that Lizzy, and her three daughters, Leila, Josephine, and Miss Kitty averaged nearly 144 guineas; no small proof of the importance of determining to have a good tribe, and following it. The twenty females made £1,518 6s., or an average of £75 18s. 4d.

The ten bulls were sold as follows: Young Ben, 54 gs. (Earl of Airlie); Seigneur, 81 gs. (Lord Lonsdale); Skyrocket, 62 gs. (Mr. Blackstock); Royal Duke, 51 gs. (Mr. G. A. Thompson); Baron Lowther, 46 gs. (Mr. W. Fox); Knight of Distinguon (twin), 43 gs. (Mr. J. Caddy); Knight of Moresby (twin), 40 gs. (Mr. G. A. Thompson); Prince of Orange, 25 gs. (Mr. Braithwaite); Knight of Alledale, 46 gs. (Mr. J. B. Senhouse); and Baron Garnock, 15 gs. (Mr. Fisher). The sum total for these ten bulls was £486 3s.; and the average £48 12s. 3d., which gives a grand total of £2,004 9s., and an average for the 30 head of £66 16s. 4d.

SALE OF HEREFORD STOCK.—A number of very fine bulls belonging to Mr. Peiry, of Cholstrey, exhibited in the Hereford show-yard, were brought to the hammer during the day by Mr. Russell. Lord Wellington, calved July 26th, 1859, by Noble Boy, was bought in at 100 guineas; Chehusford, 15 months old, also by Noble Boy, dam Carlisle, was bought by Mr. Richard Hawkins, for 84l.; Lord Nelson, also 15 months old, and by Noble Boy, brought 52l. 10s., being bought by Mr. Thomas Rea, of Westonbury; St. Clement and Young Salisbury, also offered for sale, were not disposed of. A bull calf, Conus, the property of Mr. Taylor, of Thingehill, was knocked down to Mr. Bennett for 42l., and another, the property of Mr. Goode, of Felton, was sold for 27l. to Mr. Sexty. Mr. Russell also sold a number of splendid bulls, the property of Mr. Price, of Pembridge, which had been exhibited outside the show-yard. Shamrock the Second, some 13 months old, was knocked down to Mr. Gibbons, of Hampton, for 48l. 4s.; Garibaldi, a well-known bull, also 13 months old, with a capital pedigree, brought 157l. 10s. He is destined for Australia, we understand, and we have no doubt he will support the character he bears as a really splendid bull. White Nob was knocked down to Mr. Price, of Benthall, near Ross, for 40l. 4s.; Perfection was purchased by Mr. Philip Jones for 31l. 10s.; and a pair of show steers—the one 1 year and 10 months old, the other 1 year 9 months and 2 weeks—were knocked down at 65l. 2s. to Mr. Lawrence, of Croydon, Sussex.—*Hereford Times*. [Mr. Corner has also made some other purchases of this breed for Australia.]

MR. J. G. DIXON'S SALE OF SHORTHORNS.

Considering that Pantan, on the previous day, had pretty well drained their pockets, this sale was by no means ill attended, both by "Shorthorn visitors" and Lincolnshire men. It was held in a field just outside Caistor, and a handsome lunch was laid out in the schoolroom, which

was recently built as a testimonial to Mr. Dixon, by the town and neighbourhood, towards whose prosperity and well-being he has contributed so much. Independently of two "Extra Stock" cattle, which were sold after the rest, the amount realized was 1,493 guineas, being an average of rather more than £29 11s. 6d. for 53. Of this the 11 bulls contributed about 26 gs., and the 42 females nearly 29 gs. Eight of the latter averaged 49 gs. each, but this average was swelled by the white Holly, a four-year-old daughter of Ratcliffe and Lady Hawthorn, who fell to Mr. Topham's lot for 70 gs. She was a nice mellow animal, and it was rather expected that she would have gone for more. The biddings for the three last heifer calves by Orthodox 20th were pretty spirited. Diamond (26 gs.) was bought by Mr. Barnes, and Ruth—a June calf of most orthodox Favourite descent, but with rather too chubby a head—for 35 gs. by Mr. Topham.

The six-year-old bull Eftonel was as long as a canoe, and 29 gs. was all he could achieve. There were no biddings at all for the odd-looking Orthodox 24th; but Orthodox 25th and Orthodox 26th—a son of Holly's—were decidedly cheap at 29 gs. and 37 gs. respectively. Orthodox 28th and Orthodox 29th were also well worth 35 gs. they each fetched, and the former passed into Mr. Noake's hands.

Mr. Dixon was not so favoured in the weather as his neighbour; a drizzling rain set in shortly after the sale commenced, and continued throughout the entire afternoon.

HEREFORDS FOR AUSTRALIA AND CANADA.

Last week three young bulls of this famed race of cattle left the port of London for Mr. White, of Sydney. They were selected from the following herds, viz., that of the Rev. Archer Clive, Whitfield, Mr. Evans, Llandowlais, and Mr. Rees Keene, Penraig, Monmouthshire. On the 24th the steamer Anglo-Saxon sailed from Liverpool with one of the largest and most choice selection of these animals we have ever known leave our shores at one time. They were purchased at the recent sale of Lord Bateman's herd by Mr. J. J. Stone of London, for his brother, Mr. F. W. Stone of Moreton Lodge, Guelph, Canada West, who has long been a very successful breeder of shorthorn cattle and Cotswold sheep; but now having added another farm to his estate, he is about to commence breeding Herefords. This gentleman, from a pure love of agriculture, takes a prominent part in the progression of that district, being president of their agricultural society, at whose exhibition he had frequently seen with regret awards given to animals of the Hereford breed having but little claim to the intrinsic merits of the pure-bred animal. This induced him to have the following purchases made upon his account at Lord Bateman's sale, viz.: Gentle, Baroness, Hebe, Nelly, Verbena, a daughter of Vesta (Vesta is an own sister to Gentle), a daughter of Little Beauty and own sister to Baroness, a daughter of Perees and own sister to Nelly— which, together with the bull Patriot, are destined to form the basis of the Moreton Lodge herd of Herefords. They are all of prize-taking families; and Gentle and Baroness were two of the four heifer-winners of a first prize at Leominster, 1859, and are own sisters to Nymph and Vesta, the winners of first prizes at Cardiff and Leominster, 1858, and second at Hereford. Vesta also took a first prize at Barnstaple, 1859, and Hebe and Nelly were winners of first prizes at Hereford, 1859, Dorchester, 1860, as well as at Canterbury. With the exception of Vesta's daughter, the animals purchased are all by Carlisle (923), the winner of the first in his class at Cardiff, 1858, besides eight other prizes at different agricultural meetings. Vesta's daughter is by Shobdon (1725). Shobdon by Carlisle was a winner of a second prize at Barnstaple. On the same day that these animals left Liverpool for Canada two young bulls from Mr. Duckham's herd sailed from London, in the Star of Peace, for Sydney, viz., Cronkhill (1558) and Emperor. The former was bred by the Right Hon. Lord Berwick, and by his Lordship's celebrated bull Attingham (911); Attingham was a winner of first prizes at the Shrewsbury and Carlisle meetings of the Royal Agricultural Society of England; Cherry the 7th, Cronkhill's dam, won

a third prize at Windsor, and second at Lewes. Emperor is by Napoleon the 3rd (1019), winner of a first prize at Chelmsford, and medal with high commendation at Paris, where his sire Walford (871), won the first prize of 1,000 francs and gold medal; his dam Carlisle won the first prize in her class at the Carlisle, Chelmsford, and Salisbury meetings of the Royal Agricultural Society of England. Animals so descended cannot fail to improve the herds in which they may be placed.

BERKELEY AND THORNBURY AGRICULTURAL ASSOCIATION.

There are few parts of England where the establishment of an agricultural society was more needed than in this; for there is scarcely any other branch of farming that has made so little progress as that in connection with the dairy. If we except a few inventions in machinery, scarcely any novelty has been introduced, and the present generation has been contented to amble on in the footsteps of their forefathers. In some districts, local meetings may probably be in excess; but this is, without any doubt, an exception; and the bantling being now fairly brought into existence, requires only the fostering care of its supporters to render it amongst the most useful and important of the local agricultural associations.

In order to raise the system of dairy practice to its most profitable condition various items come under notice, not one of the least important being the kind of manure best adapted for the production of cheese, as experience determines that while farm-yard manure increases the quantity of herbage, it has a prejudicial influence on the quality of the cheese. To determine which are the most valuable properties in a dairy-cow is also an important question: whether it is most profitable to select animals highly gifted for their contributions to the pail, without reference to future feeding properties, or whether it is most desirable to cultivate those animals which combine fair pretensions in both respects—can only be determined by carefully-conducted experiments. The culture of roots forms another interesting feature as regards successful farming in this district, particularly so as touching the proportion of land that can be most advantageously employed in that manner, but which on many farms is considerably restricted.

To Sir Maurice F. F. Berkeley and Colonel Berkeley the establishment of this society is principally due. The gallant Admiral has been most liberal in affording every facility for the exhibition by permitting the use of the newly-erected farm-buildings at Ham, a short distance from the Castle; and the only cloud to the full enjoyment of this, the inaugurating meeting, was the lamented death of one of the farmers' first patrons, the Duke of Richmond, to whom Sir Maurice Berkeley was nearly connected by marriage. Thus a large party of distinguished guests, who had been invited to partake of the hospitalities of Berkeley Castle, were, under the melancholy circumstances, compelled to submit to the disappointment of not being received.

The attendance of visitors in the town, however, far exceeded the most sanguine expectations of the Society; but this may in some measure have arisen from the very liberal amount of premiums being given, exceeding in many instances sums offered by societies of old standing.

The first class for the best bull, cow, and their offspring, included eight sets of animals, for which the first prize of £12 was awarded to Mr. W. J. Pouting, of Hamfield, near Berkeley; the second, of £8, to the Earl Ducie, of Tortworth Park, Wotton-under-Edge; the third of £4 to Sir M. F. F. Berkeley, K.C.B., of Berkeley Castle. Commendations were given to the animals exhibited by Mr. Richard Barton, of Oakley, near Berkeley, and Mr. John Nicholls, of Iron Acton, near Bristol.

In the second class, for bulls above 2 years old, the bulls shown in the first class held similar positions in this; the premiums being £8, £4, and £2. Mrs. Minett's bull was commended.

Both these classes were well represented, and a remarkably level, symmetrical bull, Prince of Orange, exhibited by Sir Maurice Berkeley, would have undoubtedly been awarded the first prize had he been more perfect to the touch.

The next class, for bulls under two years old, contained six very useful animals, the best of which was Mr. Saul Savager's, of Lays Farm, near Wotton-under-Edge; the second best, Mr. John Hopkins Knight, of Haw Park, near Wotton-under-Edge; the third best, the Earl of Ducie's, of Tortworth Park, near Wotton-under-Edge.

Class 4, for the best cow in-calf or in milk, strange to say, in this extensive dairy district, contained only four entries, three of which were exhibited by Mr. Richard Barton, of Oakley, near Berkeley, the other by Mr. Henry Barber, of Blishury, near Berkeley. The former gentleman took the two first prizes, the latter the third.

Mr. William Jones Pouting, who already had the two first premiums accredited to him, was again successful in Class V for the best pair of in-calf heifers; the above Mr. Richard Barton, came in for second honour; Mr. William Gaisford, of Stone, near Berkeley, third. Highly commended: Sir George Jenkinson, Bart., of Eastwood Park, near Berkeley; and commended, Mr. William Cox Wetmore, of Stone, near Berkeley.

For the best pair of storks the aforesaid Mr. Richard Barton took the first prize, and Mr. William Gaisford the second and third. The respective value of prizes in each of the last four classes were £5 for the first, £3 for the second, and £1 for the third.

Two remarkably good Hereford oxen, exhibited by Mr. William Taylor, of Heabury, near Bristol, took the two prizes of £8 and £4 respectively for first and second in Class 7; a good short-horn shown by Mr. John Richings, of Wotton-upon-Edge, receiving only a commendation.

Class 8, for the best fat cow, contained eight entries, whereof the best was adjudged to be that of Mr. Richings, the second-best that of Sir M. F. F. Berkeley, K.C.B.

A special prize, given by Sir Maurice Berkeley, for the best mare and foal for hunting purposes, attracted the attention of nine exhibitors; and in this class were some good-looking promising foals, many of them bidding fair to shame their dams in aristocratic appearance and true symmetry of form; for good brood mares do not abound in this vale at present, neither do their owners pay that regard to good keep which is essentially necessary to success in breeding horses. With the exception of one by Kingstown, all the foals were by Moorcock and Elvaston. The first prize of £10 in this class was given to Colonel Berkeley, M.P., Wickacme, near Berkeley, and the second of £5 to Mr. James Nicholls, of Symond's-hall, near Wotton-under-Edge. Commended: Mr. Thomas Taylor, Pearce-of-Mobley, near Berkeley.

In Class 10, for the best stallion for agricultural purposes, of which there were only four, with the exception of the one to which the prize of £10 was awarded, they were an indifferent sample. The successful exhibitor, Mr. Burnett, of Kingscote, near Wotton-under-Edge, possesses a useful three years old colt of the Clydesdale breed. The judges highly commended a grey exhibited by Mr. Alfred Paulton, of Eastcourt, near Tetbury. His great size, it may be presumed, gained him the distinction.

Among the mares and foals for agricultural purposes there was nothing worthy of more than mere passing mention. The first prize of £5 was gained by Mr. Samuel Long, of Clingre, near Dursley; and the second prize of £3 by Mr. George Laurence, of Hurst Farm, Slimbridge. A very respectable exhibition followed, for fillies or geldings for agricultural purposes, of which there were six. The first prize, £5, fell to Mr. William Hill, of Hengaston, near Berkeley; the second, of £3, to Mr. Henry Bailey, of Wallgaston, near Berkeley. Commended, Mr. Thomas Shipp, of Slimbridge; Mr. Joseph Adams, of Huntingford, near Wotton-under-Edge; and Mr. Henry Barber, of Blishury, near Berkeley.

We now approach the sheep, which were decidedly the only weak feature of the exhibition; but it is not a sheep district, therefore a numerous entry could not have been expected, and it behoves the Society to consider whether another year their funds cannot be better appropriated. With the exception of the first prize of £4 for a ram, which went to the World's End, and to the exchequer and farm of a worthy cultivator,

of the soil (Mr. James Taylor), all the other prizes were awarded to Messrs. James and Rushmire Nicholls.

The pigs exhibited were good, but without claiming any special observation.

Of cheese there was a bountiful supply, consisting of eleven entries of thick and twenty of thin. The first prize of £4, for thick, was awarded to Mr. Stephen Harding, of Sanjgar, near Berkeley, an award anticipated by all who knew the general excellence of the goods from that celebrated dairy.

The second prize of £2 fell to the share of Mr. Martin Neale, of Peddington, near Berkeley, and Mr. Charles Brunett, of Falfield, near Berkeley, came in for commendation. The first prize of £4 for their churn, Mr. John Smith, of Cam, near Dursley, and the second of £2, Mr. John Harris, Lower Cam, near Dursley.

The prizes for poultry, the special gifts of Colonel Berkeley, the President, and Major Peach, the Vice-President, brought a godly array of plethoric geese: of turkeys there were none, of dorkings only a few, but another year it is proposed that additional premiums will be added.

THE DINNER took place at the Berkeley Arms, and was well attended—in fact, the room, which is a spacious one, defined the limits. The event already referred to, the lamented death of the Duke of Richmond, uncle to Colonel Berkeley, prevented the member for Cheltenham presiding on the occasion; but the chair was occupied by Colonel Kingscote, C.B., one of the members of the Western division, supported by his colleague, J. Rolt, Esq., M.P., B. L. Baker, Esq., &c., &c., and the proceedings of the day, which commenced under most favourable auspices, terminated with equal success.

THE ROYAL AGRICULTURAL SOCIETY OF IRELAND.

CAPTAIN BALL'S CASE.

At a meeting of the Council, held in Dublin, on Thursday last, the Secretary read a declaration made by Captain Ball, declaring that the animals exhibited by him were *bona fide* his property, and in his possession at the time of entry and exhibition.

CHAIRMAN: Was there a letter written to Mr. Bell?

CAPT. THORNHILL: There was a letter written to him, stating that Captain Ball was required by the Council to make the necessary declaration.

The letter having been read,

The CHAIRMAN said: The regular course, I suppose, will be to inform Mr. Bell that Captain Ball having sent forward the necessary declaration, they were satisfied that he was the owner of the animals. But what ought to be done with regard to retaining the prize until the question was settled?

Mr. WADE then proposed a resolution to the effect that Captain Ball having made the necessary declaration, he was entitled to the prize. The resolution was passed unanimously.

No explanation appears to have been offered by Captain Ball, nor any communication whatever to have been received from Mr. William Torr, Mr. Cusack, nor Mr. Owen, who were employed to buy in the stock at his sale.

THE BULL "STATESMAN."

A long letter was read from Mr. Tod, in which, however, he distinctly made "no claim to the prize," and a resolution was passed to the effect "that Mr. Tod, not having furnished the required certificate, he was not entitled to the Society's prize as awarded to his bull at the Cork show, and that the prize be awarded to the second in merit in that class." Mr. Chute consequently succeeds to the first prize with "Duke of Leinster," and Mr. Barcroft's Sir Colin takes the second.

THE TALBOT DE MALAHIDE CHALLENGE CUP.

The terms of competition for this cup have been finally settled. Lord Talbot has offered this special prize for competition to landlords who shall build the greatest number of farm houses, and farm buildings suitable for tillage farms, valued under the tenement (Ireland) valuation from £50 to £150 per annum. Should the tenement valuation not be in force, the poor law valuation to be admitted. The conditions

are—The competitors for the Challenge Cup must, previous to the 1st of February, 1861, send into the Secretary plans of their farmsteads, and an account of the expenditure thereon, from which copies may be made, in order to enable the judges to discharge their duty efficiently. The whole building must be of stone, or brick and mortar, and covered with slates or tiles, and the timber of which the roof is composed is to be foreign timber. The judges are to see that the house and offices are built in a healthy, well-drained situation.

FARMING ECONOMICS.

MANGEL WURZEL.

DEAR SIR,—There is no difficulty in growing a heavy crop on a stiff clay soil, provided it is deeply drained, very deeply cultivated, and the land well filled with good manure. When too busy to cart on the manure I have grown excellent crops with 4 cwt. of guano and 2 cwt. to 3 cwt. of salt mixed together, and sown broadcast, then scarified or ploughed in. The mangel seed I mix with wet sand for a few days until it chips, and then drill it, drying it sufficiently so as not to stick to the cups of the drill. I never miss a plant. I have now (June) a good supply of sound roots, having lost none by frost, the roots having been thrown into the carts as they were pulled, and at once clamped and covered with straw. It is more easy to grow a crop of mangel than to preserve them. The more moist the land when they are pulled the better, because the fibres have then attached to their some adhesive earth, which is most material for their preservation. They are in the worst possible condition for keeping when they come up dry, clean, and free from earth. They then in the spring appear to dry-rot. It is very undesirable to let them lie on the field when pulled: the fibres and earth attached to them dry, and when thrown into the cart the earth leaves the fibres. Although more difficult to cart off in wet weather they will keep much better, and probably I shall irrigate mine just before pulling, in order that they may keep the earth attached to them, if not otherwise sufficiently damp. Although very desirable to protect them from frost, they ought not to be finally shut in with earth until the heat has evaporated, and it is desirable to have draining pipes placed vertically along the roof or ridge of the clamps. I find that by trench-ploughing for mangel I mix with the surface soil a portion of the tenacious aluminous subsoil. The mangel multiply their fibres in this, and as we now take them out of the clamp they are fresh and firm, having masses of this moist clay attached to them by a net-work of fine fibres which they have pushed into it. I hatch my clamps, and then earth over the thatch. A large and successful farming friend of mine not only does this, but thatches over the earth in order to prevent it getting wet and freezing. One of the advantages of this plan is, I think, to prevent the heat of the sun acting on the earth in the spring and summer—for we all know that in sunshine the earth attains a heat some 30 to 50 degrees above that of the air. The glossy thatch being a non-conductor acts the reverse of this, and thus keeps the mangel cool enough to retard vegetation. If you do not thatch over the earth, place the clamp in the shade of some fence or sun screen.

Dear sir, yours faithfully,

Tiptree Hall, June 18th, 1860.

J. J. MECHI.

THE AGRICULTURAL HALL COMPANY. — Shares to the amount of sixteen thousand five hundred pounds have been taken in this Company by members of the Smithfield Club. But that amount includes those allotted to the Directors, who are all members of the Club. Mr. Samuel Sidney, a gentleman well-known as a writer on agricultural topics, as well as a fluent speaker at the meetings of the Royal Agricultural Society, and the Farmers' and the Smithfield Clubs, has been appointed Secretary to the Company.

THE BUTTER TRADE.

SIR,—I have to thank you for the aid you have given me, in my efforts to call the attention of the farmers of Ireland to the butter question; and I avail myself of your space to bring before the notice of the farmers of Ireland those facts which demand some consideration at their hands.

The earlier tables supplied by Mr. Donnelly do not classify our stock in the manner which is done by those of later date; consequently, any comparison must, as far as actual data are concerned, be confined to those of later date. The first return of milch cows was made in 1854, when the total number was 1,517,682. Judging from these returns, I should say that on an average one calf is reared for every three milch cows in Ireland; and while from the improvement in our breed of stock the young animals of the Shorthorn breed are more valuable than others, it may be—I do not say that it is—but it may be that this improvement is obtained at a sacrifice in the quantity of butter.

The statistical information as to our export of butter is not as complete as it ought to be, and some of our M.P.'s connected with agricultural districts would render a great service to those interested in the subject by procuring returns of the entire shipments of butter for the past five years, and also annual returns for the future. The principal markets are London and Liverpool; and as over nine-tenths of our butter goes to these markets, it may perhaps suffice to refer to the arrivals at these ports, to illustrate the actual position of the staple agricultural traffic of Ireland.

I find that the number of milch cows, and the arrivals of butter, during the past three years, is as follows:—

	No. of Milch Cows.	Increase.	Arrivals of Butter in London and Liverpool.	Increase.
1857....	1,605,350		882,501 firks'ns.	
1858....	1,640,000	34,650	932,407 "	49,846
1859....	1,690,389	50,389	936,158 "	3,640

If it be the case that our population has not been increasing, we may suppose that the quantity of milk and butter consumed at home has been about the same in each of the three years. We should naturally look for an increase in our exports, which would correspond with the increase in our milch stock, and as the yield of butter is about three firkins for each cow, we would have looked for an increase of 1858 over 1857, of 103,950 firkins, instead of 49,846; and in 1859 over 1858, of 151,167, whereas the increase was only 3,649 firkins. The value of the firkin of butter is about £3, and the loss of 1859 from non-production, or rather non-exports, would be nearly equal to half a million sterling.

The deficiency in the yield of butter continues through this year, and taking the Liverpool returns from the 1st of April, and the London returns from the 1st of May, to last Saturday, they afford the following results:—

1858.	1859.	1860.
457,351 firkins.	490,819 firkins.	395,243 firkins.

Here we see a deficiency or 1860 under 1859 of nearly 100,000 firkins, and it surely becomes a subject worthy of consideration to ascertain from what cause this deficiency arises.

Since I called the attention of the farmers at Thomastown to this subject I have received Mr. Donnelly's returns, and I find from it that one of the effects of the want of food during last winter was to reduce the number of our milch cows, and that they are now less than they were last year by 67,779, but they are still in excess of those of 1857 by 17,260.

The subject appears to me to be fraught with much importance, not alone to the farmers of Ireland, but also to the national interests of the country, as it is impossible to diminish the receipts of one branch of native manufacture to the extent of half a million per annum without other classes besides farmers feeling the effect.

Three causes have been suggested for the decrease to which I have alluded, and I shall merely state them.

1st.—It is said that the short-horned breed, which are on the increase in Ireland, are not so beneficial for dairy purposes as for feeding.

2nd.—It is said that constant grazing of dairy-land is exhausting the soil of the mineral ingredients taken off in the offspring and product of the cow, and hence the deficiency.

3rdly.—It is asserted that the milch cows are insufficiently fed, either with home-grown roots or foreign products, such as oil-cake and bruised corn, and that it is to this cause we must trace the deficit.

I shall offer no opinion at present on the relation which those causes may have to the effect produced; but I may call attention to the fact, that though the stock to be supported had increased from 1856 to 1859, the quantity of green crops had lessened; thus there were more mouths to fill, and less food to supply them with.

I fear I have trespassed on your columns at too great length, and I shall conclude by suggesting to our leading societies, the Royal Dublin Society and the Royal Agricultural Society, the importance of having some *viva voce* discussion on this subject, in order to elicit the views of practical farmers and experienced agriculturists on this important subject.

Yours, &c., JOSEPH FISHER.
Waterford, Sept 25, 1860. —Irish Farmers' Gazette.

WELSH BUTTER AND LONDON TASTE.

At the dinner of the Pembrokeshire Agricultural Society, Mr. Bagnall said, "When I accepted the invitation to come down here to act as judge of the dairy produce, I made it a sort of condition that I was to be excused the necessity of making a speech; but as I am on my legs, I will endeavour to make a few remarks. You will remember that at the last meeting I had occasion to state that I was disappointed with the quality of the butter then exhibited. This was fully accounted for by the peculiar character of the season, for as we cannot expect a man to make bricks without straw, we cannot expect farmers to make butter without grass and water. Last year the season was attended by a remarkable drought. This year it gives me very peculiar pleasure to state that I have been pleased with the butters which have been exhibited to-day. I notice a very decided improvement in the quality. I always believed that the Pembrokeshire butter was over-salted, and that I think has been entirely removed. I am glad to hear, from information which I have had from merchants in this town, that, upon the whole, the Pembrokeshire butters of the farmers are much improved. You may have noticed a controversy in the London papers with regard to the exorbitant prices of butter, but I do not think such complaints have been well founded. In these days of free trade, and in a place like London, with its severe competition, I think it impossible for any trader to obtain exorbitant prices. I remember two years ago a gentleman connected with a firm in this town—not one of the oldest firms—mentioned that he could always pass off his butter to the London market, and that he had a vent there for all his butter. I was surprised at this, and as I failed in my previous efforts to open a market in London for Carmarthen butter, made a purpose journey to London, and attended Leadenhall, Newgate, Hungerford, and other markets. I also called upon a large firm at the bottom of Ludgate Hill; I saw the principal, and I handed him my card, and introduced my business to sell Welsh butter—Carmarthen butter. He turned round, and said, 'Your butter will not suit the London market.' I asked 'Why?' and he replied, 'They are too good for our market.' As we are not often complimented for having an article too good, I thought he was 'chaffing' me, and I began to think that as I was fresh up from the country, perhaps he might have seen something green in my eye, and although I could stand a little chaff, I did not like practical jokes. 'I am not joking,' he said; 'I repeat that your butter is too good.' The Londoners, or Cockneys, have a peculiar taste for butter: they don't like a wholesome honest butter, but something that will cut like clay—something that will spread stiffly over bread, without permeating either into bread or paste, and therefore butters are prepared in a peculiar manner for the London markets. They adulterate it with oleaginous and farinaceous substances, and make it thick and hard: it is thus a very inferior butter, for while it sells for 84s. in the market, Pembrokeshire butter will realize from 100s. to 105s. We can, therefore, go on improving without fearing any competition from Dorset, Carlow, or Cork. These three western counties of Wales make as good butter as any counties in the world.

DEATH OF THE DUKE OF RICHMOND.

Agriculture had no truer friend than the Duke of Richmond. His heart was really in the cause, and it was as no mere stepping-stone to something else that he showed at a rural gathering or shook a farmer by the hand. *He was with them*, and his justly-earned popularity told how well they appreciated him. Through the varied fortunes that have followed Agriculture there was no sorer a man to depend upon, nor one who more readily responded to any call made upon his services—and there were many. Until within the last few years, when declining health alone compelled him gradually to withdraw from all excitement, no man was so often before the world as the advocate of Agriculture. In the House of Lords, at meetings of all kinds held in association with the interest, amongst his own tenantry at Goodwood and in the North, he was equally staunch, active, and considerate. The Duke of Richmond was one of the warmest promoters of the Royal Agricultural Society, of which he had twice been President, and of which he died a Trustee. He had for many years been the President of the Smithfield Club, where his absence of late had been a source of general regret. When in gratitude to his exertions the farmers of the Kingdom offered him some testimonial of their thanks and respect, he would hear of this in no other form but in the establishment of an Institution for the benefit of their own order. He coveted no high places for himself, but would rise to speak from his seat in the midst of them, and triumph over his neighbour Rigden, or renew the challenge for the next meeting, as the fortune of the day might have told for or against him. The princely hospitalities of Goodwood, and the taste and genuine feeling with which they were administered, have long been the theme not merely of Englishmen, but of the world. His devotion to his country as a soldier in his earlier life, and as a soldier to his latest breath, are as familiar to most of us. He may have almost been said to have died with harness on his back, for he only left the charge of his regiment when he could no longer get about. He dearly loved his profession, and Mars divided with Ceres his first hopes and aspirations. His Grace was, perhaps, only less keen as a sportsman, having been, previous to the wound he received at Orthes, a good cricketer, a capital shot, and a forward man with hounds. Then, again, he made the race-meetings in his own park, the best in the kingdom; but we fancy his own sympathies at Goodwood were more with his old shepherd and the Southdowns, than with Mr. Kent and the training-stable. Agriculture, in fact, was something of a passion with him, while his career will stand as a memorial of how well he served her. Never was there an honor more justly earned than when the Smithfield Club placed Lord Spencer on the one side of the Gold Medal and the Duke of Richmond on the other.

THE DUKE OF RICHMOND.—It is with great regret that we announce the death of this estimable nobleman. He

expired at twenty minutes before two on Sunday afternoon, October 21st, at the family mansion in Portland-place. For some months past the Duke's health had occasioned much anxiety to the members of the family. In August last he proceeded to Gordon Castle, but was unable to participate in the sports of his friends; and the hopes that were entertained that change of air would prove beneficial were not realized. The lamented Duke returned from Scotland, about a fortnight ago, in a still weaker state, and has since been gradually sinking. We believe he died from dropsy. In politics of late years he was a supporter of the Earl of Derby and the Conservative party, and opposed to the Repeal of the Corn Laws. His Grace had, however, 16 years before supported the Reform Bill, and held the office of Postmaster-General in Earl Grey's administration, and formed one of the members of the Cabinet from 1830 to 1834. He also gave his support to Lord Melbourne's Government. On the Earl of Derby's accession to office in March, 1852, the Duke of Richmond was solicited to take office, but declined. The late Duke was a most useful member on the committees of the House of Lords, and for many years devoted much of his time to the public service. Both on his large domains in Sussex and in Scotland he was beloved by his tenants as one of the best of landlords. By his honourable bearing and frank manners on all occasions he had endeared himself to a large circle of friends, who will long cherish his memory. The Duke was born in London on the 3rd of August, 1791, so that he had completed his sixty-ninth year. He is succeeded by the eldest son of a large family, the Earl of March.

THE UNFAVOURABLE HARVEST.—A CONSIDERATE LANDLORD.—During the past week all the tenants on the estate of Richard Benyon, Esq., M.P. for Berks, received a notification that the rent audit would be postponed from January next to the following month of April. Mr. Benyon has been led to adopt this course from the unseasonable weather for the harvest, and the difficulty which his tenants would have in thrashing their produce so as to realize a return for the capital which they have employed. This is a step in the right direction for promoting the agricultural interest; and Mr. Benyon, by this kind and considerate act, has raised himself in the esteem and respect of the constituency which he now so worthily represents. Few landed proprietors have done as much as Mr. Benyon to advance the cause of agriculture. In the trial of new implements he has taken the lead, and afforded to his tenants the opportunity of adopting them. Mr. Benyon is a specimen of the "old English gentleman," at all times showing a deep sympathy for the farmers, and in every possible way seeking to promote their welfare. It is to be hoped that other landlords will show the same consideration to their tenants, and extend the time for the payment of their rents.

CENTRAL FARMERS CLUB.—The Session will reopen on Monday next, November 5th, when Mr. Fisher Hobbs will read a paper on the trials of agricultural implements, certainly one of the most important and best-timed questions the Club has ever entertained. The Council of the Royal Agricultural Society will re-assemble on the Wednesday following.

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 sheep in the fields, or to young cattle in the yards.

Flood water meadows; clean out, and put into proper order for use, the main channels and conveying gutters, and the sluices of flooding gates.

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

Thresh grains regularly, in order to supply the animals with straws and the yards with litter. Cut chaff of hay and straw mixed, for the horses, the fattening bullocks that are tied up, and for being steamed for the milch cows. Apply all litters 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. Timber cribs with latticed bottoms suit best, as the filth and rain-water escape freely downwards. The turnips should

be all eaten up by night, to prevent accidents from choking that may happen unseen. Give to milch cows 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-night on the bared ground in mild climates, but in boisterous latitudes they are allowed to run for shelter.

Feed swine as directed last month, give ample littering, and keep the animals dry and warm. Feed poultry with light grains, and with steamed potatoes and meals mixed, and placed in troughs under 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, chaff, bran, and oats, with a feed once a day of raw or steamed roots. The first winter's keep has a very great share in making good animals.

Begin to plough stubbles, and follow with the subsoil plough in deep lands. Prepare by fallowing the lands intended for the early spring green crops, so long as the weather will permit.

CALENDAR OF GARDENING.

KITCHEN GARDEN.

Artichokes: Protect the plants by mulch or masses of leaves, after removing all the stalks and decayed foliage. Dig roots for temporary supply of the so-called Jerusalem artichoke. Store all the potatoes, carefully observing the condition as to soundness or 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 parsnip.

Celery: Finish earthing if frost threatens; 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 by radish and salads.

FRUIT DEPARTMENT.

Prune the apple and pear trees or espaliers in

the spurs during mild weather; general pruning is well done in February.

Raspberries may be tied by file cord neatly to stakes, six rods to each, stopping at an angle towards the north, or to a neat open trellis; exposing the next year's growing canes to the sun. Too much crowding is produced by the perpendicular and confined tying to stakes.

FLOWER GARDEN.

Tulips, hyacinths, jonquils, &c.: Plant in rich sandy beds; open the holes neatly; place the bulbs an inch or two deep, carefully observing to cover every part with surrounding earth. 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 every convenient opportunity. Dry sawdust is a fine material to plunge in, as it guards the mould effectually.

AGRICULTURAL REPORTS.

GENERAL AGRICULTURAL REPORT FOR
OCTOBER.

The weather during the greater portion of this month, although rain has fallen in tolerable abundance, has been seasonably fine, and, on the whole, vegetative. Notwithstanding the advanced period of the year, the whole of the crops of England have not yet been secured. Of course, the bulk of them has been carried; but there are patches of oats, barley, and beans yet out in the North. Much anxiety has been observed in all quarters in reference to the yield of the new wheats, and upon this subject a variety of opinions has been fully expressed. On the one hand, we are told that the produce is miserably deficient almost generally; on the other, that the light lands have produced more wheat than in 1859. We believe, however, that we shall best serve the cause of the grower by taking a calmer view of the crops than that expressed by persons whose knowledge of agriculture is merely a superficial one. Notwithstanding the unpropitious season we have had to contend with, and that many districts show a deficiency, even when compared with last year, our opinion is that nearly, or quite, as much wheat has been grown as in 1859. The question of quality is, of course, another matter. On this point there can be no difference of opinion; indeed, it may be admitted that at least two-thirds of the entire growth will not be fit for grinding purposes, without an unusually large admixture of foreign qualities, for several months. Here, then, we arrive at something like a clear view in reference to future currencies. Good and fine English must of necessity continue in excellent request, at very full prices, even though we may continue to import largely from abroad; but other kinds will, we imagine, prove a heavy sale. Much caution will, therefore, be necessary on the part of the growers in forwarding supplies to market. As yet, they have declined to thrash out any large quantity of their low damp wheats, and they have realized high quotations for selected samples, the supplies of which have been inadequate to the demand. Assuming that they will be small until March or April—by which time the new wheats will become hardened and more fit for use—consumption must be chiefly thrown upon foreign supplies. It follows, as a matter of course, that we shall gradually consume the whole of our arrivals from abroad, and that a comparative healthiness in the trade will prevent any downward movement in the quotations.

The yield of the barley crop is certainly large in quantity; but its condition is very far inferior to most previous seasons—the samples being for the most part weathered and unfit for malting purposes; hence, that description of produce is likely to rule very high in price for a considerable period, even allowing for a large increase in the imports from the continent.

The oat crop has turned out tolerably well, and the yield of both beans and peas is a very large one; still, there are no indications of any reduction in value. On the contrary, it would appear that prices are likely to advance rather than recede, owing to the increasing wants of the consuming classes. Thus far as regards the crops in England. If we turn our attention to Scotland, we shall find a reverse state of things. There, the wheat crop has turned out remarkably well, and of fine quality. The growth of barley and oats is greatly in excess of last year, and of remarkably good quality, and the potato crop is by far the largest and best on record. These are important matters for consideration, because they seem to prove that immense shipments of produce will continue to be made to the South, and that those shipments will tend to check any positive excitement in the trade. In Ireland, the growth of wheat is very little better than in this country. As regards other articles, we may observe that they fall considerably short of previous expectations. The potato disease does not appear to have been general, or to have committed what may be termed serious ravages; but it is quite clear that very few potatoes will be shipped to England during the winter months.

In this country, the crop of potatoes is certainly a fair average one, even after making due allowance for actual losses; nevertheless, it appears certain that good and fine samples, which are now worth from 130s. to 150s. per ton, will continue to realize high rates for some time.

Our advices from the Continent state that, with the exception of France, the wheat crop has turned out tolerably well, and that the yield of all spring corn is a full average one. We apprehend that France has very little surplus grain for export purposes; but we believe that other countries have large stocks on hand ready for the English markets. The shipments of wheat, Indian corn, and flour from the United States continue on a very large scale—a proof of the great abundance of the crops this year. Those heavy shipments will be all required by us, if consumption is steadily met; consequently, we do not anticipate any important increase in the warehoused stocks either in London or at the outports.

Good and fine hay has continued in request, at very full prices; but inferior parcels have commanded very little attention. Straw has moved off slowly, at about previous rates. Meadow hay has sold at from £2 10s. to £5 15s., clover ditto £3 10s. to £6, and straw £1 10s. to £1 16s. per load. These wide quotations prove at once that we have grown but an indifferent crop of hay this year as to quality.

There has been only a moderate business doing in wool during the month. English qualities have changed hands at very full prices; but foreign and colonial parcels have been much neglected. The next public sales will commence in London about the 15th November, when about 40,000 bales will be offered.

The growth of hops is now proved beyond a doubt to be a complete failure. The duty has been done at £30,000, £35,000, and £40,000, and prices have ruled very high, £28 per cwt. having been paid for fine samples. They will, we imagine, command full prices for some time, even though about 20,000 bales may be expected to arrive from the Continent and the United States between this and the end of the year.

REVIEW OF THE CATTLE TRADE DURING THE
PAST MONTH.

Since we last wrote the various markets throughout the United Kingdom have been extensively supplied with beasts as to number; but we have observed very little improvement in their general quality, compared with the previous month. When, however, it is compared with the first four months of the year, the improved condition of both beasts and sheep is somewhat striking. This, however, may be easily accounted for by the enormous quantities of pasture food, and the immense produce of the hay crop. The long prevalence of wet weather has reduced the quality of that crop materially, and so saturated the land that, in some districts, the graziers have not been in a position to give their stock the full advantage which ought to arise from an abundance of food. This season, therefore, will, we imagine, materially increase draining operations. Had they been more extensively carried on during the last few years the profits arising from them this season would have been very great, and much loss and disappointment would have been avoided.

The excess in the arrivals of stock from abroad, and the improvement in the condition of the beasts and sheep, compared with the early part of the year, added to the rapid increase in the numbers in Scotland, have produced great inactivity in the demand for all breeds of beasts, and prices have given way from 2d. to 4d. per 8lbs. Sheep, too, from the same causes, have changed hands heavily at a similar decline in value. Calves have fallen materially in price, and pigs

have met a dragging trade. It would, therefore, appear that we have passed the highest range in general value for some time; but we must be careful how we estimate the future by the present state of the demand. No doubt the position of the consumers is improved so far as home supplies are concerned; but we have yet to understand the effect which a material falling off in the importations from the continent will have upon value. Ere long the continental ports will be closed against shipments; but the question is—has our own stock so much increased in weight as to render large importations unnecessary, to keep prices at their present level? One thing is quite clear to us, viz.—that we have now more English stock on hand than at this period in 1859; but, at the same time, we are of opinion, considering the extent of the consumption, that the quotations will advance above their present level during the last two months of the year.

The supply of turnips, swedes, &c. is likely to be unusually large in quantity during the winter; but, owing to the want of warm weather during the last two months, we apprehend that their quality will not be so good as in the ordinary run of years.

The annexed figures show the imports of foreign stock into London during the past month:—

	HEAD.	
Beasts	6,750	
Sheep	24,980	
Laubs	217	
Calves	1,662	
Pigs	2,074	
Total	35,683	

IMPORTS AT CORRESPONDING PERIODS.

October.	Beasts.	Sheep.	Calves.	Pigs.
1859.....	6,026	24,323	784	878
1858.....	4,600	24,145	1,581	553
1857.....	5,819	24,102	1,998	1,233
1856.....	8,871	10,502	1,280	895
1855.....	8,136	21,137	1,358	1,501
1854.....	6,894	16,328	1,009	1,063

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

	HEAD.	
Beasts	26,240	
Cows	525	
Sheep	128,250	
Calves	2,289	
Pigs	2,620	

Included in the above supplies are 12,600 shorthorns, from Lincolnshire, Leicestershire, and Northamptonshire; 5,300 various breeds from other parts of England; and 1,100 oxen and cows from Ireland. No beasts have appeared on sale from Scotland. Surprise has been expressed at this circumstance; but we believe that it has been found more profitable to forward dead meat to Newgate and Leadenhall, than live stock to the Metropolitan Market. Of one thing we may rest assured, and that is, a great abundance of both beasts and sheep in the large producing districts in that country. The Scotch graziers, however, are wise in their generation. They, for the most part, act upon a principle which all must acknowledge is a correct one—in other words, they decline to forward supplies otherwise than in first-rate condition, and for which they invariably realise a good market in the south, both as regards an active trade and remunerative prices. If the English graziers generally were to act upon so wholesome a system, we should not be suffering from the effects of great fluctuations in the quotations, or from deficient supplies at periods when they are most required. Besides which, we are perfectly satisfied that much greater profits would be realised in the long run. In the past month beef has been sold at from 2s. 6d. to 4s. 8d.; mutton, 3s. to 5s. 4d.; veal, 3s. 8d. to 4s. 10d.; and pork, 4s. to 5s. 4d. per 8lbs. to sink the offal.

COMPARISON OF PRICES.

	Oct., 1856.			Oct., 1857.		
	s. d.	s. d.		s. d.	s. d.	
Beef, from	2	10	to 4 10	3	2	to 5 0
Mutton	3	6	to 5 2	3	4	to 5 6
Veal	3	6	to 5 4	3	4	to 5 4
Pork	3	6	to 5 2	3	6	to 5 4

	Oct., 1856.			Oct., 1859.		
	s. d.	s. d.		s. d.	s. d.	
Beef, from	2	8	to 4 10	2	10	to 4 10
Mutton	2	10	to 5 0	3	0	to 5 4
Veal	3	4	to 5 0	3	8	to 5 8
Pork	2	10	to 4 4	3	4	to 4 8

It must be understood that at the close of the month the top price of beef was 4s. 6d.; of mutton, 5s. 2d.; of veal, 4s. 6d. per 8 lbs. It follows, therefore, that the latest prices show rather an important decline in a comparative sense; but this decline must be chiefly attributed to the immense quantities of English and Scotch meat which have made their appearance at Newgate and Leadenhall. They have amounted to nearly 90,000 carcases of each kind. This excess in the supplies has reduced prices materially. This must be evident when we state that the best beef has declined to 4s., the best mutton to 4s. 2d., the best veal to 4s. 2d., and the best pork to 5s. 4d. per 8 lbs. by the carcase.

The price of rough fat, owing to a further rise in the value of tallow, has advanced to 3s. 2d. per 8 lbs. We may observe, however, that the shipments of tallow from St. Petersburg this year have amounted to 120,003 casks, against 77,188 do. in 1859, and 84,412 do. in 1858. Whether this excess will be followed by reduced prices for tallow remains to be seen. It is well to know that nearly the whole of the tallow in London is in strong hands; but of course the future range in the quotations will, in some measure, be regulated by the quantity of town tallow produced during the winter months. Our impression is that it will be much larger than during the two previous years.

LEICESTERSHIRE.

We have somewhat delayed our usual report on agricultural affairs in this neighbourhood till we could speak with a greater degree of certainty as to the result of the harvest, in this peculiarly trying season. In our last we noticed, that "should the weather prove fine for cutting and harvesting the crops, we saw no reason to despair of a satisfactory result as to the produce, and we have great hopes that it will reach an average." This, alas! was not realized; the frequent and heavy rains in August, and absence of sun, retarded the ripening of grain, and injured the full crops, by laying them flat, and thus we were driven into a September harvest; and, in this month, we registered, after the 14th, nearly 3½ inches of rain. With such a large rain-fall, and after a sunless summer, the corn was not ripe, and very little fit to cut before the commencement of this month. Fortunately the first fourteen days were very fine, with the exception of a slight thunder shower or two, and on forward soils a large quantity of corn was cut and stacked in fair condition. Had not Providence of his goodness favoured us with this fortnight of warm sunny weather, the consequence to our harvest would have been most lamentable; for since the 14th of September up to the present time, we believe it has not been possible to secure grain in any state near good condition—that is, none fit for grinding without mixing it with old dry corn. Even in this forward district, on strong clay land, a large portion of the crops have been hastily carted, and stacked in such a damp state that they have heated, and, in several instances, have been taken to pieces and restacked in the best manner they could, with great waste and unsatisfactory results, the grain being greatly injured. We are now enabled to state that no cereal crops are outstanding excepting on poor cold un-drained land; but here some are not yet ripe, and can only be used as fodder for stock in a green state. Very few beans are yet in "the stack," and we fear the "spotted pack" will issue forth in full chase with the greater portion of this crop standing uncut, or in the sheaf; and if reynard takes his flight across these fields, his pursuers may be treading out the corn with the feet of quadrupeds, as in primitive times, but not on the thrashing floor. For the most part this crop is in a very unfit state to stack; the upper pods are yet green, and the rains of last week have prevented the corn hardening; and, at this late season we fear there is little chance of securing this otherwise fine and abundant crop, without great injury to the produce. We have no doubt, had the harvest weather been equally good with ordinary seasons, the quality and quantity of all crops in this county would have proved a full average; even with the great waste

in harvesting, the bulk of all kinds is large, but the quality will be vastly inferior. We regret to say that in other districts things are much worse than in this. We travelled the other day one hundred miles north of this neighbourhood, and we counted, from the railway between Manchester and Macclesfield, a distance of seventeen miles, twenty-nine fields of white corn, mostly wheat, five of beans, and three of cut; between the latter place and Leek (thirteen miles), thirty-nine of white corn, five of cut, and five of beans; between Leek and Uttoxeter (nine miles), fourteen of white corn, about half wheat and half oats, three of these quite green. This may be classed as a cold district, but we fear there are other parts of the country which have an equal amount of corn yet outstanding; and after the late heavy rains, and the advanced season, there is no prospect of getting it in, in any state approaching good order, and it will only be fit as food for stock. One circumstance, as regards this untoward harvest weather, has been fortunate, that is, the uniformly low temperature, which prevented the grain sprouting to that extent it must have done had it been warm as well as wet; and the bread, though made from damp corn, when kiln-dried will be sound, if darker in colour. We must now glance at the already visible effects of this disastrous harvest. The great bulk of new corn comes to market in such a damp raw state, that only two or three samples in ten exhibited are fit for grinding. The question is, how are these non-conditioned samples to be made the best of? One way is to mix a large portion of old or dry corn to grind with the new, and another to kiln-dry the latter. Though this process may diminish the bulk in measure from 10 to 15 per cent., still, if afterwards it will make tolerably good bread, it appears a better plan than mixing old with it, as the new will deteriorate the old, and both only produce an inferior quality of flour. We hope this latter process will be extensively adopted, as it appears the best means of bringing the soft wheat into a fit state for human food; and there is no doubt all will be wanted that can be brought into use. We hear, even, that maltsters put the damp barley on the kiln, and subject it to a partial drying before they steep it, or it would not germinate, but burst in the cistern, and therefore not make malt. Only a few samples are shown in the market, which come up to the standard of fine malting barley: such commands a high price, but the great bulk is rough, of bad colour, and damp. Oats are equally out of condition. The price of each kind of corn varies according to the quality and condition; thus we have wheat ranging from 50s. to 70s., barley from 33s. to 43s., oats from 25s. to 36s., beans 50s. to 53s. per quarter; no new yet in the market. In consequence of this extraordinary wet and sunless season the occupation of the farmer has been exceedingly trying and perplexing. The hay harvest has been equally bad as the corn, for, unless secured before the 17th of July, it has been impossible to get it in, in anything like good order, and a great bulk is so damaged as to be nearly unfit for fodder, and some is quite worthless. The expenses also have been great on this lingering protracted harvest, in paying labourers when they could do but little work, and sometimes for doing worse than nothing. There never was a season when the practice of cutting corn by machinery was more beneficial. Though the time was short when the land was in a fit state to bear the reaping-machine, yet those who used them unceasingly during the first fortnight in September, got their corn cut in a short time, and were enabled to secure a good portion of it before the heavy rain commenced. We regret to state that the root crops have not progressed so much as they at one time promised: the cold wet season is the cause of this evil as well as those before mentioned. The mangold is luxuriant in top, but the root is small; swedes have not flourished well, and will only produce a light yield. We observe, with sorrow, that the potatoes are extensively diseased, and a large portion of this useful edible will vanish during the winter by the attacks of this ruthless destroyer. This wet summer has caused an abundance of grass in the pastures: though stock has not thriven well from the excess of rain and cold temperature, still there has been plenty of natural food, but the feeding stock has not come out in high condition. The great floods which have lately prevailed have laid the low meadows, and they were full of grass, under water, and forced the stock upon higher

ground, and being more crowded, consequently are not doing so well. The prospect for wintering stock is by no means encouraging, as both roots and hay will not yield an average supply of food, and additional expense must be incurred in the purchase of artificial kinds; but there will be a quantity of injured grain, which can only be used for feeding cattle and sheep; and if Providence favours us with a temperate winter, we hope to pull through without much difficulty. Fat stock maintains a good price, the best qualities of beef and mutton making 7d per lb. The case is different as regards stores: both beast and sheep have declined in price, and at our late fairs and markets we calculate it to equal 20s. in beasts and 10s. in sheep. Cheese has not made so much as last year by 10s. per cwt., but wool maintains a high price. In consequence of the wet summer and autumn, cultivation is in a very backward state. No autumnal cleansing of stubbles, so much to be desired, could be effected; and even the dead fallows on clay soils could not be kept free from weeds, and for the most part are in bad order. Wheat-sowing has scarcely commenced, though the first fortnight before Old Michaelmas-day and the one after it are passed, and this is generally considered the chief seeding-time. The last few days have been fine, and we hope such weather may continue, that the corn yet out-standing may be got in, and the land sufficiently dried to receive the seed. We would give a caution against the use of very damp, soft wheat for seed, as a large portion of such kinds will burst in the ground and not germinate, and the crop prove a failure for want of plant. Our labourers are all employed, and since harvest—wages have increased, the best hands are receiving 12s. per week.—Oct. 24. P.S.—Before we conclude we cannot refrain from remarking, that a happy change has been effected in some parishes in this county in celebrating harvest home; and we sincerely hope that ministers of religion and other influential inhabitants of other villages will aid in extending this system. The old custom has been for individual farmers to give a harvest supper at their own houses to their servants and all engaged in the ingathering of the fruits of the earth. On these occasions, even where best conducted, a scene of rude and boisterous mirth prevailed, which tended rather to debase than elevate the minds of those present at such celebrations; but if we turn to others we shall find matters much worse, for frequently they ended in intemperance and debauchery, and even in death. We well remember, some years ago, a sober young man, who had done his share of hard work through the harvest, sat down to the harvest supper in full health and strength; but, from the excitement of the time, drank to excess, and was next morning found a corpse—his young wife a widow, and their children fatherless. Different, indeed, both in practice and results, are the harvest festivals lately celebrated. A day is set apart as a holiday for the whole inhabitants of the parish, and a social compact is entered into by high and low, rich and poor, to render grateful thanks to Almighty God for His goodness in giving us the fruits of the earth in their season. In procession, with the minister at their head, they repair to the church, where prayers and thank-givings are offered up for these great mercies. From thence they proceed to a suitable place where dinner is provided, by the liberality of the employers, for the labourers and their wives. This ended, innocent sports and pastimes succeed—athletic and gymnastic exercises practised, and the whole concluded by a general tea drinking, when occasional addresses are delivered by the minister and the influential inhabitants to their humbler neighbours in terms of sympathy, good feeling, and respect. Thus is a day spent calculated to elevate and expand the mind of the labourer, and to diffuse good-will and harmony among all classes, and form a pleasing contrast to the old mode of celebrating harvest home.—G. K.

NOTTINGHAMSHIRE.

We have now arrived at a period of the year when the report of the ungathered or ingathering crops is of importance; and, truly, many years have passed away since the patience of the farmer was so tested. We remember the years of 1815 and 1816, and since those years cannot find a parallel to the summer that has just passed. It has truly been trying. The hay harvest was as a whole the worst probably on record; the corn harvest a most protracted one, and singular for its varied phases. The bulk is gathered in

wretched condition, and what time the wheats will take, and when they will be fit to grind, is difficult to say. Where the thrashing machine has tested the yield of wheat the farmers grumble sadly, and all say it is wanting of quantity and quality. There needs no hesitation in saying that the wheat crop is below the average of years. Still there is a bright side to this otherwise gloomy picture. The weather has been cold, and prevented the sprouting of grain, so that the whole will be capable, sooner or later, of supplying the wants of the human family. This indeed is cause for great gratitude, for had the weather been warmer and sprouting consequently general, it would indeed have been disastrous to the farmer and country at large. We, too, have an abundance of old wheats on hand—the surplus of two bountiful years. In addition we have heavy supplies of foreign wheats, so that hitherto there has been no great temptation for the millers to make use of the new; and as the period of the year is so far advanced, we may fairly reckon that only ten months' supply is needed for the coming year, reckoning from harvest to harvest. The spring corn crops on all dry soils have been gathered bulky ones, on cold wet ones the reverse. A good many beans are still outstanding, and will be wanting in quality. Our pastures are scantily supplied with grass, and the aftermath very indifferent. The turnip and mangrel crops are very light ones, and will afford little food for a winter's supply. The potato crop is sadly diseased; to what extent it is difficult to say, but enough to raise the value of them to a very high figure. Our cattle markets are completely glutted. The needy farmer is apparently obliged to bring stock to market in lieu of corn, to raise money to meet the autumnal demand. This is our interpretation of the great change, for we cannot see why a plenty should so soon become apparent with the immense consumption going on of animal food. Who will say that in a few months there may not be a strong reaction, and that prices may not again be as high as ever? Our corn markets are well supplied, but the new wheats are unfit for use without a heavy mixture of old, home or foreign. Barleys are complained of as matting badly, and several have desisted from doing so until the frost shall have seasoned the grain. Our labour market, if so we may designate it, as an article regulated by demand and supply, has been more abundant, and the protracted harvest has given the farmer the advantage in the bargain. The appointed days for the hiring of servants for the coming year is at hand, and we prophesy, if allowed to do so, that wages will be lower.—Oct. 24.

SUTTON BRIDGE, near Wisbech, Lincolnshire, Oct. 24.—We have been compelled to defer our harvest report nearly a month later than usual, from the backwardness of the season; and even now there are some wheat and oats and nearly all the bean crops yet in the fields. The wheat crop planted well, and even up to the blooming time we had strong hopes of a favourable result; but, by the latter end of July it was seen, and then reported on by us, that most serious injury had commenced, arising from a general blighting and mildewing; this, a want of sun, and continued cold rains, led to a most protracted and unfavourable ripening; the result is that our apparently abundant crop is much damaged as to quality, weight, condition, and quantity, and we conclude that the food-producing value of this crop is one-fourth below an average. This crop never was—except in 1816—got in stack so unfit for thrashing, and it must be months yet before we can get our usual supply fit to grind. Variation as to quality and weight, and consequently money value, never so great—say weight from 53 to 62 lbs. per bushel, and value 42s. to 62s. per qr. Of barley the little grown is a good crop. Oats are very abundant as to straw; but being much laid and injured by the continued bad weather, became "thorough grown," and ripened most unkindly; quality and weight poor, but yield good. The pea crop came up well, and promised most favourably; but want of warmth and drier weather, with great injury from the green-fly, caused this crop to be half destroyed, so that yield and quality are sadly deficient. The bean crop never looked more luxuriant—some of the stalks measuring over eight feet, and are well podded; but as they are still out in the fields, we cannot say what the result may be. Potatoes were well put in and came up

well; but much rain and a want of sun have caused them to be more diseased, and the produce less weight per acre than was ever known—about four tons per acre, and not over one-third fit for human food. Turnip, mangold, and coleseed crops were got in very late and badly, and so injured and backened by the continued unfavourable weather, that they are of very inferior feeding quality, and very short of an average weight per acre. The clover and hay crops are a good bulk, but being gathered very unfavourably, feeding quality is much deteriorated. Eddishes and grass-keeping favourable as to quantity, yet wanting in quality. We consider stocks of old English wheat very small, indeed nearly exhausted; but American and other foreign supplies at present seem to meet all demands for mixing with our damp new. **SPENCER SKELTON & SONS.**

HARVEST REPORT.—PLYMOUTH, Oct. 25.—Although the harvest in the late districts is not yet completed, there can be unfortunately no doubt as to the nature of our report respecting the yield of corn this year. Since our last report, dated the 5th of October, 1859, the weather has been unceasingly unfavourable to the wheat crop, with the exception of about a fortnight in June. The registers show a very unusually low temperature throughout the year, accompanied by a large quantity of moisture except during about seven weeks in April and May, when the weather was too dry and cold to be very favourable. The harvest itself has been most disastrous, the cutting and carting of wheat having been effected in haste during a few hours' sunshine, followed by rain and wind of the most damaging description. There were about ten days early in August, and about a week in September, only, when some corn may have been carried in fair condition, though then, perhaps, too hastily. We have, therefore, come to the conclusion that the wheat crop is a very inferior crop in quality, chiefly in consequence of its wretchedly damp condition. The quantity also we estimate considerably below an average, although it has been exaggerated by many who have been misled by samples in which the berry has appeared to be large, and full, in consequence of the moisture with which it is soaked. The barley crop: this plant being more hardy than that of wheat, would have been decidedly a good crop had it been well secured, but it is very much injured by the wet weather in harvesting. The oat crop has been rather favoured by the wet weather in this district, and is a large crop; but we believe it is partially ruined by the wet harvest, and a great portion of it merely fit to take the place of turnips. The crop of hay is badly saved, and hardly fit for cattle, except about a third of it, which was cut early. Potatoes are said to be the worst crop since 1846. Turnips are yet very small, and almost a failure. Mangold are a little better, but by no means good. It would, therefore, appear that the produce of this country this year is a very low one, and there is certainly a large deficiency to be supplied by a foreign trade.—**COLLIER BROTHERS.**

ABERDEEN, Oct. 25.—I can now speak more decidedly about the wheat crop, having thrashed some, as I required thatch. As near as I can calculate I should say that two-fifths of the grain was shaken by the hurricane of the 3rd of this month; and from all I can learn, I am confident I do not overstate the loss of all the wheat that was uncut that day, north of the Forth; indeed, I know of several much worse cases. But this is not all the loss: the best of the wheat is gone, and what is left will not bring within 6s. or 8s. per quarter of the price of fair quality of grain. My nearest neighbour has ploughed up a field sown out with grass, with the view of taking another crop of wheat with the shaken seeds. As I mentioned before, we have a very fine crop of oats both as to quantity and quality; of course this only applies to what was cut before the 3rd. Barley does not improve as we go on, but we have had no weather to bring it into condition: the bad colour is unalterable. It is only in the lower districts of this and the neighbouring counties that harvest is finished: in many places, about the top of Dee and Don, cutting has not commenced yet; but indeed we need not be surprised at this, when we see how late some parts of England have been. I had a letter from Lincolnshire a few days ago, which states that two of my friends there had 550 acres of crop still standing in the fields, and of course they are not singular.

AGRICULTURAL INTELLIGENCE, FAIRS, &c.

AXMINSTER FAIR.—About 5,030 sheep were penned, but the sale was very dull, and prices partook of the depression noticed at Weyhill. Mutton sold at 7d. per lb.; Down ewes 25s. to 30s. each; horn ewes, 27s. to 35s.; cross-bred ewes, 30s. to 32s.; horn lambs, 16s. to 24s. 6d.; Down and cross-bred lambs, 16s. to 21s. Beef 10s. per score. Poor barreners 5s. to 6s. per score. Fresh barreners 1s. per score higher. Pigs were plentiful, and sold well, but at lower rates. Slips, 21s. to 27s. each; young pigs, 8s. to 12s. each. There was a large supply of horses, and a few useful ones were picked up.

BAMPTON FAIR, on Thursday last, was attended by some 600 or 700 persons from all parts. The Exmoor ponies however were less in demand than usual (owing, perhaps, to the scarcity and cost of keep); but 51 out of 57 found new homes. They made from 20 to 25 per cent. lower than last year; but the cobs sold well, and "The Comet" went to the Earl of Portsmouth's stables at 50 guineas: six of them averaged £4; ten, £40; and sixteen, £35 each. There were purchasers from 19 counties, and from both North and South Wales. It is intended to take the Exmoor stock to the railway side next year, and to sell them one month earlier. All the cobs and paises were young horses, and scarcely three of them had been ridden on the roads of the farm.

BLYTH FAIR.—The supply of cattle and sheep was extensive, but there was only an indifferent one of fat beasts. The prices had a downward tendency, and the business transacted was limited. In the sheep fair some fine pens of good lambs were exhibited, but the demand was not so satisfactory, as comparatively few changed hands. The show of horses consisted chiefly of the Irish breeds. Of pigs there was a first-rate supply. There was a heavy market, and many left unsold.

BROMYARD FAIR.—The supply of stock of all descriptions was very large. Beef fetched 6d. to 6½d. per lb.; mutton, 6½d. to 7d. Pigs were lower in price.

CAMELFORD FAIR.—The show of stock was much the same as in former years at this season, but the sales were so few for sheep that no price can be quoted. Fat bullocks sold at about £3 per cwt., and £2 10s. for second quality. The fair was altogether a dull one.

COLCHESTER FAIR.—There was a large supply of bullocks, in middling condition, consisting of Shorthorns (Herefords fetching from £12 to £14 per head), Scots, Welsh runts (£3 to £5 each), Irish beasts; and calves, the best of which only seemed to attract attention, and barely late rates maintained, there being many lots unsold, although offered at less money. The supply of sheep and lambs was very meagre, the trade in which was depressed, at a downward tendency in prices. Shearling wethers offering at from 30s. to 35s. per head, with no buyers. The supply of horses was quite an average. Good cart horses fetched from £30 to £40, colts from £20 to £30, with a dull sale, which was confined to the better sorts.

DEVIZES FAIR.—There was the largest number of sheep penned ever remembered, being estimated by many at 25,000; but buyers were scarce, and consequently the trade was very dull, prices being from 1s. to 2s. a-head below those of Weyhill, and from 3s. to 4s. below those at Wilton; a great many were driven home unsold. Ewes fetched from 25s. to 35s. each; and lambs from 10s. to 26s. each; some very inferior ones going below 10s. Horned cattle were in large supply, and a very considerable proportion of them of the most inferior quality, and some evidently to be got rid of at any price, many aged cows being offered as low as £4 and even £3 each; real good animals, however, sold pretty well. There was but little fat beef; prices from 10s. 6d. to 12s. score. There was a large number of horses; good ones sold pretty well, but at lower rates than of late.

DONINGTON FAIR was very dull for both beasts and horses, prices being very low, and anything but profitable to sellers.

EDZELL TRYST.—There was a fine show of sheep, and an unusual business done. All the best lots of two and three-year-old wethers were speedily sold at an advance of from 2s. to 3s. above last year. The top lots of three-year-old wethers

went off briskly at £27 to £29, and the two-year-olds from £23 to £26 per score. The Glaucory lot—three-year-olds—brought £29; the Blaimo lot being nearly the same; and the Anchoolie, £28. These were among the top lots in the market. The best lot of two-year-olds was from Arnbarrow, and went off at £26 10s. A fine lot, same age, from Kimmie, at £25 5s. Crook ewes sold well at fair prices, if in good condition; but very lean stock were a stiff sale. Best quality of blackfaced ewes brought £20; second-class, for good, £16 to £18 per score, down to £12 for inferior lots. The Bridge of Dye lot of three-year-old wethers were sold before they came to the market, and, it is said, at fully the top price.

ELSDON TRYST.—A great number of ewes, and most of them good in quality and condition. The demand was slow. Prices about the same. Good Cheviots from the hills selling from 22s. to 24s.; inferior, lower. A few lots of blackfaced, and mostly sold. An excellent ten score lot from Ryle was understood to be about 18s. No wethers worth notice. A few short-horned cattle, and good many kyles, but little business among them.

FALKINGHAM FAIR.—The number of sheep penned considerably exceeded the average of several former years, and there was a great amount of business done at improved rates. Shearlings ranged from 36s. to 48s., lambs from 20s. to 27s. each; mutton, 6½d. to 7d. per lb.

FRODSHAM FAIR.—There was a very poor show of cattle, and only little business transacted. Good milch cows fetched from £12 to £15, but drapes and inferior stock had scarcely a chance of being sold. Of pigs the supply was greatly in excess of the demand, and prices ranged from 3s. to 7s. per head less than had been obtained a few weeks previously.

GAINSBOROUGH FAIR was the largest we have had for years past. Beasts sold better than at some of the neighbouring fairs lately held. Milch cows, £12 to £18 each; fat beasts, 15 to 20 guineas each, or 6s. 6d. to 7s. 3d. per st. Upwards of 100 pens of sheep were shown, for which the trade was rather slow; many, however, found buyers at prices ranging from 34s. to 40s. each for tupping ewes, and for fat sheep from 6d. to 7d. per lb. Lambs, £1 to £1 6s. each. The horse fair was well supplied with inferior animals, young colts predominating, for which £20 to £25 each was paid. A pretty fair number of horses of all descriptions changed hands at varying prices.

HEREFORD FAIR.—Dealers were particularly shy in their speculations in store stock, unless the quality was very prime, and the condition pretty good; and the reduction in prices may be quoted at from fifteen to twenty-five per cent. off the rates which have been obtained up to a comparatively recent period. For fat stock, and for animals nearly fit for the butcher, there was a braker demand, at an abatement of about 10 per cent. in values. There were many lots of splendid steers in offer (though not so many as we have generally seen at the October fair), most of which exchanged hands, some, we believe, at the high figure of £64 the pair of three-year-olds. On the whole, the clearance that was effected was not satisfactory to the breeders, and we fear that many lots of cattle returned to their home-quarters; their owners being unwilling to accept the reduced rates, and dealers being unwilling to advance. The average price of beef, of prime quality, may be quoted at 6½d. per lb. There was a good supply of sheep, but the trade was dull, particularly in stock ewes. Prime wethers sold pretty well, the average figure being 6½d. per lb. Business was languid for a long time, and there was by no means a full clearance effected. In the pig department, there was a fair demand for useful stores at about the same rates as those which have been recently obtained. Bacon, of which the supply was not large, were worth 6s. 6d. to 6s. 9d. per stone of 12lbs.; porkers, 7s. ditto. In the horse fair there was a large number of powerful, active horses for draught purposes, which realized good prices, and for the most part met with a fair demand.

ILSLEY FAIR.—There was a considerable supply of sheep, but the trade was dull. In some cases rather less money was given than at the last fair, but generally sales were effected at the same rates.

MATLOCK FAIR was extremely dull. Very few cattle were to be found, and what were there was for the most part but of poor quality. The supply of pigs and sheep was also deficient, and the sales effected were at increased prices.

REVIEW OF THE CORN TRADE DURING THE PAST MONTH.

October has come and gone without the completion of harvest. Some white corn yet stands out, and never will be ripened, and many beans have yet to be gathered, and though this crop is best reported as to abundance, very little will be fit for market before next spring. Yet when the coldness and wetness of the summer are considered, we have reason to be very thankful that matters are no worse. As time advances, opinions more and more unfavourable of the wheat crop gather strength, and many farmers who doubted a deficiency have now experienced the results upon the corn's being thrashed and sent to market. First-class millers find very little to suit their purpose, and those who by the low prices were tempted to make a trial have found their mistake in the difficulty of selling their flour. All this has occasioned a very extraordinary demand for old foreign for mixing in large proportions, without which, this season, good bread would have been scarce. The price of fine wheat has, therefore, risen generally about 3s. per qr., the rise taking place at the commencement of the month, and since then being fully sustained, notwithstanding very constant liberal supplies from abroad. Indeed, if we look at the weekly sales for a month we shall find the quantity of English wheat sold in four weeks 270,396 qrs., against 514,962 qrs. for the same time last year; so that little more than half the English has been used, and a proportionate increase of foreign has, of course, been required. Now, taking the towns returned to represent about one-third of the entire consumption of England and Wales, we should at the present rate make the monthly *decrease* in English and *increase* in foreign no less than 750,000 qrs.; and as our average consumption of foreign is fully 400,000 qrs. per month, we have been probably going on at the rate of one million of foreign per month in consequence of the damp harvest. This cannot last, however, through the winter, nor do we mean to suggest that such a rate of supply will be required. Our own wheat carefully managed will greatly improve, but not much before March winds have passed through the stacks; so we may yet run short by that time, as the London demand has lately about doubled the supplies, though these have been large. When the wants of Ireland are considered, in consequence of the failure of the potato crop, it is fair to calculate that she will require an import of 3½ million qrs. of maize or other corn, and perhaps half as much more will be wanted on this score for England. Beyond, however, what will be wanted for potatoes, an unusual import will be required to make good the deficiency of the new crop of wheat, and the exhaustion of the stocks of old, which up to the last season were good. The partial failure of 1859 was at first not felt; but as there is now nothing to fall back upon, it seems very probable that, to make good the deficiency both in potatoes and wheat, fully ten million qrs.

will be required, even though an allowance be made of one month for the lateness of this harvest. Seed wheat in such a season has of course been scarce; and as the land has become foul and wet, sowing must necessarily be late, and the result more uncertain. All old spring corn has been advancing; very little new having yet appeared at market, and that in such bad condition as to be of little service. Much of the grain harvested in Northern Europe has turned out inferior, and so damp in some parts of Germany as to require the kiln before shipping; but Southern Russia, Egypt, Italy, Spain, and the South of France have secured their crops in fair condition, while America has been highly favoured both in quantity and quality, and our principal dependence must be on that country and Russia. We still hope a sufficiency will be forthcoming, though prices have everywhere somewhat advanced, notwithstanding the efforts of the *Times*, &c., to pooh-pooh the striking facts of the season.

The following account shows the latest wheat prices abroad: Fine quality at Paris was quoted 58s. per qr.; at Nantes, red, 61lbs. per bushel to 53s. per qr.; at Bordeaux, 54s. 6d. per qr.; Belgian top quotations were 72s. 6d. per qr. at Antwerp, new 63lbs. per bushel at Louvain, 67s. The best white at Rotterdam was 77s. 9d., red 74s. 6d. per qr. Quotations at Hambro' for the best red new 63s., old to 68s. per qr.; old red at Groningen was the same price; the price of the best new at Cologne was 59s. 6d. per qr.; fine wheat at Danzig 64s. to 68s. per qr.; Russian wheat at Riga brought 56s. 6d. per qr.; rates at Odessa ranged from 40s. to 48s. per qr.; in the Danube from 35s. to 41s.; at Santander from 54s. to 60s. per qr. The last New York advices were buoyant, Chicago spring wheat bringing 41s. per qr., and winter red 45s.; white Michigan 48s. 4d. to 51s. 8d.—all per qr. of 480lbs.

The first Monday opened on a moderate supply of English wheat, and a very liberal one from abroad, half of which was from Russia. The near counties in the course of the morning presented but a scanty show, which was principally new, in a damp state. Rain having prevailed during the previous week, the few samples of old and dry new obtained an advance of 3s. per qr., but parcels out of condition were difficult to place at any advance. There were many country buyers of foreign, who took white qualities at 2s. per qr. more money, and a still larger quantity of red at 3s. per qr. improvement. Floating cargoes only brought 1s. per qr. advance. Though the supplies in the country were small in consequence of harvest work, buyers in most markets were not very eager purchasers, and but few places equalled the London advance, in consequence of the weather taking up fine after Monday. Hull and Newcastle were scarcely dearer. Stockton-on-Tees, Boston, Spalding, and Wolver-

hampton only quoted a rise of 1s. Wakefield, Birmingham, Manchester, Gloucester, and Bristol made the advance of 1s. to 2s.; but Alford, Leeds, Lynn, Newark, and St. Ives were up 2s. to 3s. London itself relapsed into dulness on Friday. Liverpool showed animation at both markets, being 2d. to 3d. per cental dearer on Tuesday, with a further advance on Friday of 1d. to 2d. per cental.

On the second Monday there was less English wheat, and the quantity of foreign was not so heavy. Essex and Kent sent up but few samples during the morning, and those chiefly new, of poor quality. The week previous having been fine, trade was quiet, the few dry samples of English bringing former rates; but all below these hung on hand with uncertain value. The foreign trade was less active, notwithstanding a good attendance from the country, lower rates having been in vain expected from the week's fine weather. Floating cargoes were rather looking down. The fine weather continuing in the country influenced trade there, a general dulness prevailing, but fine new and old generally obtained previous quotations, though low new was 1s. to 3s. cheaper at some places. Liverpool decidedly gave way 2d. per cental on Tuesday, and equally as much on Friday.

The third Monday about equalled the second, both in the English and foreign supplies, one-third of the latter being from America. The quantity showing from Essex and Kent was rather increased, more especially from the former county, with the condition also rather better. The return of wet served to keep up the price of fine old and new, but most of the latter, where the quality was bad, was left undisposed of. Foreign, on the contrary, was in improved demand, there being many country buyers, who in several instances paid 1s. per qr. over previous prices. The country markets this week showed very little difference in their reports, which, with rather increased supplies, were firm for all good quality, new and old wheat, and some noting a rise. Manchester and Stockton-on-Tees were 1s. per qr. higher, and so were Bristol and Hull for fine old foreign, but Ipswich was 1s. to 2s. per qr. dearer. Liverpool on Tuesday recovered the loss of the previous market, and on Friday advanced 1d. to 2d. per cental.

The fourth Monday in London was less abundant in foreign wheat, though there was rather more new English. From Kent and Essex, however, the morning's supplies were very small, the condition of the new still being bad. Picked qualities of new as well as old wheat fully maintained their prices, but very damp lots were difficult to quit. There was again a large attendance of country buyers, who came to purchase foreign; many did so, and for choice parcels had to pay 1s. per qr. more money; but others, from the high rates demanded, bought only in retail. Floating cargoes were readily disposed of, at full rates. The country markets this week, with better supplies, were generally calm and unaltered.

On the fifth Monday the arrivals of foreign were heavy, and the supplies from the near counties better, but no change took place.

The imports into London for the five weeks noted were 21,159 qrs. English wheat, and 175,208

qrs. foreign, against the corresponding five weeks in 1859, as follows, viz., 40,157 qrs. English, 72,213 qrs. foreign. The imports for last September, throughout the kingdom, were 653,442 qrs. wheat, 557,960 cwt. flour.

The flour trade during the month has been quiet, Norfolks opened at 43s., and the top price of town at 57s. The rise in wheat for some time stimulated the price of country flour, and it rose on the first Monday 1s. per sack, but this was lost on the third Monday, the indifference of the quality since the use of new wheat making the sales extremely heavy. Fine American and French have consequently been more in demand at full prices, as well as the best Spanish. Notwithstanding the free imports, more especially from New York. Town rates have remained unaltered. The imports into London for five weeks were 70,757 sacks country, 29,631 sacks, 90,598 barrels foreign, against 90,085 sacks country, 785 sacks 551 barrels in October last year.

The very limited supplies of barley, both British and foreign, have forced up this grain, in spite of its inferior quality, to an unnatural height, the gain upon last month's high prices being fully 2s. to 3s. per qr. This is simply traceable to the lateness of the harvest and the unfit condition of the grain, and on the appearance of large supplies of new there must be a reaction downwards, for all but the best qualities of malting, which are as yet extremely scarce. The supplies during five weeks have been 10,107 qrs. British, and 35,420 qrs. foreign, against 29,488 qrs. British, 47,452 qrs. foreign for October 1859. The imports for last September were 111,881 qrs. for the Kingdom.

Malt during the month has advanced fully 2s. to 3s. per qr., very little new being yet made, and the fine samples of old having become scarce.

Our anticipations as respects good old oats have been partly fulfilled. The supplies, including new foreign, have not been heavy; and these latter not being liked from their soft state, old have advanced in value from 1s. 6d. to 2s. per qr., and it is doubtful whether London will have enough to go on with for the winter, and therefore high rates for such are likely to rule. New corn, on the contrary, has already receded from its starting price, say 6d. to 1s. per qr. Hardly anything has yet come from Scotland, and very little from Ireland. The five weeks' supplies were 14,507 qrs. English, 313 qrs. Scotch, 3,127 qrs. Irish, and 131,439 qrs. foreign: against 11,124 qrs. English, 3,487 qrs. Scotch, 22,086 qrs. Irish, and 168,805 qrs. foreign in October 1859. The entire imports for September last were 175,943 qrs.

Beans and peas have been advancing at the rate of 1s. per qr. weekly, the former for old English, and the latter for all sorts, old and new. Had it not been for fair arrivals of foreign beans, rates by this time would have been extravagant, as, notwithstanding the reported abundance this year, many remain yet to be gathered, and all will be unserviceable till after March. The supply of foreign peas being trifling, even damp new English duns and maples have sold at great rates, the former at 43s. and the latter at 47s., while scarcely any white have yet come to market; such have having

been made on this crop by the weather. High as the rates are, till barley comes in quantity we don't see much chance for a great reduction, more especially as the maize arriving will be wanted for human food. The five week's supply of beans was 1,814 qrs. English, 20,604 qrs. foreign, against 4,915 qrs. English 4,945 qrs. foreign in 1859. The total imports in September last were 45,544 qrs. Of peas the five weeks' imports into London were 2,267 qrs. English, 1,439 qrs. foreign, against 5,424 qrs. English, 1,457 qrs. foreign last year. The last September imports were 18,511 qrs.

Linseed also, like other articles of large consumption, has seriously risen, say fully 5s. per qr., and cakes 10s. per ton. The new crop in Russia is not well spoken of; so as we get near to winter the difficulties of keeping stock increases.

The seed trade has been calm, the extremely low rates at which red cloverseed ruled last season making buyers very cautious, although nearly all hope is given up respecting a crop. Wet weather has overtaken the gatherings in the South of France, and rather varied prices there; but the fear of getting seed not answering to sample has checked speculation on this side, though there have been offers of Bordeaux red at 60s. per cwt. free on board: white is too dear and poor in quality for speculators. Trefoil though firm is poor in quality. The new mustardseed has been so low and damp that it has long hung on the market, with very few sales, and even the best, notwithstanding a poor crop, is cheaper. So are winter tares from their softness and inferiority, but all good dry one-year-old seed fit for sowing has been held with increasing firmness. Indeed, we might almost say the bulk of this extraordinary year's harvest has been like salvage from a wreck.

IMPERIAL AVERAGES.

FOR THE LAST SIX WEEKS:	Wheat.		Barley.		Oats.		Rye.		Beans.		Peas.	
	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
Sept. 15, 1860	62	11	37	10	27	0	42	4	50	1	38	7
Sept. 22, 1860	58	3	35	5	25	9	40	7	49	6	37	11
Sept. 29, 1860	56	11	33	3	25	3	37	10	49	6	39	10
Oct. 6, 1860	58	3	39	8	25	1	39	1	48	11	39	10
Oct. 13, 1860	61	1	39	11	24	8	37	3	50	11	42	8
Oct. 20, 1860	60	6	40	7	23	7	34	7	50	2	41	11
Aggregate average.	59	8	39	3	25	3	38	7	49	10	40	0
Same time last year	42	3	35	7	21	4	29	11	39	7	38	6

HOP MARKET.

BOROUGH, MONDAY, Oct. 29.—We have no alteration to report in our market, which remains heavy for every description but the finest samples of the new growth. Our currency is as follows:

	£	s.	£	s.	£	s.
Mid and East Kents	18	0	22	0	23	0
Weald of Kents	14	0	17	0	21	0
Sussex	10	0	14	0	16	0
Yearlings	7	0	9	9	12	12

The duty has advanced to £45,000.

POTATO MARKETS.

SOUTHWARK WATERSIDE.

LONDON, MONDAY, Oct. 29.—During the past week the arrivals coastwise and by rail have been limited, but the weather being very mild for the season, trade was very heavy, and towards the end of the week prices had a downward tendency. The following are this day's quotations:

Yorkshire Regents	120s. to 140s. per ton.
Lincolnshire do.	110s. to 130s. "
Dunbar do.	130s. to 150s. "
Perth, Forfar, and Fife do.	120s. to 130s. "
Ditto do. do. Rocks	110s. to 120s. "
French Whites	110s. to 120s. "

PRICES OF BUTTER, CHEESE, HAMS, &c.

BUTTER, per cwt.—	s.	d.	CHEESE, per cwt.—	s.	d.
Friesland	114	10	Cheshire	new	70 to 80
Jersey	100	10	Cheddar		74 86
Dorset	118	12	Double Gloucester		68 74
Carlou	100	11	HAMS		—
Waterford	100	11	York		84
Cork	96	12	Cumberland		84 80
Limerick	98	10	Irish		76 84
Sligo	100	11	BACON: Wiltshire, dried		73 78
FRESH, per doz. 12s. 0d. to 16s. 0d.			Irish, green		68 74

ENGLISH WOOL MARKETS.

LONDON, MONDAY, Oct. 29.—Since our last report, owing chiefly to the dull advances from the manufacturing districts, very little disposition has been shown to purchase any kind of English wool. There are, however, several rather large foreign orders on hand, hence holders continue very firm, and prices generally are well supported. The supply of wool on offer is very small.

Per sack of 240lbs.

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

FOREIGN AND COLONIAL WOOL MARKET.

	Per lb.	s.	d.	s.	d.
German, { 1st and 2nd Elect.	3	4	4	6	
Saxon, { Prima	2	4	3	0	
and { Secunda	2	0	2	4	
Prussian. { Tertia	1	8	1	10	
COLONIAL—SYDNEY—Lambs	1	14	2	3	
Scoured do.	1	33	3	3	
Unwashed	0	10	1	6	
Locks and Pieces	0	6	2	0	
Slip and Skin	1	2	2	1	
PORT PHILIP—Lambs	1	2	2	7	
Scoured do.	1	4	3	6	
Unwashed	0	8	1	8	
Locks and Pieces	0	7	1	11	
S. AUSTRALIAN—Lambs	1	0	1	11	
Scoured do.	1	0	2	6	
Unwashed	0	9	1	3	
Locks and Pieces	0	7	1	3	
V. D. LAND—Lambs	1	6	2	5	
Scoured do.	1	4	2	11	
Unwashed	0	10	1	7	
Locks and Pieces	0	10	1	9	
CAPE OF GOOD HOPE—Fleeces	0	9	2	2	
Lambs	1	0	2	0	
Scoured	1	1	2	0	
Unwashed	0	7	1	6	

MANURES.

PRICE CURRENT OF GUANO, &c.

PERUVIAN GUANO (per ton, for 30 tons)	£12 0 0	to	£12 6 0
Do. (under 30 tons)	12 10 0	to	13 0 0

ARTIFICIAL MANURES, &c.			
Nitrate Soda } per ton	£14 0 0	to	£15 0 0
Sulphate of } 13 10 0	14 10 0		
Ammonia } 16 10 0	20 0 0		
Muriate of potash } 6 10 0	7 0 0		
Superphosphite of Lime } 4 10 0	5 0 0		
Salt } 0 18 0	1 5 0		
Coprolite (gr'd) } 2 10 0	2 12 6		
Ditto (whole) } 2 0 0	2 5 0		
Estramadura } Phosph. of Lime for 70 p.ct. p. ton	4 5 0	4 15 0	
Gypsum	£1 0 0	to	£1 6 0
Bone Ash, for 70 percent.	6 5 0	to	5 10 0
South America can Bones	4 15 0	to	5 0 0
London ditto, uncured	4 12 6	to	4 15 0
Do. 2-inch p. qr.	0 18 0	to	0 19 0
Do. dust	1 0 0	to	1 1 0
Animal Charcoal	4 5 0	to	4 10 0
Oil of Vitriol, concentrated, ed. per lb.	0 1 0	to	0 0 0
Do. Brown	0 0 0	to	0 0 0

OIL-CAKES.

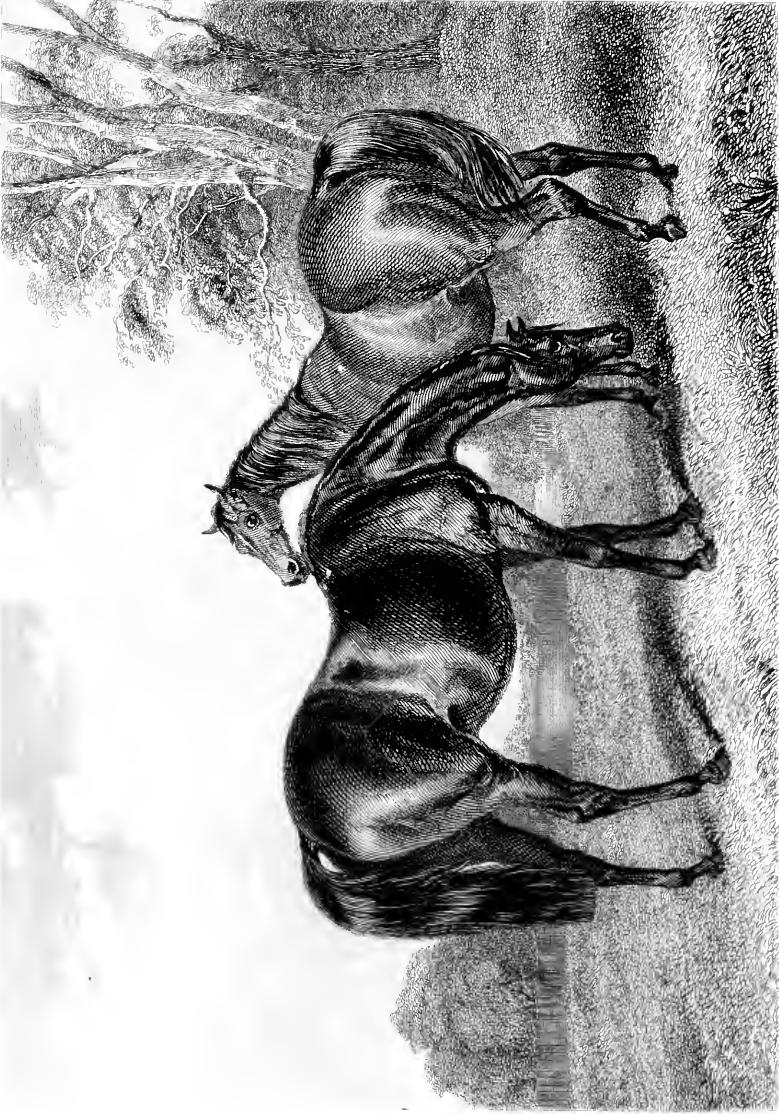
Linseed-cakes, per ton	£6 10 0	to	£7 0 0
Thin American, brs	£11 10 0	to	£11 15 0
Ditto bags	11 0 0	to	11 7 6
Marseilles	9 0 0	to	9 10 0
English	10 10 0	to	11 0 0
Rape-cakes	£6 10 0	to	£7 0 0
Cottonseed Cakes—American do.	8 5 0	to	8 10 0
Do. corticated	6 10 0	to	7 0 0
Ditto, English	6 10 0	to	7 0 0

JOHN KEEN, Agent, 35, Leadenhall-street.

Manufactured by Hodgson and Simpson, Wakefield, and Matthews and Co., Driffield, Yorkshire.

Nitro-Phosphate	per ton	£6 10 0
Ammonia-Phosphate		8 0 0





THE FARMER'S MAGAZINE.

DECEMBER, 1860.

PLATE I.

A SHORTHORN COW,

THE PROPERTY OF HENRY SMITH, ESQ., OF DRAX ABBEY, SELBY, YORKSHIRE.

This cow took the prize of 5 sov. in the extra stock class, as well as the Ottley gold medal for "the best cow or heifer bred and fed by an exhibitor," at the Birmingham Fat Cattle Show, in December, 1858.

In the week following, she was awarded a silver medal as "the best beast in the extra stock," at the Smithfield Club Show in London.

We thus wrote of this animal on first seeing her, at the Birmingham Meeting: "Tested by the great points, quality, symmetry, and pedigree, the best of the Shorthorn entry was Mr. Henry Smith's cow, which took the prize in the extra class, as the best cow bred and fed by an exhibitor.

By Mr. Booth's famous bull Harbinger, a beautiful handler, and a model to look at, there could be only one reason, for finding her in such a place. Although nearly six years old, she has never had a calf, and hence her reduced value as only butcher's meat." Mr. Smith, however, did not try to sell her with a semi-warrantay about being in calf, or play any of those dirty tricks Mr. Carr has been denouncing so ably; but when he found it was hopeless, straightway prepared her for the shambles. It was still a great sacrifice, for we have a keen recollection yet of the strawberry, as being one of the prettiest cows we ever saw in a show-yard.

PLATE II.

ANNETTE AND POLYXENA,

BROOD MARES, THE PROPERTY OF EARL SPENCER.

Of these two Priam mares, still in Lord Spencer's stud, the old brown, Annette, is by far the most famous. She was foaled so far back as 1835; and, bred in Ireland by Mr. Whaley, is by Priam, her dam Potentate's dam, by Don John, out of Moll in the Wad, by Hambletonian—Spitfire by Pipator. She was put to the horse at three years old, and threw a filly to Economist in 1839, and a colt called "Whisky" by Philip the First in 1840. She was not covered in 1841, but was sold during that season to Mr. Minor, and crossed the Channel for England proper. Here, in 1842, she had a colt with the *fie, fie!* name of "Breeches" to Pantaloon, and next year a filly by Epirus that was first of all entitled "Matilda," and next "Ellena Clara," and after that "Madge Wildfire," but now known as "Nidia the Blind Girl." Next in succession John Osborne had Agnes, by Clarion from her, and then Mr. Watson had six foals in succession without the mare ever missing. These were—1845,

"Paladin," by Clarion; 1846, "Nina," by Cotherstone; 1847, "Paul," by Cotherstone; 1848, "Nineveh," by Cotherstone; 1849, "Ambrose," by Touchstone; 1850, "Charley," by Cotherstone. Annette missed for the first time in 1851, and threw "Goose," afterwards "Englemere," to Van Troop in 1852. She was purchased during this year by the late Lord Spencer, since when she has made the following return:—In 1853, "Cleopatra," by Pompey; in 1854, "Glenmasson," by Cotherstone; in 1855, her produce to the same horse died a foal; in 1856, "Northampton," by Cotherstone; in 1857, a filly to Newcourt; in 1858, "Blisworth," by Cotherstone; in 1859, a bay colt by Grampian or Cotherstone, sold at the sale of the Althorp yearlings in June last for 190 gs. to Mr. Wyndham. Annette is still living, and again supposed to be in foal.

The bay mare Polyxena is only two years the junior of her companion, having been bred by John

Osborne in 1837. She is by Priam, dam by Cerberus, out of Diana, by Kill Devil. Like Annette, this mare made no figure herself on the turf, but went without any character of her own to the stud in 1842, throwing "Pix" to Touchstone in 1843, and her trump card "Dacia" by Gladiator, in 1845. After her second foal Polyxena was taken up again, and ridden for some years as a hack by Lady Georgina Spencer. Upon her Ladyship's decease, her favourite produced in 1849 "Croat" to Cotherstone, was not served in 1850 or '51, and was barren in 1853 and 1855. In 1854 she had a chestnut colt to Cotherstone; in 1856, a bay filly by Newcourt; and in 1857, another chestnut colt by Cotherstone, but there is nothing more to compare with the daughter of Gladitor. Polyxena is also

still alive and blooming at Althorp, in foal once more, it is hoped, to Cotherstone.

Many good judges have a fancy for "Dowagers," and it is certain enough that some of our best race-horses have been out of old and, as it was thought, almost worn-out mares. But a well-shaped, well-cared for thorough-bred mare never loses her value, and there are numbers still kept on here and there with the off-chance of their throwing another foal or two. In the case of Annette, however, there is yet an almost regular return. In fact, nearly all Lord Spencer's mares are good breeders, a point that depends no little on the way in which they are looked after, and that tells proportionately for Mr. Wilson the stud groom.

ARTIFICIAL MANURES—THEIR EXTENDED APPLICATION.

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

The extent to which artificial manures can be profitably applied is a question of very practical importance. The subject has been of late ably discussed by the members of some of our best northern Farmers' Clubs, but it has hardly in the southern portion of our island attracted the attention which the increasing importance of the inquiry deserves. The value of the research will naturally increase with the march of the population: as that multiplies, larger demands are made upon the soil; there are more mouths to feed, yet only the same number of acres to yield the required food.

It is only, in fact, as the population of a country becomes dense, that artificial manures are needed. So long as the grower of corn can select at pleasure untilled and fertile soils, he has no need of manure. He crops the ground as long as it produces remunerative returns, and then abandons it for other sections as naturally fertile. It is thus that, in all new countries, the mere labour of spreading manure is avoided as too expensive and unremunerative. In the vast wilds of Australia, for instance, the farmer very commonly does not even gather in the *straw* of his cereal crops: he leaves that in the field, and unsevered from the soil: it is the ears of corn only, that he values, and frequently thrashes out in the field.

An increasing population sooner or later terminates this easy, this rude mode of cultivation. The questions then speedily suggest themselves to the owner of an exhausted soil, how this state of barrenness arose, and how the original fertility can be restored?

He remarks that this decreasing fertility is more rapid on arable soils, but is as slowly progressive in pasture lands, however carefully these may be stocked.

It is a natural result of such useful observations to first inquire how this exhaustion arises? whether there is any other impoverishing process in operation, besides the removal of the more fertile portions of the soil by the crops it produces or the live stock which these support. What of the

drainage waters? What do these contain? What do they remove from the soil more than the water showered down on the field by the rain? This is an interesting question, because it is evident that if there is naturally a loss in this way, then that amount of injury is increased by the greater perfection of modern artificial drainage.

Now, by a little calculation, we find that if we take the annual amount of rain-fall to be equal to say 25 inches, then the amount of water falling on an acre of land is about 567,000 gallons, or 2,532 tons—a quantity which, however large in amount in the home counties, is half as much again in the westerly portions of our islands. The proportion of this rain-fall finding its way into the drains has been the subject of various and continued observations on different soils. From these, if we take as an approximate estimate that about 42·4 per cent. of the rain-fall finds its way into the drains, we have then the yearly amount of about 240,000 gallons, or 1,073 tons of water draining from an acre of land. Hence it is evident that one grain of any substance found in an imperial gallon of such water is equal to 240,000 grains, or about 34½ lbs. yearly, dissolved in the water at the expense of an acre of soil.

The nature of the ingredients thus removed in the drainage waters was some little time since ascertained by Professor Way (*Jour. Roy. Ag. Soc. vol. xvii., p. 132*). He examined several specimens of the water draining from the lands of the late Mr. Paine, of Farnham. In three of these he found in an imperial gallon the following amount (given in grains) of mineral substances:

	1.	2.	3.
Potash	trace	trace	0·02
Soda	1·00	2·17	2·26
Lime	4·85	7·19	6·05
Magnesia	0·68	2·32	2·48
Oxide of iron and alumina..	0·40	0·05	0·10
Silica	0·95	0·45	0·55
Chlorine	0·70	1·10	1·27
Sulphuric acid	1·65	5·15	4·40
Phosphoric acid.. . . .	trace	0·12	trace

In the same waters he found of organic matter, ammonia, and nitric acid :

	Organic Matter.	Nitric Acid.	Ammonia.
1.	7'00	7'17	0'018
2.	7'40	14'74	0'018
3.	12'50	12'72	0'018

From these we perceive that the quantity of the more valuable portions of the soil removed by the drainage water is very small, and after contrasting with these the small proportion of nitric acid and ammonia furnished in rain-water, the Professor was led to the following conclusions :

That through every acre of land, whether naturally or artificially drained, there passes annually a quantity of water equal to 42'4 per cent. of the rain-fall, and that where this latter is 25 inches the quantity of drainage water is equal to about 240,000 gallons in that space of time. That even where the land is very highly manured this large quantity of water removes from the soil only inconsiderable quantities of the most important mineral ingredients of soils, namely, *potash* and *phosphoric acid*. That the quantity of *ammonia* carried off from land by the drainage-water is also inconsiderable, but that nitrogen in the form of nitric acid is, especially in highly manured land, to be found in very large quantity in the water of land-drainage. That the quantity of nitrogen in the form of ammonia and nitric acid in rain-water is very much smaller than has been supposed, and inadequate, of itself, to account for the natural fertility that has been ascribed to it; and that it is to these substances, as existing at all times in the air, and absorbed from it by the soil and by plants (especially the former), that we must look for an explanation of such natural phenomena. That the quantity of ammonia in rain is greater than in drainage-water, which sufficiently attests the absorbing power of the soil for this alkali; but that the nitric acid in rain does not account for the quantity found in drainage even in the instances where it is present in the smallest quantity. That in all probability this nitric acid is due to the oxidation of the nitrogenous matter of manures, and especially takes place where such manures are of a nature to prevent their perfect admixture with the soil. That, lastly, the practical means which occur to us of preventing so important a loss, are the more perfect admixture of manures with the soil by any method which may best accomplish that end.

The amount of organic and mineral substances removed from the soil per acre in five years by an ordinary crop of turnips, barley, clover, and wheat, and restored to it in the farm manure, has been calculated, from the results of various chemical investigations, to be about, in lbs., as follows (*Jour. Roy. Ag. Soc.*, vol. xiii. p. 560):—

I.—ORGANIC MATTERS.

	REMOVED.	RESTORED.
Carbon	1831	
Hydrogen	250	
Oxygen	1697	
Nitrogen	84	
Ammonia	102	

II.—MINERAL SUBSTANCES.

	REMOVED.	RESTORED.
Silica	367	318
Potash	329	310
Soda	142	135
Lime	330	327
Magnesia	97	87
Oxide of iron .	22	21
Chlorides of } sodium and } potassium. }	69	69
Phosphoric acid	167	125
Sulphuric acid .	128	128
Carbonic acid .	140	140

It is noticeable, that from the result of these examinations, it appears that the greatest nett loss to the soil by the cropping of four years under the four-course system is in the phosphoric acid—the acid which is of all others the most universally applied to our soils in modern artificial manures.

It is an error to conclude that, even in cases where all the hay and straw of the land is consumed on the farm, there is no loss of fertile matters from the soil: a very considerable portion is carried away in the seed, and the bodies of the live stock, and very often a much larger amount in the wasteful mode in which the dung of the farm-yard is prepared. To this latter source of loss, Mr. Henry Evershed in his prize essay has recently addressed himself, when speaking of the proper use of straw on a farm (*ibid.*, vol. xxi. p. 153). He observes:—

“With regard to live stock, I have seen them thrive as well in warm, sheltered yards, open to the sun, and well supplied with litter, as in the best-appointed stalls, boxes, or covered yards. But the litter is wastefully used, the manure less valuable, and the amount of cartage greater.

“The quantity of rain falling in a year, on a yard 50 feet by 40 feet, at 25 inches per annum, amounts to 25,967 gallons, weighing nearly 116 tons. During heavy rain a large quantity runs off, carrying with it the soluble portions of the manure; but after making due allowance for evaporation, there will remain many tons absorbed by the straw, costing nearly 7d. per ton if carted a quarter of a mile. In covered yards the dung is concentrated: it is never washed; and cartage—that costly item—is reduced to a minimum. The quantity of straw required to keep open yards in a comfortable state depends of course on the weather, and also on the kind of food given to the stock. Turnips and green food increase the secretion of urine, and litter is needed in proportion.

“In ordinary years, and in open yards, with sheds, fifty head of stock require, as litter, 300 tons of straw in nine months, from September 1st to June 1st. This reckoning supposes ten horses to be kept in the stable, whose litter is thrown daily into the yards; the rest being cows and fattening cattle. The amount of straw used daily per head is 48 lbs., or twice as much as is required under shelter.

“It is stated in an excellent paper on manure, in ‘Mortcn’s Cyclopaedia,’ that 20 lbs. of straw per day are required to litter an ox, in a box containing 100 square feet. This agrees with the quantity

used in my own boxes, in each of which I find, after six months' fattening, 8 tons of dung, 6 tons 8 cwt. of which are derived from the ox, and 1 ton 12 cwt. from the litter. About 24 lbs. per head are used in the covered yards, which are occasionally treated to a dose from the stable-tank.

" Fifty head of beast, fattened in covered yards, will produce in six months—

	Tons.
" Voided by the animals	325
Litter (24 lbs. per head daily)	100 nearly.
	—
	425

425 tons of dung, fit to plough into the ground at once.

" The same stock in open yards will produce—

" Voided by the animals	325
Litter (48 lbs. daily)	200
Water	?
	—
	525

525 tons of mixture, to be carted to a heap and fermented. This is exclusive of a great weight of water.

" In six months' fattening of fifty head of cattle, in covered yards, the amount of straw saved is therefore 100 tons; worth, at Mr. Horsfall's estimate, 35s. per ton, to convert into butter and beef!

" I conclude this part of the subject by observing, that the proper use of straw as litter is, to provide a comfortable bed, and to absorb the excrements of the stock. These conditions can only be fully secured when the bed on which the animals lie is covered."

Having thus glanced at the ordinary sources of impoverishment to which our farms are exposed, next let us trace the restoratives to that steady withdrawal from our lands of fertilizing matters. In the general way we have the minute proportions of ammonia, which descend over our fields in every shower of rain. Then we have, in return for the matters which through our land-drains are finally lost in the sea, the enormous products of our fisheries, large amounts of sea-weed, shell, sand, &c. Then, again, some two hundred thousand tons of guano are yearly restored to the land by the sea birds of the Pacific. If we turn our attention to special applications, then we must remember the large amount of carbon absorbed from the atmosphere by certain green crops, the 200,000 tons of superphosphate of lime, for which the whole world is explored for bones, and those of antediluvian animals exhumed by thousands of tons in every realm, in coprolites, and the 13,000 tons of cubic petre of Chili; and if we add to these the annual imports of corn of all kinds (12,000,000 quarters), the oil-cake of the Baltic and of Southern countries (in 1859 95,000 tons), the tea (75,000,000 lbs.), sugar (9,000,000 cwt.), coffee (65,000,000 lbs.), and other enormous vegetable yearly imports—a large proportion of which, in some way or other, tend to fertilize our lands—we may then fairly conclude that the soils of our island are certainly not decreasing in their general amount of organic matters, or of phosphate of lime.

The increased application of artificial dressings is, in fact, one of the modern agricultural signs

well worthy of our attention. Here, again, the northern districts of our island ever appear to take the lead. The use of crushed bones commenced amongst the shrewd Yorkshire farmers. North Lincolnshire soon adopted the practice; and all Scotland now uses these and other artificial dressings to an extent which might surprise some of our Southern agriculturists. And if we examine the reason on which their costly outlays of money for these manures are based, we find it in the reports of some of their able farmers' clubs for a series of years. Take, for instance, those of the Annandale Club. We find them eight years since telling their brother-farmers (*Trans. High. Soc.*, 1852, p. 243), that on one farm in Annandale, along with equal quantities of dung, eleven bushels of dissolved bones, costing £1 18s. 6d. per Scotch acre, were compared with two cwt. of guano and six bushels of dissolved bones at an expense of £2 1s. per acre, and the first yielded the best crop of turnips. And, in conclusion, that the club were of opinion that 32s. per imperial acre may be profitably expended on extra manures when fifteen cubic yards of dung only can be applied; and in their next report for 1853 (*ibid.*, 1853, p. 541) they deem the wisdom of this practice to be "more and more clearly ascertained." And, again, on a more recent occasion, they add, in reporting a large series of trials by the different members of this valuable association—(*ibid.*, 1856, p. 231)—that the greatest crops of swedes were produced where bones, raw and dissolved, as well as guano, were added to the dung, and that the members deem it beyond doubt that the additional expense of 25s. per imperial acre for raw bones, or 15s. for dissolved bones, will produce an additional quantity of turnips at a very low rate per ton, besides adding much to the permanent condition of the land. In a prior report of Mr. A. Simpson, of Seavig (*ibid.*, 1860, p. 195), he advocates the annual outlay for manures of 23s. an acre; and Dr. Anderson has recently calculated (*ibid.*, p. 460), that, taking the cultivated lands of our islands to amount to 24,000,000 acres, that then the average value of the artificial dressings now annually employed is only about three-and-sixpence per acre.

If, then, it is true that far more artificial dressings can be generally applied to the soils of our country than they have hitherto received, how refreshing, how important is the conclusion! It shows us that the observation which has been sometimes made, that scarcely any well-cultivated country ought to fail in supporting its inhabitants, is an assertion much nearer the truth than we are always willing to believe. A retrospective glance at what the use of oilcake and other improved artificial dressings have already done in increasing the produce of the broad lands of England, should fairly prompt us to hope for still greater advances.

It would indeed be an absurd conclusion, if we were convinced that artificial manures can yield our excellent agriculturists no farther profitable results. Those great farmers did not thus reason, when, at the beginning of the present century, they found bones carting away as useless rubbish, when guano was known only to the Peruvian cultivators, and when superphosphate of lime was

scarcely ever seen out of the chemist's laboratory. No, no! my readers are well aware, from the wondrous, the mystic phenomena, which they remark, in every direction in which they cross their farms,

that what little we *do* understand in the use of artificial fertilizers is merely the rudimentary knowledge tending to other and still more important advances.

THE HERDS OF GREAT BRITAIN.

CHAPTER XXII.

MR. GRUNDY'S HERD.

A walk of three or four miles from the station, through the straggling suburbs of Rochdale, found us at Wolstenholme Hall at last, and according to the Ordnance Survey, about a thousand feet above the level of the sea. The hills protect it in a measure from the bleak north and west winds, but still the whole aspect of the country will suggest vague thoughts of being snowed in on the long December nights. Blackstone Edge, with its dark herbage and stunted trees, is Lancashire all over. It is said that it often refuses to shed its winter honours before Old May day; and grouse from the Dearden Moors leave the heather at such seasons, and take French leave for days amongst Mr. Grundy's grass seeds. In fact, such was the terror with which the climate had inspired previous tenants, that Mr. Grundy was confidentially assured, when he came, of the utter impossibility of growing turnips. Nothing daunted, he essayed a crop of swedes very early in the day, and what is more, he succeeded; and with the exception of wheat, he has produced every kind of white or green crop. The country, as seen from the front-door of the now humble "hall," is of a more inspiring character. Long chimneys send forth their dusky incense from Rochdale, Oldham, Heywood, Middleton, and Bury, beloved of the Robert Peels. The plantations of Ashworth Hall, divided by a brook from Mr. Grundy's land, and belonging to Lord Egerton, of Tatten, make up a pleasant summer fore-ground, and there too, embowered among the trees, is Bamford Hall, now in the possession of Mr. Fenton, a Rochdale, banker.

Mr. Grundy's holding consists of 85 acres. Besides his very nicely managed Shorthorn herd, which numbers about 25, he has not more than six common beasts. About 63 pure-bred Shropshire ewes compose his flock, and it is his plan to cross them with a Shropshire ram, and sell the lambs in July. If Mr. Bates had never lived or rather never died, "Mr. Grundy and Faith" would not have passed into a saying among the *habitués* of The Royal. The obituary of that Kirkleavington Aristarchus of the Shorthorn world, in *The Farmer's Magazine*, first fired him up, and before the year 1849 was out, he took to his present farm, and determined to try and follow in his track. The foundation of the herd may be said to date from July 1850, when Mr. Ashton, of Limefield, the master of the Bury Harriers, sold him a few heifers,

along with Tom Steel (8715) of Sir Charles Tempest's breeding. His first venture did not satisfy him, and he set forth for a new batch to Colonel Towneley's, of whose blood he has ever been a most steady adherent. They included Garrick (11507), Cressida, Gipseey, and Sweetbriar by Mehemet Ali (7227). The last named was thought to be a very doubtful breeder, but Sweet Lucy (by Emperor 9082), of Mr. Eastwood's favourite old blood, was the result of change of air and scene. Brunel (9999) and Duke of Athol (10150) were also among the other arrivals from Towneley, and the latter, which was Mr. Grundy's first dip into Bates's bulls, departed ere long, for a good consideration, to America. Four cows of genuine Kirkleavington kith and kin from Mr. C. W. Harvey's were the result of the same fancy, but it was reserved for Holker to naturalize that strain in Lancashire. Mr. Grundy was crossed in his first Shorthorn love; and he was glad to get rid of nineteen unfortunate cousins and cousins-German to the Duchesses, and Oxfords, and Waterloos at his sale, and has never bought any since. In fact he found such an utter absence of constitution in the Bates' blood arising, to judge by the symptoms in the calves, from such inveterate in-and-in breeding, that he almost determined to throw up the thing altogether. Ten years have, however, shown him what patience and science can effect, and no one acknowledges more generously than he does how good they have been made. His best Bates was Waterloo 9th, who came direct to Mr. Ashton, from the Kirkleavington sale. He bred from her Wreath, the only calf that Victor (8739) (who was second to Deception at the York Royal), ever got for himself, and Mr. Ashton, who hired him jointly from Colonel Towneley. This bull came to rather a singular end. Edward Taylor was leading him home in company with Mr. Culshaw, when he suddenly turned savage about half-a-mile from the Park, knocked his leader into the ditch, and followed him there. Taylor luckily scrambled out of his way, and the bull remained fighting in the ditch till a gun could be procured, and his humours brought to a summary end. Gilliver (11529), a combination of Booth and Bates, was his successor, and Sprightly by Belshazzar (1703), and Splendour by Bocaccio (7838), who had also been purchased by Mr. Eastwood at Mr. Wetherell's third sale, were his fair companions.

Up to this point Mr. Grundy had been a good winner at Bury, Redcliffe and "The Radcliffe Amalgamated;" but the ill success of his Bates' calves dissatisfied him with his Shorthorn fortunes, and in the June of 1853

Mr. Wetherell sold off everything, 37 in number, even down to the "capital cattle van on springs." The last proceeding looked more than suspicious. It is, however, a very true saying, that men will relinquish field sports, however ardent devotees they may have been of it, long before their means are exhausted, or their natural force abated, but that the executors are pretty certain to find "a small but select herd" on the premises, however often the departed has sold off. Mr. Grundy's case has furnished no exception to this "truly British" rule. His average was not very great, but Mr. Eastwood bought Cameo (200 gs.) (half sister to Butterfly), Wreath (150 gs.), and Sweet Lucy (110 gs.), for Col. Towneley; and Lally (73 gs.) by the Earl of Derby (10,117) departed with Gilliver (100 gs.) to Mr. Ambley's. Excluding all the above females, save the two-year-old Lally, four heifers of that age averaged 56 gs., two yearling heifers 50 gs., and two heifer calves 33 gs. Nothing was bought in; even that curiosity the freemartin Carry by Brunel (9999), which bred two bulls at Wolstenholme, heard her story told at the hammer, and departed with the rest; but before the close of the same year Mr. Grundy made Col. Towneley an offer for Sweet Lucy, then in-calf to Gilliver (11529), and with her daughter, Sweetheart, by Roan Knight, the new era set in most auspiciously.

Sweetheart was the first he ever showed at The Royal, and will long be remembered as the third in that memorable class of Chester yearling heifers, in which Queen of the Isles and Frederick's Diadem held sway. This stylish roan was sold before two o'clock on the afternoon of the awards, to Mr. Douglas, for 165 gs., and went into Ireland for 300 gs. She was shown in the cow class at the last Dublin Spring, and stole Mr. Anthony Maynard's bachelor affections so completely by her good looks, that it was only in submission to his two colleagues on the bench, that he gave up her claim to be placed before Rosette. Sweet Lucy's fifth calf, Souvenir by Roan Knight, was the winner in her purchaser, Mr. Eastwood's, hands of the yearling heifer prize at Dundalk. Horatio also did good service to Mr. Grundy as the sire of Rosa Bonheur and Coquette, which were sold for 350 gs. to Mr. Marjoribanks (as there was nothing but their half-brother, Roan Knight, to cross them with at Wolstenholme), but he injured his spine by slipping on his quarters from a heifer, and was obliged to be killed. Mr. Grundy was within an ace of buying Jenny Lind (the dam of Musician), when she was in calf with Victoria, but he could not then agree as to the figure, although she subsequently became his property. Taglioni (175 gs.), with Master Butterfly 3rd, then a week old, at her side, was not a lucky bargain, as, although Col. Towneley purchased the calf at 10 months for £215, the cow resolutely refused to breed. Twice she was served, and twice she broke at the end of nine months, and the butcher had her forthwith. Venilia, bred by Sir Charles Tempest, and the dam of Vestris and Vestris 2nd, and grandam of

Master Butterfly 2nd (who was sold for 300 gs. as a yearling, and again for 400 gs. to Mr. Crookshanks at the Bushey sale) proved a more lucky choice, and although she has nearly given up breeding, she has produced three bulls, the eldest of which, Vandervelde (17172), after being commended in his class at Chester, went, at a good figure, to the River Plate.

The farm buildings are principally built of rough-dressed stone, from a quarry hard-by, on the estate. The beams of the ceiling of the shippin have been screw-jacked up 3 feet, and this extra height, in conjunction with the clean white walls, the movable spar floors, the perforated zinc windows, and the sprinkling of "McDougall" (which has been found equally efficacious when the fly attacks the first sowing of turnips) gives the whole a remarkably cool appearance. A large stone trough in the centre-yard is fed summer and winter from the hill spring behind, and the arrangements for chopping up and then steaming the oats and straw, and bruising the beans and oilcake, are on the most complete scale. *Victoria Regina*, a daughter of Marmaduke and *Victorine* by Baron Martin, occupied the first stall, and although she has been stripped of several stone since then, it was easy to recognize the highly-commended heifer of Warwick.

She broke one of her horns, which are by-the-bye rather too dark for a breeder's eye, on the road home from that show, and, like Tom Sayers, will enter the ring no more. Mr. Tallant offered 50 gs. for her at six weeks old, and on the whole we preferred her to Faith, when they were both in training. Her shoulder, back crops, loins, and twist are all that can be desired; but on the *per contra* side must be placed a somewhat masculine head and a slight tendency to be scoopy in the quarter. She has had a bull-calf to High Sheriff, and is served again by Red Knight. *Patience* by Roan Knight from Princess Royal, a long level cow of good quality, stood next to *Dignity*, an own sister to Frederick's Diadem. *Dignity* has a little of the old Butterfly head and colour, but her hind-quarters are not on a par with her fore.

Cornelian by Valiant from Cameo, and *Frederick's Victoria* were further representatives of Towneley. Mr. Grundy tried to buy the latter when she was within a month of calving Bowbearer, but the figure then asked made him

"Whistle and ride away."

Eventually it was agreed that she should be exchanged for Roan Knight by Horatio from Beauty (dam of Beauty's Butterfly), and her length of quarter, good loins, and well-hooped ribs rhyme well with a remarkably nice head and general quality justify the choice.

The last attribute applies very truly to *Victorine*, bred by Mr. Carr, of Settle, and bought for 92 gs. at Mr. Marjoribank's sale in 1857, in-calf of *Victoria Regina*. She has bred three bull calves since then, in the space of three years and six weeks; and her High Sheriff bull-calf was sold to Mr. Holford, M.P., at Warwick. Her *vis-à-vis* *Lady Lola*, by Tom of Lincoln, was an

old-fashioned useful milker, and her white eyelash told at a glance of her grandsire, Buchan Hero. *Etiquette* by *Sparrow Hawk* (15325) from Emily by Kossuth (11646), which Mr. Grundy considers the best haired animal in his herd, was away at The Dales along with Faith's first-born *Hope* by High Sheriff. It is his rule never to suckle a calf either on its dam or a nurse cow, and hence Hope has been presented to his eldest son, and is gaining its settlement in another parish.

A few steps across the yard, past the crystal fountain, over which Deau Close and his distinguished friend "Sir Total Abstinence" might have lingered with delight, brought us to the calf *Hesperus* by High Sheriff from Victoria Regina. It is rather small, owing perhaps to its having come a month or five weeks before its time, but nice, neat, and level withal. *Venilia*, in the adjoining stable, looks like the remains of a very fine-handling deep-bodied cow. She was calved in the February of 1849, and hence both hips and rumps have grown a little out of proportion, but her splendid head and full eye-balls bid stern defiance to time. Sir Charles Tempest bred her, and sold her at his sale, and there are thirteen from her and her produce at Towneley, from whence Mr. Grundy purchased her; but it seems probable from present appearances that the trio of bull-calves she has had at Wolstenholme will be her last contributions to the Herd Book. *Butterfly's Decorum* by Crystal (a son of Jeweller) from Decorum, a cow with nice horns and head, but not first-rate behind, was another deal with Towneley, whither Mr. Grundy originally sold her. She missed to all their bulls, and Mr. Grundy bought her back again on the off chance. *Jenny Lind*, by Ben (8831) from Ruby by Selim (8845), kept us poring over her a considerable time, both for her own sake and her gold-medal daughter. It is now three years since he purchased her, and she has had two calves. As regards neatness of offal we saw nothing to equal her, and her lengthy level form, fine quality, and old-fashioned head, with the incurved horns, stamped her as worthy of her line. She is, however, rather short of hair.

High Sheriff had three bull-calves to show us, in the shape of the beautifully-haired *Victor Emmanuel* from Venilia, the neat and level *Prince Regent* from Princess Royal, and the red lusty *Joe* from Jenny Lind. Their senior *Red Knight* by Horatio from Venilia hardly did justice to his lineage, as he was all to pieces with cold, and he was deposed *pro tem.* by the white *Butterfly's Nephew*, a son of "Dick" (13590) and *Beauty 3rd* by Frederick. Barring his shoulders being a little too forward, he is a very good bull. Few stand on such a short leg, and such remarkably nice hind ones; and whether his back, twist, head, or quarters are under review, it is difficult to be dissatisfied with him. *Butterfly's Decorum* was another of the clan, and as she is by Butterfly 4th from Etiquette, her nomenclature admits of no cavil; still the invention of a name for her forthcoming produce by Butterfly's Nephew will be quite a

philological puzzle. She is a very nice heifer, and with the exception of a slight falling-off from the huggins, as clever as one would wish to see; but still we are not sure that *Prudence*, who shared the next box with her half-sister Lady Lally, did not please us as much as anything there. She is by High Sheriff from Patience, and her neck vein was wonderfully snug. *Lady Lally* from Lady Lola had more substance, but still, despite a level, pretty top, she showed hardly so much caste. We looked at the pair over and over again, till William Hall, the herdsman, began to think that we were quite passing a slight on *Faith*, whom we had left on purpose to the last. We never admired her very much at Warwick, and thought her if anything rather on leg, but like Duchess 77th, she went on wonderfully in the next three months, and perhaps no proprietor of so small a herd could show two better yearlings of his own breeding, in training at one time, than her and Victoria Regina. Her dam, Flirtation, was bought by Mr. Ashton from a calf at Sir Charles Tempest's, and she and Patience are the first that were ever dropped to Roan Knight. Great size and a most capital back and loin are her principal characteristics, and it was her remarkable development and early transmutation from heiferhood to cowhood, so to speak, which spoils her chance in the two-year-old heifer classes this year. Her somewhat straight horns are rather against her, but although she had to resign her laurels, without even a mention, she was the only one of her Canterbury class which came both in-calf and in-milk.

We took one last look round at those we had treble crosses against, and went once more on our way. The leaf has fallen since then, and, as calves have fallen with it, it would never do not to give the very latest entries in the Wolstenholme Gazette. Here they are: Princess Royal has just blessed Butterfly's Nephew with a *Princess Rachel*; Patience has also borne a light roan bull-calf, *Picturesque*, to him; Victorine keeps up her charter with *Vangoyen*; and Butterfly's Decorum has got through her labours with a red roan heifer, *Butterfly's Decoration*, which will, we trust, be true to its name. Frederick's Victoria and Victoria Regina are both to calve to Red Knight in March; but Decorum and Lady Lola broke in their fifth month, and have calmly passed into the final "shin o' beef stage."

H. H. D.

PRIZE FOR AN ESSAY ON SEAWEEDS.—Sir W. C. Trevelyan has placed at the disposal of the Council of the Society of Arts the sum of £100, to be awarded as a prize for the best essay "On the Applications of the Marine Algae, and their Products, as Food or Medicine for Man and Domestic Animals, or for Dyeing and other Manufacturing purposes." The essays must be the results of original research, not mere compilations, and must be accompanied by a series of specimens illustrative of the best modes of collecting and preserving them, and be sent in before December 31st next.

THE COMING WINTER.—STOCK MANAGEMENT.

Many will be the anxieties passing through the breast of every stock-master during the ensuing winter, relative to the sustenance and management of his live stock, owing to the short supply and bad quality of winter food. We have seldom had to contend with such a general failure of green crops, and the further calamity of a spoilt hay crop, and a much-injured straw crop; so that we are in fact involved in the double difficulty of providing substitutes for both the green crops and the hay and strawcrops, or, what is equally difficult, to devise the best means of economizing what we have of them, and making them most available for food.

The object of this short paper is to offer a few suggestions under the trying circumstances in which we are placed; for, in addition to the partial loss of the green and straw crops, owing to the untowardness of the season, we have as a consequence the greater number of stock to provide for from the same cause. The summer has been so cold and wet, and the grass so deleterious, that numbers of both cattle and sheep have failed to make themselves fat. Hence they are yet on hand, and require good and nutritious food to bring them on and fit them for the fat stock market. This, however, must be effected, at whatever cost in reason, or the summer's grazing will be entirely thrown away, and for this purpose the best of the food and the closest attention must be given to them. The quicker they are fattened the better. A very few weeks will suffice, under good management, and a supply of plenty of good food, with cake and corn, or either separately, to bring up well-bred, but half-fatted animals, to a satisfactory marketable state.

The great question is as to what is to be done with the store stock, so as to keep them in a progressive condition? How can the winter's food and fodder be best economised and improved? and what artificial additions or aids can be made available?

What is to be done with the *store cattle and sheep*? *Store cattle*.—In the first place, if store cattle are compelled under this unfortunate state of things to partake of inferior food and exist upon it, if exist they can, they will be greatly aided by being made as warm and comfortable in the fold-yards or byers as possible. A little food, with warmth and quiet, is better than much food with cold yards and bad lairage. Another thing is to supply this inferior or unpalatable food in small quantities, but very frequently. If a full crib is given, the animal throws out the greater portion in order to find something perchance that may prove palatable, and thus much is lost; most unquestionably they will require much greater attention and care to induce them to consume the much-injured provender of the present season, staid and tainted as it is. This, however, we hope in

some measure to obviate and aid by answering our own next question—How can the winter's food and fodder be best economised and improved? First, we may greatly improve the tainted straw and hay by steaming it. True, we cannot make it more nutritious by steam, but we can take away all taint, and make it sweet and palatable, *i. e.*, that which contains a large per-centage of nutritive food, and wholly unsavoury, so that cattle will not touch it, is by the action of steam upon it made savoury, so that they will eat it with avidity. And bear in mind that although fodder may be much tainted, it still retains its nutritive properties. We have the task of making it a palatable food, and this we can do by steaming it. I speak from experience on a small scale, and was and am surprised at the result. Coarse, tainted, mouldy hay was made free from smell, and to regain its hay flavour, by a short exposure to the power of steam passing through it from the top of the cask which constituted a receptacle for steaming food, and, being subsequently mixed with sliced or pulped turnips, made a good and nutritious diet. Now, this is one of the suggestions I desire to make—that great resort be had to the steaming of tainted hay and straw. For this purpose it must be cut into chaff. After it has lain a while, on being taken from the steamer, a small quantity of cut or sliced or pulped turnips or mangolds should be mixed with it, and when cool the mass will be ready for the stock. In this way much food may be made very valuable, at no great cost, as the time required to steam it is short. I shall not attempt any lengthened detail of the process of steaming. The more simple and inexpensive the apparatus the better. Mine is simply two large barrels (36-gallon casks) hung on posts, by a small furnace, to which is attached a steam pipe, communicating with each cask alternately, steaming one while the other is being emptied.

Another suggestion I would make is relative to the judicious admixture of pulped roots with cut chaff. It may be impracticable to adopt steam on an extensive scale, but the cutting of straw into chaff may be generally adopted; in such case a judicious admixture of pulped or sliced turnips, as effected by either Bentall or Moody's machines, will be found very conducive to make the most tainted hay or straw eatable food, and if given in small quantities, the stock will consume it readily. Another suggestion is that the dust of linsced-seed cake be slightly scattered over such cut chaff. Salt, again, in small quantity, will, in some cases, make it palatable. Linseed porridge is highly useful in such a mixing. This needs applying when warm, and the chaff to be well turned as applied. Bean or pea or barley meal would answer admirably in making this strawing food available, a slight dusting over steamed chaff

would suffice. In this way much of the inferior fodder of this winter may be profitably consumed.

I will now say a few words upon the artificial additions and aids which may be made available through the winter in economising food, or in substitution of the usual supply. For this purpose the great resort must be to the corn crops. Wheat will this year produce a large proportion of offal: this might form a staple food in many cases. It also leaves a large proportionate quantity of tailings at every dressing: this would be very serviceable, either ground into flour, or steeped in grain. Barley has been much injured by the weather: much refuse barley may be brought into requisition. Peas suffered considerably by the wet: these should be ground, and applied to the fodder. Oats in the sheaf might with great advantage be cut into chaff, and given to store stock, particularly young stock. Maize might be substituted in some degree for bean-meal. The standard artificials, as linseed-cake and rape-cake, will, of course, form a very large portion of this supply; besides these, we have cotton-seed cake, dodder-cake, mustard-cake, and carib beans, all to be made available in a season like this. Of course the farmer's judgment must guide him in the application as well as preparation of any of these, and other helps he may feel inclined to adopt. It is important that all is done at once: on no account should the stock be compelled by sheer hunger to eat or die; no, their food must be prepared for them, and made so acceptable that they will greedily devour it, or loss of condition must ensue. All this will require both skill, attention, and judgment; mixtures soon deteriorate, and become not only bad, but injurious to the stock. Warmth, cleanliness, and wholesome food are everything to stock; and taking this as the rule, let every part of their management be in accordance with it, and thus threatening as the coming winter now appears to be, a satisfactory "wintering" of farm stock may reward the stock-master.

I have confined myself in the above to suggestions for making provision for the sustenance of *cattle* during the ensuing winter. I shall now offer a few suggestions relative to the "wintering" of *sheep* in a year like the present, when so little food is to be found for their support. It is a long time since we have had to contend with such a season—no good hay; straw unusually bad and tainted; grain sprouted, damp, and thin; mangolds small, and defective in quality; turnips small in size, and light in crop; coleseed leafy, without rib, and of bad quality; the whole grain crop of the country being fully one-third below an average one.

What, then, is to be done with our flocks? How are they to be brought satisfactorily through a winter fraught with such difficulties? The flocks are by no means less, or shorter in amount. We believe a fair average number of sheep have to be provided for, and that out of a crop less, we say, by one-third in bulk than usual, and, owing to the cold, wet summer, possessing very little nutritive value.

What, then, we ask, is to be done?

First, as a general rule, sheep must be well taken care of in the early part of the winter. As the spring puts in, they will bear a little pinching; but even that is a dangerous course, should a flush of grass come early in the season. However, it is certainly better to put them "on short commons" in the spring, rather than in the winter, if such a course is inevitable from scarcity of keeping. But in such an unfortunate case the food should be good, particularly if they have but little of it. A few ounces of cake each, with a small supply of green food and cut chaff, will keep the sheep in fair condition for a considerable time, in the early months of spring, if the cold is not severe. The milder the season, the less food will they require, providing that little is good and nutritious.

The chief thing, then, to be done, is to economise food in every possible way, and to see that the flocks have good lairage, and that they are in every way made as comfortable and are kept as quiet as possible. The task of economising green crops is not a formidable one. It is the universal custom to give to sheep all the sliced turnips they will eat, and even permit them to waste a portion. In a season of scarcity like the present, I would suggest that fair and reasonable rations be dealt out to them, but no more; that cut chaff from oat-sheaves or barley-sheaves, and a small quantity of hay, be daily given to them; and that a ration of cake be served out every evening.

I am not by any means an advocate for stinting sheep in their daily food; but it will be found that a moderate allowance of turnips, swedes, mangolds, or even coleseed, with a somewhat liberal ration of cake or corn, will keep them in good thriving condition. I therefore suggest the following course of management: The sheep to be folded upon the crop in stinted folds—*i. e.*, rather confined for room than otherwise; that every portion of the bulbous crops—*i. e.*, turnips, swedes, or mangolds—be cut up for them, but be served out very sparingly, in troughs; the allowance not to exceed 5lbs. each per day for lambs, and 7lbs. for older sheep (less will suffice); the balance of food to be made up by cake, corn, cut chaff, hay, and straw. The proportions should be something like the following: For lambs, the allowance of cake should commence at $\frac{1}{4}$ lb. per day, to be increased to $\frac{1}{2}$ lb., and to have, in addition, cut chaff, straw, &c. For older sheep, to begin with $\frac{1}{2}$ lb. cake per day, to be increased to 1 lb., with chaff. If corn—*i. e.*, oats, barley, beans, or peas—is used, the allowance of oats for lambs, per day, should be half a pint, to be increased gradually to three-quarters of a pint; of barley, to begin with something less than half a pint, to be also increased to three-quarters of a pint; of beans or peas, to begin with a quarter of a pint, to be gradually increased to half a pint. For older sheep, about one-third more of each kind might be given, in the same gradual way. Straw *ad libitum*.

This would, no doubt, be a favourable season for re-

sorting to and trying the other varieties of artificial foods. Carib beans, for instance, in moderate rations (of which the experiments would soon determine the quantity to be given, but of which I have no experience), millers' offal, inferior rice, sprouted and inferior grain, malt-comb, brewers' grains, cotton-seed cake, and any other well-authenticated feeding stuffs, might with advantage be used; which, together with the rations I have named, and straw in plenty, both to eat and for lairage, would cause the sheep to pass through the winter profitably. All sheep-breeders and flockmasters have their own peculiar modes of wintering their sheep. My suggestions are only intended to put them upon economising their food in this year of scarcity, and to induce them to adopt and freely use, as efficient aids, some of the other kinds of food I have named, and to make such other dispositions in their management as to them seems best for the welfare of their flocks.

In the present depressed state of the corn market, it would appear that inferior wheat might be purchased, and used as feeding stuff for sheep, with advantage. If so, it should be ground and given with cut chaff, at the rate of $\frac{1}{2}$ lb. each of meal per day. On no account should wheat be given, to any extent, in its green state. Its tendency is to swell greatly in the stomach, which will frequently cause death to ensue. This is not the case with other grain, to any injurious extent; but beans and peas should most certainly be reduced to meal before they are given. Inferior barley or oats may be given in larger rations than I have named above.

My own course occasionally has been, to make a mixture of each kind of grain, including inferior wheat, and to give about half a pint per day each. It saves a little trouble, and, taking a flock together, is the more healthy way, each animal having the opportunity to select the food which instinct dictates to be best.

The season for storing mangolds has been very good;

and it is probable they will come out in fine condition in the spring, which is, in truth, the only time when they ought to be used for sheep: certainly, they must not be given to lambs before the month of March, unless the weather is very fine and dry. The abundance of water contained in these roots will otherwise cause great scouring and looseness of body. It will, therefore, be wise to consume all other green food before these are resorted to; and if they can be spared till March, they then become very valuable, and are almost synonymous with, or equal to, turning to first grass, the great restorer of all stock.

It is the general custom for the corn merchants, in the neighbourhood from which I write, to make excellent feeding mixtures of corn, consisting of tailing wheat, thin barley, and a few oats, with a slight addition of beans and peas. This mixture is sold by the stone-weight, and is much sought after for pigs and sheep, and occasionally for horses. In the present season they will undoubtedly have plenty of thin "wheats and barleys," so that abundance of these mixings may be obtained at a moderate price; and, truly, they do constitute excellent feeding stuffs, and have my full recommendation.

We have great reason for thankfulness for the fine open weather of the past three weeks. It has caused a great improvement in the growth of our green crops, and enabled us to secure the crops of mangolds in admirable order. Swedes have increased much in weight, and are still growing favourably. Coleseed has surprisingly advanced in growth and quality. The common turnip also partakes of the improvement. We therefore trust that, notwithstanding the manifest scarcity, we shall, by the adoption of strict economy, and the use of every artificial aid, be able to bring our stock satisfactorily through the *coming winter*.

P. F.

HIGHLAND CATTLE AND BLACK-FACED SHEEP.—THE DUMFRIES FARMER'S SOCIETY.

"It was a most fortunate event that crossing in cattle and sheep in Scotland had taken place, for there was many a district which would have paid no rent had there been no cross." It is something more than four years since, that we heard this remark made at a discussion-meeting held in the capital of the Highlands. And now there has just been another gathering in the pretty little town of Inverness, the great object of which was to protest against this plan of crossing; or, at any rate, to discountenance any undue favour for new breeds and varieties, to the prejudice of those so long identified with the district. The Highlands, in fact, would appear to be losing some of their most characteristic features. The rough, shaggy, picturesque mountain ox, and the active, curly-horned, black-

facéd sheep are gradually giving way before the Short-horn and the Cheviot. Or, if not actually driven forth, they are being crossed out of their native purity, and in this state put to a manifestly unfair comparison. The Inverness Farmers' Society has determined, after a lengthy debate, "that we should have been better off had our energies been more directed to improving the black-facéd sheep and Highlanders."

The line of argument ran much in this way:—The native Highland cattle and sheep will live on little or nothing more than what they can find on the hill. They will eat heather, and the Shorthorns will not. While they are thus still left to "rough it," the new breeds are pampered and housed, although it was maintained their own beasts could pay quite as well for more food

and warmth. But there was considerable difference of opinion on this point. Mr. Anderson, who opened the discussion, had himself some Shorthorns, but "he had the greatest liking for Highland cattle. He had some Highlanders, four years old, now at Kildrummie, worth £30 a piece. When his Highlanders were four years old he sent them to the London Christmas market, and he was never disappointed in the price which they brought him. He had been disappointed with crosses, but never with Highlanders." Then, Mr. Frazer, of Fairlie, thought "neither their severe climate nor their pastures were suitable for Shorthorns. He kept Highlanders because he found the climate was most suitable to support that kind of stock. He found that the warmer they were kept the better they thrived; indeed he thought it was almost useless to keep cattle over the winter unless they kept them warm." Mr. Mackay, of Dinnoch, on the contrary, did not consider that the Highlanders paid in an equal ratio for better care-taking; and this is a very important point in putting the case: "If our cattle were as our sheep, dependent upon our hill pasturage, I should place Highland cattle in the same category with black-faced sheep, and say that they, and they alone, were adapted to our circumstances. And where the system of farming pursued is the same as it was a century ago, where cattle are fed on straw during the winter, and on heather in summer, of course a change from Highland to cross cattle must be a ruinous one, inasmuch as a Highlander will fatten where a shorthorn would decline. If your food is heather, your stock must be Highland. If, on the other hand, you have good houses, and feed your cattle on straw, turnips, and oil-cake, you must have cross cattle, as such feeding is quite thrown away upon Highlanders." There is a great deal of the argument of "progress" about this, and the speaker goes on to distinguish between the relative merits of "starving" and "feeding" stock. For the one alternative it is very evident there is no other beast equal to the one so long habituated to the system; the question is, whether he would behave as well under better circumstances?

Experience answers this in a variety of ways. Our own knowledge of the North tends to assure us there is no other breed of animal now so much neglected there as the rough-coated, long-horned, pure Highland ox. We remember yet the disappointment we felt at the show of them brought together in the heart as it were of their own territory; while at Dumfries, this summer, their class would bear no comparison, either for numbers or merits, with the black polled or the Ayrshire. The Highlander may do well enough upon heather, but to our eye he never shows to so much advantage—he never looks so grand, so useful, or even so noble—as he does in Bingley Hall or Baker-street. And salesmen and butchers say the same. The very best meat of all that comes to table, either for flavour or firmness, is that of the Highland ox, when he has been properly "done by." It sur-

passes alike the Galloway, the Devon, and the Shorthorn. Go to Badminton and ask the Duke how they taste? Or Mr. Thompson how they do? And the answer will be all in their favour. This of course goes to correct Mr. Mackay's opinion that feeding is thrown away upon the Highlanders. Was it ever fairly tried there, or have the hapless mountaineers only had enough to eat and drink after they have crossed the Border? Of course we must except such men as Mr. Anderson, who makes beef cheaper off the Highlander than anything else, and at the same time finds it fetches the best price in the market.

On the whole, the deduction one draws from this discussion is that the farmers themselves are more in fault than the cattle they contrast and compare. It really seems that neither the pure breed nor the crosses are properly treated. The strain of the Highlander is evidently being cultivated with less and less care, and he is degenerating accordingly. Then, the crossing has come to the crossing of crosses, and "miserable-looking cattle are to be met with." Of course there is nothing more fatal than this. As nothing pays better than a first cross, nothing can be worse than going on with it. A new strain of blood may be judiciously introduced, and gradually assimilated with what it is grafted upon, but even such a step in the best of hands is always something of a problem, and seldom as lasting a success. Here, however, in Inverness-shire, they seem to have taken to the use of mongrels, while in a proportionate degree they have been neglecting the character of their own stock. On such a showing it is high time the Inverness Farmers' Society had such a meeting. With due regard for them, there is no possible reason why both sorts should not still flourish in different parts of the district. Let that great improver of his age, the shorthorn bull, be by no means ignored, but above all let the native cattle be looked up. It is here that the great strength of the country should centre. Let the kilted hillman make it his business to learn all Mr. McCombie has done with the Aberdeens, and of how famous a cross comes of them. And then let him reflect that he has quite as good material to go upon, for one of the finest of all "nicks" is that of the shorthorn bull with the Highland heifer. Even further than this, the Highland ox is something of a fancy with us in the South. As Mr. Simpson, the chairman, said, "they are much in demand, for keeping in the parks of the English aristocracy, where their picturesque appearance suited the scenery, and doubtless their flesh was also relished in the Baronial Halls." There can be no doubt whatever as to either of these attractive recommendations, and we have only to trust their own friends will no longer neglect what we are so ready to prize. The tendency of the debate at the Inverness Club was to pit one kind against another, and to run one up at the expense of the other. This is scarcely the way we should be inclined to treat the

subject. No good can come of abusing the Durham; he will always have his uses, even in the Highlands. Nothing but harm can follow from perpetuating careless crosses; and nothing should be safer than maintaining, in all their excellence, breeds that have so far

answered so well, both at home and abroad. A black-faced sheep yet holds his own with tolerable firmness, but his companion on the hill-side has still to do battle for the vantage ground.

IMPORTANT GAME CASE.—THE RABBIT PLAGUE.

On Thursday, November 15, a case of great interest to farmers with reference to the preservation of game, and the rights of farmers, was heard by Robert Segar, Esq., Q.C., and a jury, at the County Court. The plaintiff was Mr. John Rome, a farmer, of the Gillibrande Demesne Farm, near Chorley, and the defendants were the Rev. Henry Sewell, and Messrs. Thomas Whittle, William Whittle, and James Blackledge. Mr. Samuel Pope, who was instructed by Mr. Jonathan Wilson, of Chorley, appeared for the plaintiff; and the defendants were represented by Mr. Mayhew, of Wigan. The court-house was densely crowded.

Mr. Pore opened the case, and said that the plaintiff, John Rome, claimed damages for trespasses and injuries done by the defendants to his farm lands and the growing crops thereon, by having wrongfully overstocked a large quantity of pheasants, rabbits, &c., on or near the said lands. In 1858, 1859, and 1860, the crops were destroyed to an extent far exceeding £50; but plaintiff had abandoned all claim to a sum beyond £50, in order that the question might be heard in that court. He (Mr. Pope) would be able to place the matter beyond one of problematical enquiry, by proving that direct trespasses had been committed by the defendants. The present was not a case so much in which the litigants were hostile to each other, as one of those matters which must necessarily arise in such a district as this is, where sporting was carried on rather keenly. The defendants, it seemed, had the shooting over the farm in question, and in 1857 the game was entirely destroyed; but after that time, in order to have continued sport, the defendants themselves, or at any rate their gamekeeper for them, purchased large quantities of rabbits, and turned them out on or near the farm, and thus caused the injury to the crops complained of. Other trespasses had been committed, as, for instance, setting traps, &c. The farm contained a number of rats, and, to keep these away, cats were kept by the plaintiff, and several of those cats had been caught in those traps. He would also call witnesses, who had valued the crops, and he would particularly direct the attention of the jury to the state of those crops in the years 1858 and 1859, the greatest damage having been done to them in those years. Complaint had been made in both the years named, and the defendants were requested to meet the plaintiff to make a fair valuation of the damage done, but no notice was taken of the application; they made, it was true, some sort of valuation of their own, but would not come to terms with the plaintiff as to compensation.

John Rome was called and examined. He said: I am the occupier of the Gillibrande Demesne farm. I entered it in 1856. Since Mr. Rothwell had the shooting, the Whittles and Sewell have had it. In 1857 I was troubled with the game to some extent. I first began to find damage from the game in 1858. I spoke to Blackledge about it in that year, about harvest-time, and he said: "You have not had much damage this year, but I will not answer for the next." I have seen all the defendants shooting over the land in 1858 and 1859. [A plan of the farm was here produced.] There was much damage done in the moat meadow in 1858. Messrs. John Howarth and Dickinson valued it. It was 22 acres statute. The valuation of the damage was £25 5s. In 1859 the game was very heavy. A value of the damage was made by Mr. Rolston and Mr. Smith. I have been in the habit of keeping cats, and have seen defendants on my farms with traps in their hands.—His Honour: Which of them? Blackledge.—I have lost many cats. I have not suffered so much this year, nor made any valuation of this year's damage. In 1857, when the game was not troublesome, the average crop of wheat per acre was 24 bushels,

but in 1858 it was only 13. The damage to the grass was caused by rabbits.—By Mr. Mayhew: I have the lease of the farm: it is dated December 8, 1856, and is between the Rev. R. M. Master and Henry Bullock, Esq., on the one part, and the tenant on the other. It demises the farm, and there is an exception of the full and free use and enjoyment of the stream of water, a right of way, the mines and minerals; and it is then stipulated that the lessors shall make reasonable recompence and satisfaction to John Rome, for any damage done to the premises; but it reserves all game, rabbits, fish, and wildfowl, with free liberty, licence, and leave to and for the said Rev. R. M. Master and Mr. Bullock, and their gamekeepers, &c., to hunt, hawk, course, shoot, fish, and sport in, over, and upon the said demised lands. I knew that the game was reserved to the landlords. Mr. Rothwell had the game until February, 1857. Defendants took the game in 1858. Blackledge was the keeper when I entered the farm, and continued to be so for Messrs. Whittle. I did not suffer much damage in 1857; in 1858, however, I suffered greatly, and had a valuation made by Mr. Howarth and Mr. Dickinson. In 1859 I suffered the most, and the principal part of the damage was caused by rabbits. Mr. Dodds is the agent for the estate. I complained to him, but he did not tell me then that I might destroy them. He told me so afterwards. I first complained to him in April or May, 1859, and he did not, until Midsummer, tell me I might kill the rabbits. Even when he told me, I did not. The part of the farm most damaged was the moat meadow for hay and the three lawns. I did not keep an account of the quantity of hay I got from the moat meadow, in 1857. In 1858 it was about 30 tons, but in the following year only 25. These figures are of course only guesses. There was a deal less in 1859 than in 1858. In 1859 I sent in a bill to my landlords for the damage I had sustained in the hay, but not for the crops. The traps were not rabbit traps, though they would take either rabbits, cats, or rats. I complained to the keeper about them. I have not seen any of my cats in the traps. I have seen six or eight cats' skins in Blackledge's yard: two of them were mine. I know that Captain Anderton, an adjacent landowner, preserves his game, and that on other sides of the farm game is preserved.—By Mr. Pope: I sent to Mr. Dodds a statement of the entire damage.—Mr. Mayhew: I object to the production of the paper.—Witness, by Mr. Pope: I complained to Mr. Dodds about the rabbits at the commencement of the season. The first time of my having killed any rabbits myself was in this year. The reason of my not having killed any before was that Blackledge had threatened me. The first time when I was told I might destroy the rabbits was after Mr. Smith had valued the damage.

John Fowler was then examined. He said: I am a spinner at Chorley. I have sold living rabbits to William Whittle, in 1856, in the beginning of the year. Most of them were with young. There were 16 of them altogether. I got 1s. 3d. for those with young, and 4d. each for young buck rabbits. I sold them to him in his own office. He objected at first to the rabbits, and said he had plenty; but he would buy some bird's eggs. The rabbits were put into a hamper a yard long.—By Mr. Mayhew: I object to say who helped me to take them.—Mr. Mayhew: I shall beg to have an answer to that question.—His Honour: It cannot be material.—Mr. Mayhew: It may affect the credibility of a witness; but, of course, if your Honour thinks it immaterial, I will not press the question.

John Dewhurst deposed: I live at Common Bank, and am a labourer with my father, who is a farmer. In 1858

I was out "heating" for Mr. Sewell, the Whittles, Mr. Potter, and another. I know Mr. Rome's farm at Gillibrand. I remember going to the keeper's house in the latter end of the year, and seeing a hamper there, a yard long and two feet broad. I sat down on it and heard a noise inside. I moved the cover to one side and saw a number of living rabbits. Blackledge, William Whittle, and a man named Bateson took it to the wood. Bateson was a keeper. The rabbits were in the skip when they took it away. They were away ten minutes, and it was empty when they returned. They went into the plantation adjoining the farm. There were more rabbits in 1859 than in 1858. I have seen rabbits in the crops, and I have seen that the crops were damaged. By Mr. Mayhew: Mr. Sewell was not present when the hamper of rabbits was taken away. I heard no shooting. I did not see them bring any rabbits back; if they did they must have been in their pockets.

John Horne, examined: I work for Mr. Rome, and have worked for him for three years. There was the most game on the farm in 1859. The chief damage was in the three laws of wheat. The rabbits' droppings were in the hay. Cattle will starve before they will eat hay which contains rabbits' dung. I have seen traps set, which would catch cats or dogs. I have seen no one set them, but I have seen Blackledge carrying them.—By Mr. Mayhew: They would take rats, of which there were many.—By Mr. Pope: I remember one day when Mr. Rome's little girl and her governess came into the field, with a little dog, and it started six pheasants. That was when I was cutting the wheat.

Mr. William Adam Smith, farmer, Duxbury, said: I know Mr. Rome's farm, and I have seen rabbits and pheasants on it. On July 13th, 1859, I inspected it in reference to damage it had received from game. On August 10th I was looking at the growing crops, and found considerable damage had been done to them by game. I have suffered in a greater degree from the same thing, and recovered compensation. The moat meadow was considerably injured by rabbits, as was evident from the numerous roads they had made, the great quantity of dung lying in the piece, and the many bare spots in the field where they had been feeding. Three-fourths of the field had been manured with 600 single-horse loads of compost, and 17 tons of lime. The grass on the manured portion was inferior to that on the unmanured part, and that is accounted for from the feeding of the rabbits thereon, that grass being sweeter and more palatable to them than the other. In an ordinary season the meadow would have produced from 30 to 40 tons of hay. Probably nine tons have been destroyed—value £5 10s. per ton. The crop of wheat was thin. There were marks of cattle having been there, and some few traces of rats on the eastern side, considerable damage having been done to the western side. Twelve windles of wheat have been destroyed—value £1 per windle. This does not include what I calculated as damage by rats. The further lawn was very much eaten by rabbits; four windles having been destroyed. The middle lawn had a much better crop; but still, two windles were injured by rabbits. That is not so near the plantation as the other lawn, but there were marks where the rabbits had been. The near lawn suffered the most, the south-west and the north sides being greatly injured; half an acre was eaten down, as well as the mid furrows half up the field, and for a breadth of four feet; the total extent of damage was eight windles—value £8. That lawn is almost surrounded by the plantation. Corn field No. 2 was in bad condition, and, even making allowance for the deficiency of the cultivation, and the fact that under ordinary circumstances the crop would not have been good, 24 bushels, worth £4, were spoilt. As to the clover and turnip crops, I made no estimate. The damage had been done through the whole summer, and cannot be accounted for by the supposition that the rats had done it. Judging of the land from what I saw, the average crop per acre, after a succession of turnips, should have been from 30 to 40 bushels, *i. e.*, if no rabbits had been there.—By Mr. Mayhew: I was accompanied in the valuation by Mr. Roston, who is not here. I have made a valuation of damage done to agricultural crops once before—several years ago. I found some damage done to the wheat by rats.

Mr. MAYHEW then rose to address the jury for the defendant. He said he should ask his Honour, in directing the jury, to say whether the plaintiff had a right of action at all. The only case which he found which could bear on the case, though it was remote, was one in Burroughs, where there was a dictum by Lord Mansfield that if the lord of a manor surcharged a common to such an extent by placing rabbits upon it, as that the herbage of the common should be totally eaten or destroyed, though the commoner could not abate the evil, he had a right of action. That was as between persons having independent rights. But here the plaintiff had no rights beyond those given to him by the lease; and, going back for an instant, to the exception, it was remarkable that in the exception of the mines and other things which the lessors reserved to themselves, a clause was contained to the effect that if any damage should be thereby occasioned, the lessee could have compensation; but in the reservation of game, the maxim *Expressio unius exclusio est alterius* must be applied by his Honour. Not only in his (Mr. Mayhew's) view was no action sustainable for damage done by animals *fero nature*, but if damage had really been recoverable, the lessee's remedy would be against his own lessors, and not against those to whom the lessors had given their licence to shoot or fish. What would be the state of things if the lessee could proceed against the lessor? First, if the lessee sustained damage, it was by his own want of care, in not making it a term of the contract that the damage should be compensated for, just as compensation was stipulated for in other things. What damage? Damage by the game on the land. What game? and to what extent? For if the lessee could recover for any damage, he could recover for all damage, supposing that any rabbits were kept and any injury had been sustained. (His Honour: I don't understand that the defendants "kept" rabbits at all.) Well, what were the facts? Mr. Rome, the plaintiff, became the tenant under the lease in December, 1856, and shortly afterwards he entered into possession. He stated that the game was reduced; but when Messrs. Whittle came it was greatly increased. Supposing, then, that that increase had been by the natural fecundity of the animals themselves, and not by any act of the defendants, it was clear that no fault could be found against them on that account, and though the claim overrode three years, 1858-9-60, the two ends of that claim might easily be cut off. No claim was presented as to 1860, and therefore only the year 1859 had to be dealt with. If the game had increased in 1859, it was clear that the damage might be then caused; but it could not be said that that increase was anything but natural. It appeared that there was game on the adjacent estate. Defendants were the lessees of the game on 1,300 acres of land, of which Mr. Rome's farm was a portion. Game passed from one portion of the estate to another. The pheasant which was in one wood one day would be in another on the following day. There was, in fact, no property in them, except when killed and in a man's possession. His Honour must have noticed how carefully the plaintiff had worded his claim; but he (Mr. Mayhew) took leave to say that as the evidence stood, there was nothing to support the allegation made in that claim; there was nothing to prove the stocking, placing, or keeping on the farm any of the things therein named. That there were rabbits could not be denied, as also that there were some pheasants. Of hares, however, nothing had been said, and even of pheasants they had heard but little. He could show that defendants were the tenants of the game by an agreement between the lessors and themselves, and that they were entitled to all the rights reserved in the lease of 1856; they had exercised those rights, as he was instructed, with fairness and moderation, and had no desire to trespass, or even to suffer the game to increase to an improper extent. He did not find that in 1858 any complaint was made to the defendants themselves, and in 1859 complaint was only made to their keeper and Mr. Dodds. If the jury had to adjust the quantum of damages, he (Mr. Mayhew) would have to call witnesses, to go generally into the evidence for the defence; and it would be for the jury to consider whether or not the plaintiff had established the amount of his claim. On that evidence they would have some considerable difficulty in arriving at a conclusion as to the amount. Though he did not say it offensively, they must discard Mr.

Rome's evidence, it appearing to be so vacillating and uncertain, and also that of the three intermediate witnesses. If they arrived at the amount, that must be ascertained from the evidence of Mr. Smith. Mr. Smith, however, was an inexperienced valuer, and had only made one previous valuation, and was not thoroughly disinterested, being a friend of the plaintiff, and having suffered himself from damage. It would have been more satisfactory had Mr. Smith told the jury why he did not ascertain the entire amount of the produce of the moat meadow; he might have easily measured the quantity which did come from it, and applying that to the case in question, he might have given a proximate idea of the quantity which should have come from that area, and thus he would have been able to have told them the precise loss sustained by the plaintiff. As to the damage done to the wheat, Mr. Smith had not stated that the farm was kept in a clean way. Much would depend on that, as well as on the season; and in arriving at the amount of damage done to the wheat, he (Mr. Mayhew) would be able to show that there were hundreds of rat-holes on the farm, and that persons had seen ears of wheat lying in all directions, from the rats, as well as that Mr. Rome had full permission to kill the rabbits in 1859. Why he had not done so no satisfactory explanation had been given.

Mr. POPE said there was no doubt that in the lease the game was reserved, and that though no case was found bearing directly on that point, it was assumed on all hands that for excessive preservation of game plaintiff might recover. He had no authority except the one named by Mr. Mayhew, as to a rabbit-warren. Some three or four years ago there was an action by a farmer in Northumberland, who recovered excessive damages; but taking Lord Mansfield's dictum as the law, yet in the present case there were two grounds of action—a trespass committed by the setting of traps, and the damage done to the crops. Putting it in the light that the increase of the game was an artificial one, the defendants might be brought within the terms of Lord Mansfield's dictum.

His Honour said the question of the stocking⁷ of the game might be submitted to the jury.

Mr. MAYHEW submitted that the action should have been against the lessors of the game.

His Honour said the subject of game was beginning to be of considerable interest. The lease did not give any right to set traps for any other purpose than for the taking of game. The question was, whether there was evidence as to the placing of traps on the farm, or whether there was damage resulting from it, and whether the rabbits were turned out to increase.

Mr. POPE understood his Honour to withdraw from the case the whole amount of damage as to the game naturally propagated, and to confine the case to the rabbits turned out.

His Honour said there were three questions:—1, as to the damage done by the rabbits turned on the land or on the neighbouring plantation; 2, the birds turned on the land; and 3, the traps, and the damage done by them. In the two latter items, he thought only nominal damages could be assessed.

Mr. Thomas Dodds was then called for the defence. He deposed: I am a land agent at Chorley. I am agent for the Fazaackerley estates. On behalf of the trustees, I entered into an agreement for game with the three defendants, I agreeing to let, and they agreeing to all the rights to preserve the game, &c., on the estate. The agreement was for four years. Mr. Rome's farm is a portion of the property comprised in the agreement. [Agreement produced: it stipulated that the defendants should have a gamekeeper, and that in case of the rabbits becoming at any time so numerous as to be destructive to the agricultural crops growing upon the estate, permission should be given to the tenants of the farms to take, kill, and destroy such game on their respective farms.] I told the plaintiff that he might kill the rabbits. I knew the farm in 1856-7-8-9. I was frequently upon it, on my own business. If I had been satisfied that there was a large increase of game I would have given Mr. Rome at first a written authority. Mr. Rome once said something to me about rats. There was a day's rat hunt, and it was a poor day's sport, for we only turned up three rats all day. [Mr. POPE: Then the thousand rat-holes boasted of only produced three rats!—By Mr. POPE:

I gave Mr. Rome a written authority in 1860. I did satisfy myself then as to the increase of game.

James Blackledge, one of the defendants, was then examined: I am a gamekeeper. I have been on the estate five years next June. I remember an occasion when Mr. Dewhurst was present. The rabbits were taken to his field, let out of the hamper, and shot dead as they ran. We then carried them to my house. I have not turned down any rabbits at any time. The traps were not set on Mr. Rome's land at all. They were set for vermin, with which the place abounded. The vermin chiefly consisted of stoats, weasels, rats, and cats (laughter).—By Mr. POPE: I only had a day's shooting out of the hamper once. There were plenty of rabbits in 1859. I got some eggs, and brought off some young birds, but never served a rabbit out at all. We have caught many a cat in the traps. I have shot many a hundred rabbits. I shot the most in 1857.—His Honour: Was there anything unusual about the rabbits in 1859? Complaint was made in 1859 about them.—By Mr. Mayhew: In 1858 I killed as many rabbits as in 1859.—By his Honour: The rabbits were more numerous in 1859 than in any other year.—By Mr. POPE: I got fifteen pheasants' eggs, and thirteen partridges' eggs in one season.

Mr. POPE rose to reply. He said he confessed he felt surprised that his friend's case for the defence should terminate at that point, for it left much of his own (Mr. POPE's) case unanswered. He had called witnesses who had testified to things which Mr. Mayhew might have contradicted if he could, especially as they bore on the point now for adjudication. He (Mr. POPE) would address himself to the facts on which the jury had to adjudicate. The Judge would tell them that so far as the natural increase of the game was concerned, the defendants were not responsible for damage done; but that if they (the jury) were to find evidence to lead them to conclude that instead of leaving the game to its increase, the defendants had stocked it and increased it artificially, then they would find damages to the amount of injury so caused. The real question, then, was one of fact, and one which Mr. Mayhew might have contradicted if he had been able and chosen so to do; he had, however, simply contented himself by calling the gamekeeper, who was the most interested witness it was possible to have called, and he asked the jury, on that man's unsupported testimony, to discredit what the witnesses for the plaintiff had said about the damage done to the farm. It had been proved—and it was not so much as sought to be contradicted—that when Mr. Rothwell left the estate, and the defendants took it, the game had been reduced to the lowest possible limits, and that afterwards it had remarkably increased. The jury would have, therefore, to consider whether the defendants had stocked the game, and whether it would be possible for the game so to have increased by natural propagation in one year as to have done the injury to the crops, to the extent which had been proved. It had been proved—and it was a main point—by the man Fowler that he sold the rabbits. Those rabbits, however, it should be noted, were not the same rabbits as those spoken of by Blackledge. They were sold in April, 1858. What was proved was that one of the defendants was buying rabbits early in 1858, and that defendants and their gamekeeper were turning out rabbits late in the same year. When, therefore, it was found that that was the case, and that the defendants were giving more for those rabbits which were with young, and that the gamekeeper admitted that they stocked the farm with other sort of game, as birds, and that in 1859 the rabbits had mysteriously increased beyond all calculation, was it an unreasonable supposition that there must have been in that period more occasions than one in which rabbits had been turned out to the estate? If Mr. Whittle really did not buy the rabbits, why was he not placed in the box to contradict such a statement? He was admitted to have purchased in April, 1858, rabbits in young, and paying a larger sum for them. Why was that? Were rabbits better to shoot when in young? No; but they would be all the more valuable for turning down into an estate for the purpose of breeding. Was not that uncontradicted fact sufficient to carry the plaintiff's case upon the question of fact? He (Mr. POPE) was astonished that the defendants, who were gentlemen of position and property, should have preferred to come to that court to ask the jury to say that they were not responsible, rather than to fairly meet the case and say, "Well, damage

has been done; we are liable; we wish you simply to assess the amount to be paid by us in compensation." But in face of the facts produced, the buying of rabbits, the buying of birds' eggs, &c., they came and disputed the whole matter. The learned judge would instruct the jury that if the defendants did turn the rabbits down on the estate, the necessary consequence was that they were breeding and thus overstocking the estate. Then, there was also the additional fact that whilst there were at Christmas 1858 so very few rabbits they could not have good sport in shooting them, in the course of a few months they had become so numerous as to be positively a nuisance. Whence came they all, if they had not been turned down? Even Mr. Dodds himself, who never believed at all in the existence of rabbits, until the damage of the crop of 1859, had become satisfied that the increase of rabbits was so undue that in 1860 he gave a written authority to Mr. Rome to destroy them, because they were doing so much mischief. That question as to the increase of rabbits in 1859 was of vital consequence. He (Mr. Pope) thought that he should insult the understanding of the jury were he to address them at length on that point. That part of the case had not been answered, nor had it been attempted to be argued, by his learned friend; and he (Mr. Pope) therefore claimed damages for the injury done by what was evidently the turning down of rabbits into the plantation, if not the farm itself. That, however, was not the only ground of action. The plaintiff was also entitled to damages for any trespass which might be proved, in setting traps for rats or cats. The defendants had no right to come upon the farm of the plaintiff, according to the reservation of the lease, for any other purpose than for the game, and that was to be taken in the ordinary legitimate way. Blackledge had admitted that cats had been caught. Some of those cats had been proved to belong to the plaintiff. The keeper had been seen on the farm with traps such as could catch cats. Mr. Mayhew thought that the rats had done the mischief. But it came out that though there was a hunt for rats, which were so numerous according to the statement of his learned friend, only three could be found in the whole of the day! Such a defence he really considered to be ridiculous, and all the jury had to decide was the amount of damages. They would distinguish between the damage done by artificial stocking and that by natural increase. The damage by rabbits in 1859 was 69*l.* 10*s.*, out of the meadow moat and wheat crops; to the turnips and clover about 15*l.* or 16*l.*; and the entire amount of damage was 85*l.* 10*s.*, so that the plaintiff had allowed 35*l.* 10*s.* for the natural increase of the game, and only asked for 50*l.*, the largest sum the court could award, and which they considered to be not an unreasonable sum.

His Honour said the jury should be bear in mind that for the damage done by the game which was naturally propagative, there was no right of action against the defendants. The question of game was becoming every year more important—just, indeed, as progress was made in agricultural improvement. It was evidently becoming more expensive to a farmer to maintain his crops. There was, he thought, a *prima facie* case for the jury to work upon, as to damage done by turning the rabbits down on the estate. That would be an action for trespass, and for that trespass all would be liable who had taken a part in it. In considering the consequences of the turning down of the game, it would be hard to distinguish between the injury done by the game so turned down and that done by the game actually on the estate. If the rabbits were turned not on the farm but on the adjoining plantation, with the design that they should feed on the farm, and increase by their sustenance on Mr. Rome's crops, and did, in point of fact, feed upon them, then, though not actually turned down on the land injured, some would think the parties would be liable; the jury would decide that question. There had been a suggestion made that many more than those proved to have been bought had been turned down. Now, those actually bought, if turned down, could not have produced the great increase. The whole district was preserved. Game did not stay in one place. They went where there was the best food. What became of the rabbits which Fowler sold to one of the defendants had not been ascertained. Whittle appeared to be an independent actor in that matter, and

there was no evidence that he turned those rabbits down on the farm. Would the jury go against Mr. Whittle or against all the defendants? Were they satisfied that some rabbits were turned down into the field or wood, with the intention that they should increase the number of rabbits, and they should feed on the crops? If so, what was the amount of damage resulting therefrom? As to the increase of the pheasants, there was evidence that Blackledge did get eggs and young birds, and artificially bring them up. But even supposing he did so, nothing had been said about damage done by birds. As to the setting of the traps, it might be considered whether that was not a necessary protection of game from the animals of prey, called by the witnesses vermin, and which prowled about and would destroy the game. If so, the traps set for that purpose were necessarily incidental to the preservation of the game itself, and anything incidental thereto was incidental to the rights of the gamekeeper himself, and would be implied, though not stated in the terms of the lease. If not necessary, why were the traps set on the land? for Blackledge says they were set in the woods. It did not appear, however, that there was any actual damage resulting from the setting of the traps. The jury would consider, first, were the rabbits turned out to stock the estate, and what was the amount of damage done; second, were the birds turned out in like manner; and third, did the traps set on the land constitute a trespass, or were they necessary for the protection of the game? If the jury were not satisfied that the rabbits and birds were turned out for the purposes named, or that the traps were not necessary, then he (the judge) thought the defendant would be entitled to the verdict.

The Jury then retired, and after a lapse of twenty minutes, returned with a verdict for the Plaintiff for £25, half the amount claimed.

Mr. MAYHEW asked his Honour to consent that the execution of the verdict should stand over till the next court day, in order to allow his clients, the defendants, to consult as to their future procedure in the matter.

His Honour agreed to the application. The case occupied from eleven o'clock in the morning until nearly four o'clock in the afternoon.—*Preston Guardian*.

RABBITS NOT GAME.

SIR,—As a farmer, with many rabbits on my farm, some of which I kill for my own use, others I sell, and occasionally employ a man to ferret them, on reading the new game act I became alarmed, and I consulted some friends, who thought, as I did, that I could not, either by myself or servants, kill any rabbits on my own ground without a licence. I heretofore thought them to be chattel property; consequently, to be sure on the matter, I wrote to the Commissioners of Inland Revenue, London, and I herewith send you a copy of their answer, as it may quiet the minds of many of your subscribers.

"Inland Revenue, London,

"Sir,—I am to acquaint you in reply to your inquiry of the 30th ult., that a certificate is not necessary to authorise the taking, killing, or selling of rabbits.—I am, sir, your obedient servant (signed), WM. COBBETT, Assistant Secretary."
Nov. 5, 1860.

We (*Mercury*) have looked into the New Game Act, which is dated 14th August, 1860, (23 and 24 Vict., c. 90) from which we take the following abstract:—

- 1st section repeats the former duties on certificates to kill and deal in game.
 - 2nd section levies new duties in lieu thereof. It provides that a licence must be taken by "every person who shall use any dog, gun, net, or other engine for the purpose of taking or killing any game whatever, or any woodcock, snipe, quail, landrail, or any conies, or any deer, or shall assist thereat."
 - Sec. 4 provides a penalty of £20 for neglecting such licence.
- The following are exemptions: 1, The taking of woodcocks and snipes with nets or springs in Great Britain.
2, The taking or destroying of conies in Great Britain by the proprietor of any warren or of any inclosed ground what-

- ever, or by the tenant of lands, either by himself or by his direction or permission.
3. The pursuing and killing of hares respectively by coursing by greyhounds or by hunting with beagles or other hounds.
 4. The pursuing or killing of deer by hunting with hounds.
 5. The taking and killing of deer in any inclosed lands by the owner or occupier, or by his direction or permission.

RUGBY.—THE NEW GAME LAWS.—Our correspondent writes, that, at the last Petty Sessions at Rugby, Mr. Duck, an officer of Inland Revenue, applied for a summons against Stephen Rathbone, of Leamington, Hastings (who was ordered to pay 40s. for shooting a hare about three months ago by the Rugby magistrates), for shooting at game without taking a game certificate, the penalty for which is not above £20 or under £5. The application, which is the first of the kind that has been made under the new law, was granted.—*Leicestershire Mercury.*

HARES NOT GAME.

It will be seen by the following letter from the Board of Inland Revenue, received by a gentleman in Ireland, that hares may be coursed or hunted by greyhounds or beagles, without the owner being required to produce a game licence:—

“Inland Revenue, London, 25th October, 1860.

“Sir,—In reply to your letter of the 4th instant, referring to an advertisement from the board respecting the liability to game licence duty of persons coursing hares in Ireland, and stating your opinion that such persons are not now liable, being within an exception in the act of last session, I am directed to state that, in consequence of that letter, and of several others on the same subject, the board have had recourse to legal advice, in order to ascertain whether the technical interpretation of the Act 23 and 24 Vic, c. 90, is that which you contend for.

“The board are now advised that the law will bear the construction which you put upon it, and that persons may now pursue and kill hares by coursing with greyhounds, or by hunting with beagles or other hounds, in Ireland, as well as in England and Scotland, without a game certificate.

“You are at liberty to inform your correspondents that no licence is required for the purpose above described, and to give publicity to this letter.

“I am, Sir, your obedient servant,
(Signed) “THOMAS DOBSON, Secretary.”

LAND DRAINAGE AND OUTFALS.

SIR,—The present wet season will surely open the eyes of many of the landowners of England as to the necessity of attention to arterial drainage. The question of surface drainage has long been decided; but so long as the rivers remain in their unimproved state it is useless attempting to pour out the water more quickly from the land where there is not a great natural fall for it. Even where such a fall exists, it only makes a greater necessity for improvement of outfalls to prevent the damage which must arise to the low lands by the sides of rivers in consequence of the pressure from above. Agreeing generally with your correspondent under this head, in your paper of Oct. 15, I cannot help calling his attention to the Act 3 and 4 Will. IV., cap. xxii. commonly known as the Sewers Act. Under the provisions of this, the outfalls of several rivers have been improved in Nottinghamshire and Lincolnshire, and there is no reason why this act should not be put in force in every county in England.

The act authorizes the appointment of Commissioners of Sewers, each having a certain qualification, who hold Courts periodically. Any proprietor having cause of complaint can present a petition to the Court, who, if they think it a fit case, order a view to be taken by a committee of the members of the Court. If their report is favourable the Court proceeds upon the requisition, or with the consent of the owners and occupiers of three-fourths in value of

the lands proposed to be improved, to order a survey to be taken, and a rate to be made upon the whole of the lands in the level. A day is appointed to hear appeals against the rate, and in all the cases I have known, the result has been most satisfactory.

The work of cutting and embanking the rivers, and the amount of compensation to be paid to those whose land is taken for any purpose, is under the control of the Commissioners, through whom the money is paid when they are satisfied the work is properly executed.

I can illustrate this by referring to the works on the Witham and Devon rivers; the Spaldford and Torksey drainage, the Dunham, &c., embankment, and the Girton and Spaldford embankments, all in the neighbourhood of Newark-on-Trent. Numerous instances of the beneficial exercise of the powers of the act may be found in Lincolnshire; but I have referred only to cases which I have known personally.

In all these a variety of conflicting interests opposed the execution of the works for a long time, and it was only that the Sewers Act gives such full powers that the plans were carried out. I may add, that many who were the loudest in denouncing the schemes at first, were afterwards amongst the first to appreciate the benefit.

My object in writing will be attained if public attention is called to the subject, and I shall be happy to obtain for any one further information upon it, the question being of such immense importance to the country.

I am, sir, your obedient servant,
5, Mitre Court, Temple. JOHN PARKINSON, JUN.

It will be seen from the following letter addressed to the *Economist* of this week, that something more is now to be done:

SIR,—As I observe from your remarks upon drainage, on the 3rd inst., you take an interest in this subject, I should esteem it a favour if you would announce that it is the intention of certain landholders much interested in obtaining better outfalls for their estates, to call a meeting of agriculturists, engineers, and other persons next month, in London (the time and place of which will be duly announced), to take into consideration the present state of the drainage, and to ask the Government to prepare a bill which will secure sufficient outfalls, and for other purposes. It has become an acknowledged fact, that all low grounds require under-draining to render them profitable in these days of high taxation; a large return, moreover, is received from a judicious expenditure upon such works. Land-draining, however, and laying out money in cutting drains, are not always synonymous. It is now beginning to be felt that large sums have been, with the best intentions, ill spent; the works having been commenced at the wrong end, instead of outfalls of sufficient width and depth being cut upwards, to carry off the water, from an area capable of being dried by such main drain or drains. To effect this, it will not only be necessary to pass a general Act, but also to repeal a number of local ones, for how stands the law at present? Act 9th and 10th Vict., chap. 101, empowers the Treasury to advance £5,000,000 to landowners for drainage purposes; but other Acts, very little known, but in full force, prevent their applying this money to any great profit—e.g., I may mention the Market Weights Drainage and Navigation Act, passed in 1772, with the double object of draining and navigating a large district! the consequence being the impossibility of draining it, if even the whole five millions were expended, such an Act remaining unrepaled. The *Economist* is a journal well calculated to unite the money with the landed interest, the first requiring investments for their capital, and the second funds to bring out the resources of their estates. There is not better security in the world than English green fields, under the various Acts passed for draining them, such loans taking precedence of all charges with the exception of tithes; but it will be a national loss if estates are still attempted to be drained without reference to each other, and without proper outfalls. The difference between the amount of the produce of the low lands in England thoroughly or imperfectly drained, not being a question of thousands of pounds, but of millions; therefore in behalf of townfolk, as well as countryfolk, I entreat your co-operation in this movement.—I have the honour to be, Sir, your obedient servant,
LOWLANDER.

NOTES ON MEADOWS AND PASTURES.

BY JAMES BUCKMAN, F.G.S., F.L.S.,

PROFESSOR OF BOTANY AND GEOLOGY AT THE ROYAL AGRICULTURAL COLLEGE.

3rdly.—*Plants which, by reason of their structure, offer mechanical inconvenience to Cattle both in Hay and Pasture.*—In considering the pasture weeds of this kind, we shall have by far the greater number of their species of the single genus *carduus*, which is now made to comprehend the two old genera of *carduus* or thistle and *cinicus* or plume thistle, the latter differing from the former in its beautifully feathered down or *pappus*, which is *simple* in the *carduus*. It is in both forms; and, indeed, in the whole tribe of thistles, this feathery down which aids so much in the extension of this class of weeds. But, besides these, we have plants quite different in their botany, and yet being obnoxious to cattle from some mechanical arrangement, such as the stings and stiff hairs in the nettles and other *setose* plants; as, also, the *awns* or beards, and the *spicula* or the ribs and edges of the leaves of some grasses; these harder parts usually sticking in the gums, and causing great irritation to the mouth.

The following is a list of the more important weeds of this class:—

TABLE III.—PLANTS WITH INJURIOUS SPINES, &c. MECHANICAL WEEDS.

Botanical Name.	Trivial Name.	Remarks.
<i>Carduus nutans</i> ..	Musk thistle	Mostly a weed of "seeds."
„ <i>acanthoides</i>	Wetted thistle....	
„ <i>eriphorus</i> '.	Cotton thistle....	
„ <i>lanceolatus</i> .	Spear thistle	Mostly in the hedge-row or borders of fields, the latter inclining to the open meadows.
„ <i>arvensis</i> ..	Corn thistle.....	Principally a weed of "seeds."
„ <i>palustris</i> ..	Marsh plume thistle	Damp or marshy meadows; river flats, in good but moist pastures.
„ <i>pratensis</i> ..	Meadow plume do.	
„ <i>acaulis</i> ...	Stemless thistle ..	Poor uplands—usually in calcareous soils.
<i>Carlina vulgaris</i> ..	Carlina thistle....	
<i>Urtica dioica</i>	Stinging nettle ..	Everywhere.
<i>Hordeum murinaum</i>	Wall barley	All grasses with bearded flowers or rough leaves.

An examination of the thistles will show us that in them we have plants of different degrees of endurance; most of them are biennial, in which case the plant is produced in one season: it then withstands the cold of our most rigorous winter, and shoots up its flowery stems, and develops its seeds the next year, when it dies. Of this kind the *carduus nutans* is a good example. Others are perennial, in as far as the rootstock is concerned; but the leaves die down annually, which in fact is also, so far, the history of the nettle.

Now, as regards the biennial forms of thistles, we must see that to have it in our crops, whether of na-

tural or artificial meadows, to any extent argues great carelessness, as its first year of growth is sufficient for its detection, and if cut up then *below the crown* it is not only itself killed, but all hope of a future progeny is thus avoided. Still, we have this week seen a patch of seeds in which half the mass was *carduus nutans*, and under such circumstances as clearly show the manner in which they are propagated by the farmers, for by his care and carelessness the farmer is truly a *weed nurseryman*, though it is true that if a bailiff advertised for a place as a weed propagator, he would not expect readily to get one.

Now, in the case before us we had

1.	2.
Field of <i>old</i> seeds full of bunches of <i>carduus nutans</i> coming on to flower.	Field of last year's sown seeds also full of the same thistle as 1, and in the same condition.

In the first field were about a dozen people cutting up the thistles. this, however, might have been done by the plough, and its tillage would be advanced at the same time.

Now, in this case, we have only to suppose that the thistle was originally sown either with the "seeds," or from the neglected road-side, or from a dirty neighbour, and as the seeds are seldom or never weeded they seeded on the ground, and in sufficient quantity to be at present so vastly conspicuous as to force themselves upon the attention, and we can easily understand how a small beginning may cause such great results if we bear in mind the great fecundity of some of these plants; as thus, we have counted the following amount of seeds in single plants of the under-mentioned species, and as opportunity offers we shall be sure of quite as great results on examining the others:

TABLE IV. SEED DEVELOPMENT OF THISTLES.

Botanical Name.	Trivial Name.	No. of Seeds to a single Plant.	Remarks.
<i>Carduus nutans</i> ..	Musk thistle	3750	150 seeds to each flower head.
<i>C. lanceolatus</i> ..	Spear plume thistle.....	30000	300 seeds to each.
<i>C. arvensis</i>	Corn thistle.....	5000	This plant also increases by creeping roots (rhizome.)
<i>C. acaulis</i>	Stemless thistle..	600	This is sometimes so thick in uplands that its flying seeds simulate a snow-storm.
* <i>Sonchus arvensis</i>	Corn sow thistle.	19000	190 seeds to each flower head.
<i>S. oleraceus</i> ...	Common thistle.	25000	250 seeds to each flower head.

* One plant seeding covered a garden of two acres in a single year.

Here, then, although the musk-thistle is not the most fecundate of all, yet if even one head of flowers should scatter its ripened seed around, and a due proportion should grow, they would soon make a tolerable show. So is it with thistles of this kind; but with such as occur in pastures or in seeds there ought to be but little trouble in *eradicating them*: not merely keeping them under, but complete *extermination* should be aimed at, which can only be effected by never letting a specimen flower. We yesterday examined some old churchwardens' accounts, in which we found that in a single year 3d. a dozen had been paid for twenty-one dozen of sparrows' heads. Surely it would be a more profitable investment to pay 3d. a dozen for thistle-heads, in which case, though the accounts would be greatly swollen for three or four years, yet we venture to express the opinion that in ten years a poor thistle would hardly be found for the gratification of the collecting botanist; and the few scattered ones that might occur under careless agrarian cultivation would in all probability be due to the importation of foreign seeds.

We have now to speak of the perennial forms of thistle; and here the *Oniscus arvensis*, from its specific name, might appear to be an agrarian rather than a pasture weed: but, in truth, it is far too abundant in both, and wherever found it is difficult to eradicate on account of the long succulent creeping *Rhizomata*, by which so large an underground growth is maintained, being ever ready to shoot up on the advent of spring, and suddenly to show forth the patch of thistles where formerly only a few had been observed. From the well-known fact of the increase of this plant by the means here described, the farmer concludes that it is only propagated in this way, and that the seed of this plant will not grow. And Curtis entertained the same opinion, for after describing the growth of the part which botanists call the *rhizome*, he says as follows:—"This, therefore, is the manner of their reproduction: the fibres left shoot out larger roots, which also rise higher in the soil and spread; these form buds, and hence come our annual crop of thistles."

However, as we had reason to suspect some fallacy in this, we collected some seeds and planted ten in a pot, and we found that *everyone germinated*. We have them still growing; and when the experiments are complete, shall hope to make out some new facts in the natural history of thistles. At present, however, we can only record the opinion that the *Carduus arvensis* is annually produced from seeds to an enormous extent; but so small is its first year's growth above the ground as hardly to attract notice, while the underground growth is preparing small buds, which make a complete colony the second year. However, it happens fortunately that much of the seed of this plant is eaten by a weevil, and that which arrives at perfection is a favourite of small birds, and particularly of the finches.

To destroy thistles of this kind in a meadow, we should take care never to let the leaves, which are the lungs of the plant, have time for their growth; as soon as we see them we should trample them under foot, or hammer the young buds to bits with something like the

old "clod beetle;" and when they greatly abound, a repeated rolling with a Crosskill seems advisable, the object being to *bruise* them, as they do not recover injuries of this kind so soon as those done by a sharp implement, clean wounds in plants, as every gardener knows, being much more easy to heal than contused ones; and as the object is to prevent the growth of the leaf, which is the active agent in building up other structures of the plant, not even omitting those below ground. If this be continued with either this kind of thistle or nettles, the rhizome will gradually die out. Curtis condemns the early attack upon thistles; he says, "Clearing the wheat of thistles by the hook or spud is usually practised during the months of April and May; but, to show of how little avail it is to cut down thistles early in the year, the following rustic doggerel may be subjoined:—

" ' If thistles be cut in April,
They appear in a little while;
If in May,
They peep out the next day;
If cut in June,
They reappear very soon;
If in July,
They'll hardly die;
But if cut in August,
Die they must!'"

From these lines it would appear to be generally known that thistles (and we have seen the same rhymes applied to the case of nettles) grow again after injury, more or less readily according to the month in which it is done; so that in May, when the destinies for the year of so many plants are determined, the new growth is rapid. Well, be it so; but we would remark that cutting them in April or May does the greatest amount of permanent injury on this very account, whereas although it is equally true, that if this be done in August, you see no more of them for that year; yet no real injury is done to the future crop of thistles or nettles, inasmuch as by that time the plant had used all its growing powers to the enlargement of the underground stems—the root-stocks—which are thus strengthened for the following year's growth; for it should be remembered that in August its own natural period of growth is nearly over. On this point we may quote the remarks of a writer in the *Agricultural Gazette* for June, 1859.

" In August the nettle has performed all its functions for the year, even to the production of seed, so that, although upon being cut down it will disappear for that year, the pest is not at all injured in productiveness for the next season. The fallacy of recommending August cutting of these weeds must be apparent to everybody. The madman in the poem is made to say to the soldier as to killing his enemies—

' Kill a fool's head of your own;
They'll die of themselves if you let them alone.'

" And this is quite true of these enemies of the farmer at this season. The first cold night acts quite as readily in destroying the above-ground growth as the most careful cutting. Hence the injury inflicted by August cutting is more apparent than real."

In dealing, therefore, with perennial plants of this kind, as found in pastures, the only plan is to bruise

them when they first appear, and again whenever they re-appear, and their permanent destruction will be ensured at a quicker rate than is generally supposed.

The *Carduus acutis* and *Carlina vulgaris* are so essentially weeds of the poor pasture, that we may quite conclude that anything which will contribute to its enrichment will rapidly diminish their numbers. We have seen the closely folding of sheep on these drier lands taken at night from the damp, but rich water-meadows

effect the nearly total destruction of these pests in a single season. In fact, improvement and real cultivation of such wild spots is the quickest and most profitable method of dealing with them. Mixtures of soot, salt, town-rubbish, guano, superphosphates, and the like, and spring rolling with a Crosskill, all being treatment which these wilderness plants cannot survive.

The injurious grasses which come under the list just treated of must be considered in our next.

A CHAT ABOUT CORN-GROWING.

We had a nice little dinner the other day—(your readers need not be too curious as to locality and personality),—and after having exhausted the tit-bits and delicacies of the season, discussed the commercial treaty, naturally introduced by the hock and champagne, made a digression on the subject of Garibaldi, and settled the question, Whether we are likely to have a wheat-seeding this year, with the still more important inquiry, What prices we may hope for in the future corn market,—our talk turned upon the Farmer's Club discussion, on successive wheat-growing. Two of the party had visited Lois-Weedon, and testified their confidence in the exact truthfulness of every statement published by Mr. Smith. One of the Club speakers had attributed the good vicar's successful culture to the famous quality of land he had to work on. "True," said these gentlemen of our party, "the soil is rich enough after the tillage that it has received; but had it been ploughed four or five inches deep, and worked in the ordinary manner ever since it was broken up from tolerable grass sixteen years ago, it would not have produced wheat crops in annual succession. There is not a field in the neighbourhood that does more than yield ordinary fair crops taken in judicious rotation, with frequent fallows and good manuring; and so far from Mr. Smith's ground possessing any such extraordinary native fecundity as would account for his unparalleled produce without manure, it had a natural staple of five inches good strong soil, with a stiff yellow clay underneath, so that his first spade-work provoked the prophecy of practical neighbours that he would never get a crop, and that his land was now spoilt. The event has proved that it is "famous land" for the purpose of deep trenching and the Tullian husbandry; and if so, then there are thousands of acres of similar character, and tens of thousands of acres having a clayey subsoil free from absolutely noxious qualities, equally well adapted to the system."

"Well," said several friends, "it is impossible to carry out spade-husbandry in ordinary business, and the subject will, perhaps, revive again when steam-ploughing has become a regular part of everybody's farm-management." "Nay," replied our host, "there have been many instances of several good wheat-crops in succession grown upon loams as well as clays; and Mr. Clarke's own experience of ten acres appears quite satisfactory as to the possibility of getting

several fair crops in yearly succession off moderately strong loamy soil." Here Mr. Rental, our agent (a nice fellow, as you know, though I name him fictionally) observed "that Mr. Clarke's land was probably much better than was represented; he knew those Lincolnshire marshes very well; there were many splendid pieces of ground, and very little land so light and silty as to be of poor quality. He had heard of one piece in the district which had produced, under common husbandry, crops after the fashion of the rich soils of Virginia; more than a dozen fair yields of wheat without being worn out; and around Long Sutton, wheat and potatoes alternately was quite a common course." Frank Clayfield, a strong-land farmer, denied that Mr. Clarke's experimental piece was particularly good land; he had visited the farm, seen the field, and ascertained its history, and found that it was a piece of old arable, which had been cropped time out of mind, and was exhausted, and treated precisely as the Farmer's Club paper stated, and not by any means worth more than 30s. per acre to rent. He was quite satisfied from that example, that by ploughing and subsoiling in the same way, at least, several annual crops of wheat may be grown, without manure upon any ordinarily good wheat soil.

"Let us consider it," I said, "as proved, that on fair wheat land, two or three crops each of 4 to 4½ or even 5 quarters per acre average, may be taken, provided the straw be returned as manure every third or fourth year, in which year you may have beans, peas, roots, or any crop that will bear a good dose without fear of being overdone. The profit, according to Mr. Clarke's carefully kept book of expenses, will be £2 10s. to £3 10s. per acre on each wheat crop when the price is as low as 40s. a quarter, and will be no less than £3 10s. to nearly £5 per acre when the price rises to 56s. Now, this is extraordinary, and demands attention, for who can realize such profits as these by common methods of farming?"

"Why," said Rental, "in that potato-growing country they commonly make £20 an acre of the crop, and I have heard of £40 per acre; they also get 40 tons of mangolds and sell at 10s. a ton, that is £20 an acre. Where they can do this, wheat is for them a losing crop."

"All very well," chimed in Frank, "but its only on a small scale, where plenty of town manure is available,

or where they are close upon a river or railway for delivery of such heavy produce; on land newly broken-up from pasture, or naturally very prolific, and what a costly outlay for manures must be necessary. You, Mr. Rental, as agent for estates, know very well that a crop of 5 tons of potatoes per acre sold off the farm takes as much mineral matter out of the land as three good crops of wheat where the straw is returned as manure; and 40 tons of mangolds, if sold, exhaust an acre of land as much as twenty-five good crops of wheat. But I am certain that the successive wheat-growing would answer, as far as yield is concerned, on land that would not produce a series of paying potato crops; for I can say from personal knowledge, that the very piece on which Mr. Clarke's crops are grown, is not calculated for being farmed in that way. And on my own occupation you know that I could not raise such yields of potatoes; and no amount of imported manures would pay for themselves for that purpose. Yet I feel sure that my strongish subsoil would bring a succession of Lois-Weedon wheat-crops, if the plough, subsoiler, scarifier, and horse-hoe were applied as directed. This new system of wheat-growing is adapted to all districts of heavy or tolerably solid loamy land, and can be carried out by the ordinary teams and hand-labour of a farm; but your semi-garden culture of potatoes and carrots and onions and cucumbers is limited to such spots of rich vegetable soil and sand-loam as Biggleswade, Sandy, Evesham, and the rich loams and unctuous warp lands about the Humber estuary." Several of us here broke out with the objection, that the system was impracticable, as it must take so much labour. But Frank had evidently gone into the matter, and was anxious both to establish his own opinion in favour of the management, and induce the rest of the party to see it in the same light. "Look at the list of operations, the hand-labour, with the thrashing, &c. (apart from the team-men), comes to about 30s. or 32s. per acre, so that the labour-bill is no heavier for land devoted to this system of corn-growing than for land farmed in the ordinary way. You are thinking, however, of the summer tillage by the horses. It is quite true that wheat on the plan requires scarifying and horse-hoeing several times (in the busy time of turnip-sowing too), and thus more horse-labour is needed than by a wheat crop as commonly grown. But mind you, it takes much less horse-labour per acre for wheat yearly, say for five or six years, than it does for the usual crops of a rotation in the same period, as I can prove by Mr. Clarke's experiments."

"I'll tell you what, Clayfield," interposed our worthy host, "if you are going to advocate the Lois-Weedon wheat-growing in ordinary business, we shall find you some nuts to crack, besides those filberts, the last dish we have left of last season. By-the-bye, you are getting eloquent about farming, and forgetting the port." "Well," said Frank, "in these times it won't do to evade cracking a few shells if we really want kernels. I have thought over this Lois-Weedon business in respect to my own farm of fair strong loam, and you you shall have the matter put clearly before you." It was agreed that the question should be gone into with

pencil and paper, to see what figures would make of it, and without reporting any more of the conversation, I shall give the gist of what we arrived at.

There is no objection on the score of manual labour, for the wages of men and boys (according to Mr. Clarke's trial) amount only to 30s. or 32s. per acre, without including the team-men. Now, take the horse labour: this, in the same experiment, is 23s. to 25s. per acre; while, according to the statistics of "horse-power" in the R. A. S. E. *Journal*, the average cost for ordinary rotation husbandry is 30s. per acre. But there might be so much work requiring to be done within a limited time, that, after all, more horses would have to be kept than are wanted in ordinary farming? To resolve this and other objections, we just put Frank into the new corn-culture, supposing him to have adopted it "the whole hog"; and we then look into the practical working of it. On his 300 acres arable he gives up stock breeding and roots and artificial grasses, and walks boldly into corn-growing only; his soil being specially adapted for wheat. The only restriction is that he shall grow horse-keep enough for his teams; and the rest of the farm may be all in wheat if he likes. However, as he must apply the manure every few years, he arranges to have other crops to come first after the dressing; as, according to Mr. Smith, the wheat would not stand it. And he cannot have a bit of clover hay without seeding the clover in the previous year, which being impossible on the inter-cultural strips, makes some other crop also necessary. Nine horses, he says, will be amply sufficient, though on his present system he works fourteen; and I may tell you by-and-by how he makes this fully appear. Well, to provide food for nine horses, and have proper crops for the manure (which he is to make out of wheat, bean, and pea-straw eaten with oilcake and a few roots by store cattle, and of the consumed horse-fodder and corn), his course is supposed as follows—a three-fold rotation; numbers 1, 2, and 3 representing the divisions of 100 acres each:

No. 1.

1st year.—Wheat, 100 acres. 2nd year.—Peas and beans, 75 acres; oats, 15 acres; mangels, 6 acres; and tares followed by turnips, 4 acres. 3rd year.—Wheat, 75 acres; clover, 15 acres; wheat, 10 acres.

No. 2.

1st year.—Peas and beans, 75 acres; oats, 15 acres; mangels, 6 acres; and tares followed by turnips, 4 acres. 2nd year.—Wheat, 75 acres; clover, 15 acres; wheat, 10 acres. 3rd year.—Wheat, 100 acres.

No. 3.

1st year.—Wheat, 75 acres; clover, 15 acres; wheat, 10 acres. 2nd year.—Wheat, 100 acres. 3rd year.—Peas and beans, 75 acres; oats, 15 acres; mangels, 6 acres; and tares followed by turnips, 4 acres.

Every year there will be an acreage as follows:

Wheat	185 acres.
Peas and beans	75 "
Oats	15 "
Clover	15 "
Mangels	6 "
Turnips	4 "
Tares	4 "

Reckoned at eight quarters an acre, the oats will yield 120 quarters—enough to allow each horse a peck a-day all the year round. The mangolds, at thirty tons, and the late turnips at 10 tons per acre, will give 220 tons

of roots, which the teams may share partly with the yard cattle, as a relish for the latter, with their straw and cake; and with fifteen acres of clover hay, fifteen acres of clover aftermath cut green, or left for a second crop of hay, and the four acres of tares mown for early summer-feed—the nine horses will be pretty well provided for. And there will be hay and roots and green food to spare for two or three milch cows during their time of winter housing. The yard and hovel beasts are to improve enough in value through the winter to pay for attendance, the carting of straw, management of the muck, &c.; and thus there remains only the outlay for tillage and general expenses to be set against the proceeds of the wheat and pulse crops, which are all the produce Frank is to depend on for his returns, seeing that the other cropping goes for horse food.

Now for the working expenses. The manual labour and thrashing (as I said) comes to 32s. per acre on the wheat. We calculated it to be 24s. per acre on the peas and beans, 20s. on the oats, 12s. on the clover, and 32s. on the roots and vetches—altogether, £434. The cost of the nine horses we averaged from the Royal Agricultural Society of England's *Journal*, and the requisite wages of the team-men, in this way:—

Blacksmith	£15
Saddler	5
FARRIER	5
Depreciation and casualties, £5 per horse	45
	70
Wages of men and lads, varying from 15s. to 12s., } 9s., and 3s. per week, with extra for harvest }	166
	236
Wear-and-tear of implements, &c., at 2s. per acre ..	30
	£266
Manual labour	434
Seed, &c.	100
Oilcake, &c., for beasts	150
Artificial manure for roots	10
	£960
Rent, at 40s. per acre,	£600
Tithe, rates, taxes, &c., at 15s. per acre	225
	825
	£1785

The outlay, therefore, is a trifle under £6 per acre, on the 300 acres—becoming a little heavier as prices rise.

Now, for the returns. We reckoned up the crops at all sorts of yields and the prices likely to be realized.

Acres.	Yield per acre.	Produce	Amount at 40s. for wheat and 30s. for pulse crops.	Amount at 45s. and 35s.	Amount at 50s. and 40s.	Amount at 60s. and 45s.
185 wheat	4 qrs.	740 qrs	£1480	£1665	£1850	£2220
75 peas & beans	4 qrs.	300 qrs	450	525	600	675
			£1930	£2190	£2450	£2895
Deduct expenses			1785	1800	1850	1895
Profit			£ 145	£ 390	£ 600	£1000
Or, on the capital invested			8 cent.	22 cent.	32 cent.	53 cent.

This table shows pretty well; but Frank will not hear of only four quarters per acre: he is sure, from the

example of what is being done on land subjected to a long series of crops, his wheat (being only two crops in succession, and so never occupying precisely the same stripes of ground at intervals of two years as in Mr. Clarke's piece) will yield much more. Besides, instead of following wheat, barley, and wheat before that, (like Mr. C.'s thirty bushels an acre crop) eighty-five acres of Frank Clayfield's wheat will come after well manured peas, beans, and roots; fifteen acres will follow clover; and only eighty-five acres will succeed wheat: so that the wheat crops will have all the advantage of ground in good condition, as well as the forcing and feeding of the tillage, which stirs and cleans the land. Our friend is so confident on this point, insisting upon the certainty of an average of five quarters, that we made the calculation on this supposition just to humour him; at the same time reckoning also at the medium and more moderate figure of 4½ quarters.

Acres.	Yield per acre.	Produce	Amount at 40s. and 30s.	Amount at 45s. and 35s.	Amount at 50s. and 40s.	Amount at 60s. and 45s.
185 wheat	4½ qrs.	832 qrs.	£1664	£1872	£2080	£2496
75 peas & beans	4 qrs.	300 qrs.	450	525	600	675
			£2114	£2397	£2680	£3171
Deduct expenses			1785	1800	1800	1895
Profit			£329	£597	£880	£1275
Or, on the capital engaged			18 per cent.	33 per cent.	46 per cent.	67 per cent.

Acres.	Yield.	Produce	£1850	£2081	£2312	£2775
185 wheat	5 qrs.	925 qrs.				
75 peas & beans	4 qrs.	300 qrs.	450	525	600	675
			£2300	£2606	£2912	£3450
Deduct expenses			1785	1800	1850	1895
Profit			£515	£806	£1062	£1555
Or, on the capital engaged			28 per cent.	44 per cent.	57 per cent.	82 per cent.

Looking at these estimates, which were not framed merely to prove a case, and seeing that anyhow the percentage for capital would be good, and that, with wheat at 45s. or 50s. a quarter, our wheat-grower would be making a clear income of at least £390 up to £1,000 a year (according to yield) off his 300 acres; while, still further, there is a fair chance of his profit swelling to £1,500 in a year of tolerably good prices (to say nothing of his minting money if markets jumped, as they occasionally do): we all said, "Well, really, there is something in it!"

We got talking afterwards about the Woolston farming, and the unparalleled cheapness of the tillage there accomplished by steam-power, Frank maintaining that, in the same way, a still larger gain in his new mode of wheat growing would be secured by employing steam, instead of part of the proposed team of nine horses. He showed clearly enough from Mr. Clarke's ten-acre experiment, and the number of days' work there done, that nine horses are a sufficient force for the culture supposed. But I must not go into these details at present, or you will find this too prolix a "chat about corn-growing."

QUIS-QUIS.

THE LEADING FEATURES OF THE IMPLEMENT DEPARTMENT OF THE CANTERBURY SHOW.

All attempts to introduce a substitute for the plough as an implement for the preparation of the seed-bed are, to use a sporting phrase, forcible if not elegant, nowhere. Rotary cultivation has, with one or two exceptions, been confined as yet to the region of speculation. When we name Usher, Romaine, and Ricketts we exhaust the catalogue of those who have made persistent efforts at substituting a new for the old system of preparing the soil for the seed. It is not, however, treating the subject philosophically to say that because hitherto no great steps have been taken in advance, that henceforth will none be made. While accepting the plough as the recognised implement for effecting the preliminary operations of culture, and gladly acknowledging the rare merits which it possesses, we need not nevertheless shut our eyes to its acknowledged defects; and although we may not coincide with the opinion of the author of the most elegantly written epigrammatic work on agriculture, that the "plough has sentence of death written upon it," still we may learn something in the art of progress, if we admit that the implement may be greatly improved. Deep culture is now acknowledged nearly by all thinking men to be a *sine qua non*, and the accomplishment of which, so as to secure a finer pulverization of the seed-bed, in our wide variety of soils will greatly increase their practice. Yet it is remarkable how slowly this deep cultivation and fine pulverization of the soil works its way, notwithstanding our belief in their virtues, and the practical exemplification we have of them in market-gardens, where every pains are taken to secure them. True the spade in these cases is the implement of culture; but there are practical authorities amongst us, who think that an implement, horse or power worked, can be made, by which all, or nearly all the advantages of spade culture could be obtained. Although it is not by any means a generally received notion, yet an examination of the working of the Kentish turn-wrest plough, which we described in our last paper, will, we think, show that it brings about a state of the soil more resembling that effected by the spade, than that effected by any other plough in general use. Yet hear what an authority says on the subject: "The work of the latter (ordinary plough) is done entirely by the cutting of the share and coulter, which leave a solid or continuous wedge or brick, impervious to the atmosphere until surface-scratched by the harrows, and a hard-pan underneath, affording only a shallow bed for the corn to root on; while the turn-rest plough penetrates and breaks up the ground with the action of a peak or fork, and as it turns the soil over, crumbles it to pieces, sifting several inches of the finer crumbs to the bottom, bringing the larger lumps to be acted on by the harrow and roller; and all this is done without forming a hard under-pan to confine the

roots to within five or six inches of the surface. * * In my experience I have met with every description of plough used in England, and although I freely admit the advantage of having the two-horse ploughs of the lighter description on every farm for ordinary work, still I believe no farm will be well cultivated without occasionally having recourse to a heavier and different description of implement, for the purpose of trenching and breaking up the pan that is formed by the continuous use of the ordinary ploughs: and I have never yet met with one so effectual, to deeply stir and pulverize the soil, as the much-abused, old-fashioned Kentish turn-wrest plough." With this view of the matter it seems a ten-fold pity that the comparative trials which ought to have been instituted at Canterbury were not so. A grand opportunity has been lost of ascertaining results of no mean interest to agriculture. Let us hope that the very absurdities eliminated from the trial, or the attempt made to carry out trials, will so direct the attention of the agricultural world to the subject, that some future and early opportunity may be made to put this question at rest.

As a contribution to the cultural implements so much required to bring about a deep and well pulverized seed-bed, we draw attention to the "pulverizer-plough" invented by Mr. Hancock, and exhibited by him at Canterbury. All agree to the fact that admirable work was shown by this implement. As this has been already described in the columns of this journal, we pass on to the consideration of other departments of the show-yard.

In glancing at those of the mowing and reaping machines, we have to notice the improvement—or rather, we shall content ourselves at present by saying, the mechanism—introduced into the "combined reaper and mower" of Wood (W. M. Cranston agent, King William-street, London), by which a self-acting, or raking, movement is obtained, which delivers the grain in a sheaf at the side. The following describes the arrangement of the mechanism: A square or rhomboidal table, forming the platform on which the grain is delivered by the reel from the cutters, has a groove or slot running all round it, below and coincident with which is extended an endless linked chain, passing over pulleys at the corner, and one of which, by means of bevel-gearing, receives motion from the main driving wheel. To one link, or part, of this chain a stem, or pin, is connected, this being connected with the handle of a rake, one extremity of which is jointed to a pin supported at the side of the machine; the other extremity being supplied with a rake, which sweeps over the platform as the chain passes under the groove. By means of a small clutch, this collecting apparatus can be thrown instantly out of gear.

The "flexible reaper" of Mr. P. Trotter, of South Accomb, Northumberland, attracted considerable attention, and is worthy of fuller description than has yet been accorded to it in the pages of this Journal. The peculiar feature of this machine is the arrangement by which the cutting parts can accommodate themselves to the inequalities of the ground over which the machine is passing. This is effected by jointing the table, or platform, on which the grain is delivered, by hinges to a side-beam. This, it will appear, not only admits of its rising and falling according to the nature of the ground, but of the cutting parts being folded against the working part of the mechanism, so that the apparatus can easily be taken through gates, &c. A small wheel is fitted to the extremity of the table, or platform, upon which the grain falls, two wheels giving, according to the inventor, a facility in guiding and shifting the machine. In front of the bar to which the platform is hinged, a small wheel is placed, this being in line with the points of the cutters. This wheel is carried on a stud on the end of a long lever (*a*), which works on a centre placed on a vertical bar attached to a movable beam. The other extremity is capable of being adjusted at any height of a segmented bar attached to the bottom, the bar being provided with holes, into which a pin provided to the side of the lever can be sprung when desired. By elevating the extremity of the lever, the small wheel (*b*) at its opposite end is depressed, and *vice versa*. These movements affect the moveable beam carrying the stud to which the lever is centred, and to the side of which beam, or bar (*c*), the wooden cutter bar and platform on which the grain falls. The moveable bar is jointed to a centre connected with the main frame directly below the centre of the main axle, and directly in a line with the stud of the small wheel which supports the extremity of the platform and cutter bar. By raising the handle of the lever (*a*) above mentioned, the wheel (*b*) is depressed, and the bar (*c*) raised at its upper end, and with the cutters also. In this way the attendant can at any time adjust the height of the cutters, so as to reap high or low; this adjustment in no way interfering with the action of the connecting rod which works the cutter bar to and fro.

The main frame can also be lowered or raised at pleasure by the following arrangement: A cross-bar joins the horse-shafts, which are attached to the mid-portion of the main frame. This carries a stud at its central part, which can be placed in any one of a series of holes made in a vertical bar, which by diverging extremities is connected with the front of the frame. By putting the pin of cross-bar into the lowest hole of this bar, the cutter beam is pulled up from the ground, and *vice versa*.

The hinges by which the cutter-frame and grain platform are attached to the main frame, not only allow the ground wheel at the extremity of the platform to rise and fall according to the inequalities of the land, but also, as before stated, the frame can be lifted up out of action altogether, or very easily disconnected from the driving parts. The cutters are arranged on "Hussey's principle."

The grass-mowers at the meeting — Wood's and (Allen's) Burgess and Key's — attracted great attention. In both considerable improvements have been effected. In Burgess and Key's the cutter-bar is now made independent of the movement of the frame, and is attached by a joint to a bracket, so that having vertical play it can accommodate itself easily to the inequalities of the ground over which it is passing, independent of all motion of the frame.

In Wood's machine the cutter-bar is so arranged that, whatever be the inequalities over which the main driving wheels are going, it is kept close down, spring fashion, so as to go over the ever-changing contour of the land, and so cut the grass at a uniform depth. This is effected as follows: A thin flat bar (*a*) is connected to the driving wheel side rail of the machine, and is projected to the cutting side; to the end of this a bar (*b*) is secured, and is bent downwards and then upwards, the opposite end being extended vertically, and finished with a loop (*c*), which passes over the axle of the driving wheel. To the centre of the bent part of the bar (*b*) the end of the cutter bar (*d*) is fixed. When the driving wheels drop into any depression no injury is communicated to the cutter bar, as the axle is allowed play in the loop (*c*) of the bent bar (*b*); and the spring of the bar (*a*) allowing the heel of the cutter bar (*d*), with the bent bar (*b*), to pass over any inequality in the ground.

Haymaking or Tedding Machines.—Mr. Thompson, of Lewes, exhibited one with his patent reverse action. The chief feature in this machine is the placing solid axles of the travelling wheels and the tine-frame in solid bearings, these being capable of adjustment as the journals wear, so that shaking or loose working of parts is prevented. On the solid axle carrying the wheels, journals are turned down, these revolving in bearings adjustable as above stated. The end of this axle revolves in a bearing attached to the inner side of a gear-box placed inside the travelling wheel; revolving within this gearing-box, and keyed on to the axle, is a spur-wheel (*a*). Above the main driving axle, but nearer to the back part of the machine, a solid bar is placed, stretching across the machine. Round this solid bar a hollow axle (*b*) revolves, which carries on its exterior surface the tines, which operate upon the hay. On the end of this hollow axle (*b*) a small pinion (*c*) is keyed; this gearing with, and receiving motion from the spur-wheel (*a*) fixed on the main driving axle. The forward motion of the tine barrel is thus obtained from the main-driving axle. The back or reverse motion is obtained by means of an intermediate pinion which slides along a bolt, and is actuated by a lever which throws it out and in gear, this lever being within easy reach of the attendant.

Mr. Thompson has introduced what he considers a great improvement in the form of the tine. Usually the tines of tedding machines are finished with a slight curve, in some shaped somewhat like the line of beauty. However well-adapted to lift up the hay while the tine-barrel is revolving in the forward direction, Mr. Thompson holds that the same curved tine cannot per-

form its work as efficiently when the tine barrel is revolving in its backward or reverse action. To adapt the tine to its two kinds of work then, Mr. Thompson has given it a double instead of a single extremity—the end of the tine branching off into two parts, one being highly-curved, the other being nearly straight. In one form these two tines or ends are completely separated from each other; in another form the two tine points are connected together by a thin metal web. A specimen of Nicholson's (of Newark-upon-Trent) hay-making machine was exhibited at the stand of the Agricultural Engineers Company. The distinguishing features of this machine are—first, the lightness of the whole, obtained by the use of tubular iron shafts and the substitution of wrought-iron for cast; second, in the simplicity of its driving gearing. The forward motion of the tine barrel is obtained in the usual way by means of a wheel and pinion; but the reverse-action is obtained without the intervention of an intermediate pinion as usually employed. How this is efficiently done and in a very simply way we shall now explain. The central axle-box of the main driving or wheel-carrying axle is not of small diameter and solid as is usually the case, but is of large diameter and hollow. It forms, in fact, a flat cylindrical case, to the outside of which the spokes of the driving wheel are fixed. The main axle passes through the central boss or stud of the case. On one side of the case a spur wheel (*a*) of the usual form is cast; on the other, an annular wheel (*b*), that is, the inside ring of the case at one side is provided with teeth. To the part of the hollow axle carrying the tines, which revolves within the case, two pinions (a small one *c* and large *d*) are keyed. The hollow axle is capable of being moved out and in, and kept in any desired position by three catches. By placing the middle catch in gear, the two pinions (*c* and *d*) are placed midway between the spur wheel (*a*) and the annular wheel (*b*). In this position, although the machine is in motion, the tine barrel receives no motion. But by putting the second catch in gear, the small pinion (*c*) engages with the spur wheel (*a*), and the forward motion of the tine barrel is produced. By putting the third catch in gear, the small pinion (*c*), is disengaged from the spur-wheel (*a*), and at the same time the large pinion (*d*), engages with the annular wheel (*b*), and the reverse motion is produced. The action of an annular wheel and an internal pinion is such that both revolve in the same direction. That of a spur-wheel with a pinion, or of two spur-wheels, produces movement in the contrary directions. Hence, by the use of the movements Mr. Nicholson obtains a forward and a reverse movement of the tine-barrel with the utmost degree of simplicity.

At the same stand a specimen of Smith and Ashby's hay-making machine was exhibited; it is now manufactured by Messrs. T. W. Ashby and Co., of Stamford. This machine has for a long time possessed a high reputation, and its success may be said to have been the prompting means in inducing other makers to rival it if possible in efficiency of operation and accurate adjustment of parts. In this machine each tine is supported

by double bearings, and fitted with two steel springs, so that the heaviest crops are thrown up without clogging. Each tine is capable of being placed in two positions, and is so fixed that if it meets any obstruction it gives way to it and passes it over. The bars of the revolving frame are not fixed permanently to it, but are jointed at the ends to the radial bars of the frame. Each tine is fixed by a bolt and a nut to this moveable bar, which carries five tines along its length. The upper side of the bar carries an iron shoe with circular end, through which the end of the tine passes, and on the surface of which it is screwed down. Against this shoe the end of a long steel spring presses, which serves to keep the tine bar, and consequently the tines, in any position desired. The tines, for instance, can be turned down so as to be parallel to the springs, and thus be placed out of all action; or they may be pulled outwards, and placed in the position of full work. The action of the spring is such that when the tines come in contact with any obstruction they give way and allow the obstruction to be passed.

In the three machines noticed, the means employed to raise the tine barrel further from, or lower it nearer to the ground, are nearly identical in principle. In Messrs. Thompson's machine, the axle (*b*) of the revolving tine frame is placed in the upper part of the gear-box, in such a position that it is above yet a little behind the main driving axle (*a*): the gearing box has thus a tendency to fall towards the ground; but this is



prevented or regulated by the lever *b c*, the end of which nearest the horses passes through a stud fixed to the shaft of the machine, and is actuated by a screwed nut. By lengthening the rod or lever *c b*, in the direction from *c* to *b*, the point *b* is depressed, and the tine barrel lowered towards the ground; but by screwing up the rod *b c*, and shortening it, the point *b* is brought nearer to a position directly above the point *a*; so that the tine barrel is raised from the ground.

In Mr. Nicholson's machine, the end *c* of the rod *b c*, is provided with a small quadrant containing a few teeth, these engaging with the teeth of a small pinion, the axle or shaft of which works in studs bolted to the shafts, and the ends of which are provided with handles, by which to work the pinions. By working these, and raising or lowering the toothed quadrants at the ends of the levers, the tine barrel is raised or lowered accordingly.

In Messrs. Smith and Ashby's machine the end *c* of the lever *c b* is jointed to the end of a small lever, which is fixed to the end of a spindle, provided at its end with a small segmental rack, with the teeth of which engages an endless screw. By working with an appropriately fixed handle this endless screw, the segmental rack is brought round, and the levers attached to its spindle pull forward or shove back the gearing box, and with it the tine barrel.

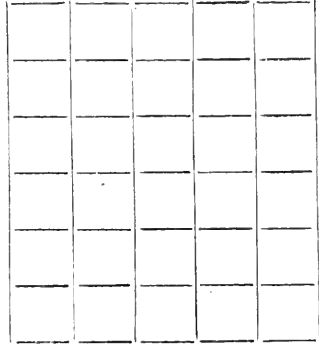
It is always interesting to trace the successive im-

provements which any particular piece of agricultural mechanism has undergone. Thus, in that now under review, the machine had only one or a forward motion; but experience soon showed that in addition to the complete turning over and tossing up of the hay brought about by the forward-action of the machine, a benefit would arise if at another stage of the process a slight raising from the ground and a scattering of it behind the machine were secured to the hay. This brought out the reverse movement, and a modification of the mechanism. Then, again, in the first machines introduced, the tines were placed upon bars which stretched across the whole breadth of the machine. The result of this arrangement was, that in turning the machine the tines missed their work. This was obviated by having two sets of tine barrels, each barrel or frame having an independent set of gearing—so that, when turning, the outer wheel keeps one-half of the tines in motion.

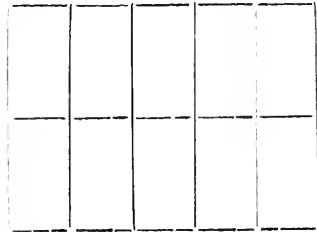
The consideration of the machines for tedding the hay brings us to the next department of agricultural mechanism, namely *horse rakes*. At the stand of Messrs. Smith and Taylor, of Ipswich, was exhibited the counterbalance horse-rake, the invention of Mr. Smith. This apparatus presents many points worthy of notice. With the tines or teeth are combined counterbalance weights, by adjusting which, the points of the teeth are raised from the ground, and prevented from entering in and doing injury to the ground. The counterbalance weights are attached to short levers, and these are jointed to the inner ends of the tines or teeth; by bringing in the short levers, so that the weights at their extremities shall rest upon the upper sides of the tines, the pressure is increased upon the working ends of these; but by throwing the levers outwards, so as to lengthen as it were the tines or teeth, with the weights at the outer extremity, the pressure is taken of the working ends off the teeth. The circular boss on which the tine is fixed has two projections at opposite ends of the diameter: to one of these projections the tine or tooth is fixed, and to the opposite one the lever carrying the counterbalance weight is jointed. The series of bosses carrying the tines and weight-levers are strung or threaded as it were upon a shaft, stretching across the whole breadth of the machine. Parallel to this shaft, and in advance of it, is placed a bar, on which the tines rest; by a simple arrangement of levers, this bar is acted on, in such a way that by depressing the outer end of a long lever placed within reach of the attendant, the series of tines are raised from the ground, and the hay which they have collected stripped off them by a clearing bar. The lifting up of the tines is rendered very easy by the action of the counterbalance-weights.

A horse-rake with an ingenious delivery was exhibited by William Gerrans, of Tregony, near Grampond, Cornwall. In this, by the action of a pedal, operated upon by the driver, who sits behind the horse, the teeth are lifted at intervals, and the load delivered as desired. The whole is so designed that it can be folded up, lying compactly on the carriage, so that it can be easily transported from place to place.

We now turn our attention to the machines connected with the preparation of the food for stock, and notice first a novel form of root-cutter, which was exhibited at the stand of the Trustees of Mr. Crosskill, a short description of which may be interesting here. In the central space of an oblong box two square pistons, or plungers, work horizontally: while one is moving outwards towards one end of the box, the other is moving inwards towards the centre. The outer ends of the pistons are provided with a series of cutting faces, or edges. The ends of the box are not made up with solid parts, but barred, one end being divided into squares, as thus:



the other into long parallel divisions, thus:



The turnips to be cut are thrown into the two boxes, one being formed at each side of the moving piston mechanism; and, the fly-wheel being set in motion, one piston presses upon the roots; and the bars making up the ends of each division being sharpened on their inner edges, so as to act like knives, the roots at one end are forced outwards in the shape of square pieces, at the other in the form of narrow strips. The backward movement of each piston allows space, in which the roots fall, resting upon the bottom of the box, and ready to receive the force and impulse of the piston, on its next outward movement.

Messrs. Richmond and Chandler exhibited an improvement in their straw and hay-cutters worthy of notice, which has reference to a mode of effecting the length of cut taken by the knives. On the spiked roller, or feeding shaft (*a*), at the end furthest from the feeding part of the machine, two spur-wheels, or pinions, are keyed. These are of unequal diameter: one of them (the smallest) we here denominate *b*, the other *c*. Parallel to the shaft (*a*) another (*d*) is

placed, this receiving motion from the fly-wheel shaft through the medium of bevil gearing. This shaft carries a sliding clutch, easily actuated by a lever within reach of the attendant. To the clutch is given two toothed wheels, one of which (*e*) is of smaller diameter than the other (*f*). These can be made to engage, at will, with the pinions *b* and *c* on the shaft (*a*). Thus, by putting the wheel (*f*) in gearing with the pinion (*b*) on the shaft (*a*), the machine cuts the longest lengths; by gearing the pinion (*e*) with the wheel (*c*), the machine cuts the shortest lengths. Change-wheels—always cumbersome, and the fitting-on of which is a loss of time—are thus avoided, and the change of lengths instantaneously obtained.

In the dairy department the principal novelties were the churn of Mr. Cornes, of High-street, Bow, London, and the butter-making apparatus of Messrs. Hancock, of Gloucester. The churn is on what Mr. Cornes calls the "concussion principle." It is made of a long box, working between two uprights, on central pivots. By means of a handle the box can be worked up and down, like the beam of a steam-engine, one end up with the other down, alternately. Our readers will easily perceive that, as the mass of milk is suddenly arrested in its progress by the end of the box, against which it strikes, a very complete concussion will be the result, and a kneading action also, which, as the butter forms, will be advantageous. An improvement, we think, would be in hanging or suspending the box by side-links from centres *above* it. The box being thus loosely hung, it could be very easily moved to and fro, pendulum fashion. In the *Journal of Agriculture* (No. 43, January, 1854), we described a swing-churn as exhibited at the Dublin Great Industrial Exhibition; and, in same number, one on the same principle, which was invented *early in the present century* by William Horrocks, the inventor of the steam power-loom, and was introduced by him to a farmer in Cheshire, and who had one made. So easily was it worked, that the farmer could churn with it, reading the paper or smoking his pipe. This is simply the statement of a fact. The inventor was led to the subject by observing the "very complete agitation of a liquid placed in a long bottle, moved from end to end by making the bottle oscillate, as it were, on the centre of its length, while held horizontally. The bottle should be about half-full. The liquid, as it dashes up against the end, is turned over exactly as a wave dashing against an embankment or a pier." To assist this wave-like action, we recommend the corners at the bottom of the box to be rounded off. We should like much to see this swing-churn subjected to a complete series of trials. Indeed, we think that a complete series of trials for all churns would elicit a vast amount of valuable information on a subject of which far too little is known—namely, the peculiarities of the movements of liquids confined as in churns, and subjected to different motions. We say, a *complete* series of trials—not short, but long-continued workings, and these arranged with reference to peculiarities of motion, &c., &c., power taken, time consumed, &c., &c. No trial has as yet

been carried out, worthy of the name, in this department, so far as we are aware of. It would be a work of time, involving much labour and some expense on the part of the experimenters; but the results would, we feel assured, justify all these amply.

Messrs. Hancock's butter-making machine has attracted considerable attention wherever shown. It aims at superseding hand-working of butter—that is, making it up for market after being churned; an operation not always conducted satisfactorily with hot-handed dairy-maids. In the apparatus now under notice, the butter is placed in a vertical cylinder of white metal, at the bottom of which there are several apertures. A piston is passed into the cylinder above the butter, and pressed down by means of a screw working in a cross-bar fixed to the upper part of the cylinder; this action forces the butter through the apertures in the form of small flakes, which fall into a water-vessel placed beneath. By making the apertures of different forms, a pleasing shape is easily given to the portion of butter forced through. The action of the apparatus is precisely similar to that of a brick or tile-drain apparatus, with which, doubtless, our readers are very familiar.

In corn cleaning machines we have to notice those of Messrs. Rankin, of Liverpool, and Messrs. Hughes, of London. In the latter the object aimed at is not only to give the wheat a good cleaning, but to prevent its being damaged while being so cleaned; a point not always secured in smut machines. The grain to be cleaned in this apparatus is put into a hopper placed at the summit of a vertical frame; passing from this, it is conducted through a circular revolving chamber, and is made to fall upon the conical fluted surface of a revolving drum; passing from this, it meets a blast from a fan placed inside of the cone, and is delivered to a second cone, and finally to a spout, which leads it to a second spout, across which the grain spreads itself, and is subjected to the action of a fan, which frees it from all the remaining dust, chaff, &c. The wings of the fans inside the rubbing cones are covered with square laced wove wire; this prevents the wings from giving direct blows to the grain, and at the same time permits the air to pass through the fans, leading of dust and chaff through the meshes of the outer cylinder by which they are enclosed.

In Messrs. Rankin's machine, the grain, on entering, is taken up by a rapidly revolving drum, and is dashed against a solidly-fluted cylinder enclosing the drum. This releases and loosens the dust, which is carried upwards by a current of air produced by a fan placed at the top of the machine. The lower part of the fluted cylinder is formed of wire cloth; the wheat passing from the upper and fluted portion comes in contact with the wire cloth, and as this portion is enclosed within an air-tight cylinder, it allows all sand, seed, and heavy extraneous substances to pass through, the light dust, &c., being drawn upward by the current created by the fan at the top. The refuse passed through the wire is kept separate from the lighter dust.

As stated at the commencement of our present series

of papers, the novelties were not at all numerous at the Canterbury meeting; and some of these being but novelties, and little more—that is, characterized by a small amount of novelty—and therefore not worthy of detailed notice, our duty of explanation has been comparatively light.

R. S. B.

THE NEW LANDLORD AND TENANT BILL FOR IRELAND.

Some years since, ere the Tenant-Right claim came to be much admitted amongst us, one very grave objection was sure to be urged against the recognition of the principle. It had “got a bad name,” and landlords, without staying to enquire into its real action, carefully kept aloof of the movement. Tenant-right in their eyes was more Irish than English, and they straightway came to picture in association with its development agrarian outrage of the worst character. The actual owner of the soil would have no real power over it; his agents would be bullied, or far worse treated; while the tenant would argue on possession being not merely nine-tenths of the law, but a great deal more. As for improvement being fostered by any such a system, bitter experience went to assure us that the rule was the very reverse. There was no getting quit of a bad man; while the agitation for his assumed rights of course only tended to make him worse. Let us give the tenantry compensation for unexhausted improvements, as they do down in Lincolnshire. Let us by all means endeavour to bring about a due adjustment of the several claims of owner and occupier; but pray do not employ that terrible phrase in doing so. As with the sensitive lady in *Peter Simple*, when her good husband was waging war against Lindley Murray, the very mention of the phrase would bring on “such a head-ache.” So that poor Mr. Pusey had to tack about for all sorts of side-winds to run the good ship in; while *The Mark Lane Express* had to be perpetually explaining that the English Tenant-Right was not the Irish Tenant-Right, and that there was really no cause for alarm.

However, “a rose by any other name would smell as sweet,” and the English claim has surely if slowly made its way. It may not have much position in our law books, but the justice of the principle has told upon most men, and more equitable agreements will answer for uncertain “custom.” It is a wholesome sign though, still, to see the one class meet the other with such a cry, when they are talking over their duties one to the other; and it was thus that Mr. Duckham spoke out at the Hereford dinner only last week. Of course, according to the present etiquette of the thing, the tenant-farmers come in rather at the fag-end of the feast; but this at least gives them the opportunity of offering some comment on what the high table may have advanced. Mr. Duckham is addressing himself not merely to two landlords of the county, but to at least one of his representatives in Parliament: “He expressed the gratification he felt upon hearing the liberal manner in which Mr. Clive has come forward to promote the formation of a company for the purpose of providing steam ploughs for hire, and thought it

would be productive of great benefit to the tenant-farmer. At the same time he pointed to the essential requirements of the fields being made more open, the crooked hedgerows straightened, and superfluous timber felled, before they could be enabled to derive the full benefit from its use. Mr. Mildmay had stated that the Tithe Commutation Act had been a great moral agent for agricultural improvement; he begged to tell them that giving the tenantry a full freedom of action, not shackling them in their endeavours by restrictive agreements, and giving them an equitable Tenant-Right, would do more for agricultural progression than anything that had hitherto taken place.”

This speaks well for the way in which the principle is “maintained” here in England. But we look with more anxiety to Ireland, “an improving country,” where such a sifst as an impoverished, incapable tenant would seem to be one of the greatest impediments to advancement that it would be possible to devise. Fortunately for herself, Ireland, again, is taking to another reading of the Right. The past Session was not so utterly idle even as regarded Agriculture, the last interest in the world the Legislature is likely to care about. Another Landlord and Tenant Bill—one almost shudders to write it—but another measure on this much vexed subject was fairly passed through all the necessary stages, for the benefit of Ireland. And rarely has there been one which has promised to do so much good. The direct aim of the Act is *improvement*. Whether on the part of the landlord or his tenant, all kinds of powers and facilities are offered; but, above all, the principle of compensation for unexhausted expenditure, where advantageously applied, is directly recognized. It is true that the improvements specified are more of a permanent than a temporary character; but the other will follow, as the system of modern agriculture, with all its disbursement of capital in manures, marliug, chalking, and so on, comes into adoption. However, the real meaning of this war-cry is beginning at last to be properly understood. The wedge is rightly placed at last, while our one remaining care is, how the Irish themselves will take it? Will they be satisfied to suffer so exciting an agitation to sink into so reasonable and, as we trust, so easy an adjustment? The country, to be sure, would seem to be more and more prepared for such a step, and, to its credit be it written, would appear really to welcome the new Bill. The *Northern Whig*, an Ulster journal of repute, thus writes of it: “The chief value of the present measure is that the principle that the tenant is entitled to compensation for the improvements he effects is at last recognised by the law. Under its provisions improvements can be made either

by the tenant or by the landlord, under the control and sanction of a Chairman of Quarter Sessions or a Judge of the Landed Estates Court. Compensation for the sums so expended is to be secured by an annuity of £7 2s. per cent. for twenty-five years, commencing on the date of the charging order made by the judge or Chairman when the improvements have been completed and certified. The second part of the Act has reference to leasing powers, and is very important. It gives the right to grant leases, under the different titles of agricultural leases for terms not exceeding twenty-one years, improvement leases not exceeding forty-one years, and building leases not exceeding ninety-nine years (except in special cases), under the conditions set forth in the 25th section of the Act. The most interesting portion of the Act to tenant farmers is that which deals with tenants' improvements—Part 3. Although the retrospective question is not touched, it is satisfactory to find that henceforth a tenant is to be protected in his interest in the soil created by his own labour and outlay; and that he cannot be turned out of his holding without being compensated for all the money he has spent and the labour he has bestowed in judiciously improving his landlord's property." The nature of the improvements, as specified in the Act, are:—The thorough drainage or main drainage of lands—Reclaiming bog land, or reclaiming or inclosing waste land—The making farm roads—Irrigation—Protection of land by embankment from inland waters—The erection of farm-house or any building for agricultural purposes suitable to the holding, or the enlarging or the extending of any such farm-house or building erected or to be erected thereon, so as to render the same more suitable to the holding—The renewal or re-construction of any of the foregoing works, or such alterations therein or additions thereto

as are not required for maintaining the same, and increase durably their value.

The majority of these sound to us more like landlord's, or, as distinguished here, "permanent" improvements; but the admission of others, more properly the tenant's improvements, will follow. It is within only the last month or two that Mr. Oliphant Pringle, one of the editors of the *Irish Farmers' Gazette*, has collected a series of very able and well-considered papers he had written for that journal, "On Meat Manufacture, and the Rearing and Breeding of Stock." This extraordinary shilling's worth of information has upon its title-page, as a motto, one of the maxims of Mr. Mechi—"The more meat you make the more manure you produce, and the more corn you grow." And, as Mr. Pringle shows us Ireland is the country above all others to grow more meat. More manure and more corn will follow; and so, as the green isle flourishes, the landlord will lay out his money in building and draining; while the tenant, more properly, employs his capital in feeding more stock, buying more oilcake—in a word, in making more manure and more corn; either being secured—we care not how, by custom, agreement, or enactment—of the due fruits of his outlay and exertions. We have now had the opportunity of personally witnessing the advancement of agriculture in Ireland for some years past; but we know of nothing more encouraging, or rather of nothing so likely to establish this, as the new Bill of Landlord and Tenant. Mr. Pringle's pamphlet is an appropriate commentary upon the Act; or, rather perhaps the prologue to what must come. When the readers of the *Irish Farmers' Gazette* require such elaborate essays as these, the fact only shows how ready they must be for improvement. The author has ably done his duty by them: let them now do theirs. Everything urges them onwards.

THE FARMERS' DIFFICULTIES—AND HOW TO MEET THEM.

No man now can continue to question the serious effects of the past unpropitious season, although one still hears, after a few hours *without* rain, that the fine weather has done wonders. However, the corn thrashed is mostly in the worst possible condition, whilst it is often found to be nearly as bad in the yield. A sack instead of a quarter is already said to be the rule in some districts, and even this is so damp that scarcely a miller will look at it. Then, again, there is no getting on the land, which is becoming terribly foul; and cattle, utterly unsaleable, are starving over the mouldy hay they cannot eat. The root crop is even yet more generally indifferent, so that the farmer, thoroughly "beat" for once, turns from this side to the other without a ray of light or hope in the horizon. What, under the circumstances, is he to do? How shall he get fit his wet wheat and his discoloured barley? Is there any way of turning the unsavoury fodder to account? How is he to get on his land, and his seed-corn in? What is he to say to his landlord?

And when does he think he *might* be able to pay his rent?

There is nothing like seizing the happy moment for introducing a topic of interest, and the members of a neighbouring club have just been talking over these matters one with the other. The farmers about Croydon confess to "the casualties resulting from the past season," and go on to offer "hints for their mitigation." It will be by no means unprofitable to follow up some of these suggestions, and see how far they may be susceptible of practical adoption. Of course one of the great difficulties of the hour is the condition of the sample the producer has to offer to the consumer, and it is thus that the Croydon Club deal with it. Mr. Barling said—"The kiln had been mentioned as a remedy, but perhaps there were not three persons in the room who possessed one. Their worthy chairman had a kiln, which he had kindly placed at the disposal of several of his neighbours. But very little corn was thrashed kilndried, and even if they thrashed it when

damp, and were not fortunate enough to have a kiln to dry it in, they wanted some suggestion to tell them what to do. He had felt very greatly interested in this subject, and a short time since he thought of going to Mr. Wakley and his friends in order to get some information on this subject; for, if they remembered, that gentleman had written some letters to the *Times* relating to this important matter. When he (Mr. Barling) went to them, they informed him that the evils were past alteration or redemption. After this he went to East Cheap, to a Mr. Savage, who was a clever practical man, but he was not at all willing to engage in any commercial transaction. He, however, sent Mr. Barling to several others of the same kind as himself, and he spent a whole day amongst them. He afterwards came to the conclusion that their case was quite hopeless. The plan those engineers offered was to thrash the corn in some small machine and dry it by a system of hot air, so that the air should be driven through the small machine, and so dry the corn after it had been thrashed. He told the engineers that they could hardly conceive the bulk they would have to operate upon, for he could see a thousand waggon loads of corn in his locality, the greater part of which he thought never would be thrashed. He therefore asked them, could they operate upon it in a bulk? They replied that the case was hopeless. He thought whether it might be successfully operated upon in the straw; and the only scheme he could hit on was that they should build a round stack at one of the largest ends of their barns, with a hollow well in the middle of it, and let it extend nearly to the roof; then he thought they could apply hot air with great force, and thus drive the moisture from the middle to the outside. Perhaps the club was not aware of the extraordinary machine they had in London for these matters; it was a patented machine—a large fan—and the one he saw was equal to force ten thousand cubic feet in a minute with suitable mechanical power. If this could be adopted the difficulties attending a wet season like the past would in a measure be obviated; the corn would be considerably improved; they could thrash it, and it would then be rendered fit for market. The expense of such a machine was about £100, which of course would be rather a serious consideration for one person, and more than he would like to lay out in an experiment. However, it would be a fair speculation, and if successful a person might gain a good deal by keeping one to let on hire on the principle of a steam thrashing machine. But it would only be useful for such wet seasons as the past, when their corn was in so bad a condition."

This narrative of a day's travels in the Metropolis affords us something more than a hint at mitigation; while the President of the Club, Mr. Stenning, one of the leading agriculturists of the county, backs the suggestion with some actual experience he has already had of a kiln:—"He had carted 50 quarters of wheat, and thrashed it the second day after it had been carted, and, after drying it, had succeeded in realizing 56s. a quarter for it. He also thrashed 38 quarters of barley

which had stood in the field a month. This had been dried by his own kiln, and if he felt disposed to rob the public he could pass it off for good malting barley. [A sample of the barley was produced, and said by the club to have been excellent.] He had seen some kiln-dried barley in the market that day which had been over-dried, so that it tasted quite sweet, and the flower of the grain was thereby greatly injured. He did not wish to keep from the club anything that would be useful to the members; and therefore he would tell them that in drying their corn at a kiln they must be very careful how they did it. They must have an experienced man, one who understood the fire, and how to keep the corn in constant motion not to let it lie still. His own kiln was a small one, and his man was continually employed in shifting it and seeing that no part actually caught the fire. With regard to the corn which he now had in the field, he should, the first fine day that came, take advantage of it, and get it together, thrash and dry it, and bring it to market." Mr. Sallows, again, "had a kiln which he found very useful to him in drying the corn, but the great attention and pains of drying it was more perhaps than many were aware of. He had some wheat for which he was offered 56s. before he had dried it, and after it had been dried he had sold it for 60s. He dried twenty-six quarters; but when it came out of the kiln it was reduced to twenty-four and a-half quarters, and after that he sold it at 60s. He should next week dry some more corn; and where this could be done kilns were of the greatest benefit. But unfortunately few people possessed them at all. After this they may think it advisable to procure them, although perhaps it might be some years before we had another season like the past." All this is very admirably put, and it is really refreshing to see so much sound good sense can be found at an agricultural gathering, after what we have heard and read of at "the Dinner" of the Society. But we have sifted a little CORN even out of the CHAFF flying about on these occasions; and at Bromyard Lord William Graham "had been told that the best way of treating the damaged hay crop was to steam it, as it was thereby made more nutritious and more valuable for the animals, and that a machine for steaming may be obtained for £7 or £8. Two or three farmers, therefore, by combining, might easily obtain such a machine, to their great advantage."

Having considered so far what may be at least attempted with the crop of the past season, an equally anxious care is how to prepare for the next? Mr. Wood at Croydon thinks, "from the foul, wet, and sodden state of the land, particularly on many of our wet clay farms, there is no doubt that it will be next to impossible to get much of the wheat in this autumn, and that it must of necessity be left to cart out the manure during the winter if possible, and get it ready in the spring, for spring wheat or other corn crops. That such a course must be preferable to putting wheat in very badly is in most years right, and most likely will prove so this." Mr. Fuller looked a little further ahead, and suggested "they might avail themselves of

that opportunity of calling their landlords' attention to the present extraordinary state of the soil, and then ask him to do something with regard to efficient drainage. It was sure any of them who had their lands drained this year would be able, on comparing it to lands left undrained, at once to see the wisdom and utility of drainage, and the superior condition of drained land would appear so apparent to the landlord that if the tenants availed themselves of the present time by urging the matter, the other would not say that the land did not want drainage, nor that the request was premature. Of course they would come to an arrangement of a fair and proper character; and the tenant must meet the landlord and pay a per-centage upon the outlay." But a landlord in Kent had just about the same time been saying at Groombridge that which a farmer in Surrey had recommended at Croydon. Lord Delawar "had found where land had been deeply-drained and well-cultivated and cleansed, the injury sustained by the crops was by no means so great as where those operations had been less attended to. He was told that where land had been well drained for several years past, well cleansed and kept free from weeds, the crops had been brought earlier to maturity, and therefore suffered less from the influence of the weather, as the farmers had been able to take more advantage of the few opportunities offered by fine weather for gathering in their corn. Those circumstances showed how very important it was that the cultivation of land should be strictly attended to, and that deep draining especially should receive more attention than it had yet done in this part of the

country." It is encouraging to see the two classes so mainly concerned making such sound deductions from the past, with a view to the future. But each of us has at least one pet remedy of his own—and Mr. Wood would kill the slugs with lime and soot—Mr. Hunt would strongly recommend steam-ploughing—Mr. Brown thought the better and deeper they ploughed their wet lands the more they would get the water away—and Mr. Staveley proposed that the landlords generally should give up the Michaelmas rent due!

The steam-plough recipe was not very heartily received, but was met with two queries—*Where* were they to get one? and then, *Where* were they to use it? "It could not be employed for fields of less than thirty acres." Still it must be by no means assumed that any hints for the mitigation of our ills begin and end with the Croydon Club. On the contrary, in a letter from the well-known Mr. Smith of Woolston, details how he has finished his harvest and carted his beans "well"—how his swedes are good, and his mangolds are pulled—how the land is everywhere clean, the stubble smashed up, and the wheat drilled. This, in the way of a contrast, is really an imposing array of facts, and the secret of all this is cultivation by steam-power. Surely, as the founder of it says, there must be some value in a system that, in such a season, can thus expedite the business of the farm. It is, too, under difficulties that we more especially appreciate the services of a friend; and if ever any man was really in difficulties, it is the farmer as he stands just at present. The elements are against him.

THE NORFOLK AND DEVONSHIRE SYSTEMS OF FARMING CONTRASTED.

Having been a farmer for thirty years, he must crave their permission to speak on one or two points of practical importance. He did not wish to refer to his own doings in the shape of boasting; and their best course was to apply their own individual judgment to what he said. All of them had prejudices, and he, perhaps, was apt to think too much of Norfolk farming, as they, on the other hand, might err in their preference for Devonshire. First, as to farming. The system pursued among them was quite opposite to the Norfolk system. Which was the best he would leave it to them to decide; but his experience was in favour of the latter. He did not, as here was the custom, plough each way for the sake of getting a good seed bed. This edge ploughing allowed the grass and weeds to grow as well as the corn. His method was to use the drill after the ground had been once opened in furrows nine inches wide, and as flat as he could make it. The drill was of modern introduction, and supplied the place of broadcast sowing; and the fact that drilling was superseding the old system of sowing, from one end of the country to the other, established its superiority without the necessity of argument from him. Until modern days Devonshire was so far removed from London that it did not possess the advantages of other counties in reference to improvements in farming. The edgeways ploughing gave an opportunity for burying seed; but by the Norfolk system they drilled more regularly, and com-

pletely covered the seed with mould. After ploughing the land flat there is no fear of its turning back and spoiling the seed bed. The land being closer down, too, it was less liable to be injuriously affected by frost; whereas, where it was hollow, the frost often got between and killed the plant. The crops were thus more secure by the Norfolk system of planting; and he hoped before they met again they would give it a trial. Another implement which he used, and which he thought more important than any other, was Coleman's grubber. He had not seen one at work in Devonshire, but that might be because he was rather confined at home. This implement, he was sure, would eventually supersede the plough. His own system, to a great extent, was to plough his land but once in the year. They were all aware of the expensae of ploughing in Devonshire. In Norfolk a man might plough two acres a-day; but here half an acre or less was the quantity on some land. The grubber had the advantage of acting as a harrow as well as a plough; it cut open the ground quite as well as the plough, and made a better seed-bed for the barley in the spring. Immediately his mangold were off in November, he ploughed seven inches deep, and left the ground all the winter. The surface thus exposed to the atmosphere and the frost became in a beautifully pulverized state, which was better to get in the seed upon than the fresh clay. The grubber not only did the work more simply and better, but with a saving of ex-

pense. A grubber with four horses could be made to do as much as four ploughs with six horses: this was quite within the mark. In February last, he put his grubber once through the soil, harrowed once, drilled in the barley, and harrowed a second time. This was all the work done on the land, and people had told him that his crop was better than any other in the neighbourhood. He also used the grubber after harvest over a stubble field, using six-inch shares in the shape of a heart, once across the field, and then round and over the field the other way. By this process the roots were separated from the soil, leaving the weeds on the surface to die; then he ploughed it all under, and the land would be as clean in the spring of the year as it was now. The land might be ploughed both ways, cutting the weeds into pieces, but these all took root again, and thus by this means the cleaning of the land was a hopeless task. The scarifier did it thoroughly at a tithe of the expense. The first summer he came here, being short of time, he put in turnips on some of his land after the scarifier without ploughing, and to his surprise, though some of the land was most unfavourable, the crop was excellent, and double that on land ploughed. His system was to plough the land once in a year, making the grubber do the rest; and the whole was considerably less costly than the ploughing and harrowing. He would advise the experienced farmers present to try the experiment on part of their land and compare their results with his own. He should be happy, if any of them would pay a visit to show them what he was doing. As to stock, Devonshire was pre-eminently a breeding county, but he had learnt a secret as to this breeding, namely, that it much depended on what entered the mouth. The other day, at the great sale of Mr. George Turner's stock, there was an illustration of this, and it was noticed by Mr. Kekewich and other leading men. There was one pen of five sheep sold at seven guineas, and others of the same breed precisely sold at only half the sum; but the first were highly fed, prepared for show, and their extra growth was the result. It was well known that an animal removed from an inferior soil to a better improved in every generation. On the other hand he had seen Leicestershire sheep taken into Norfolk, gradually degenerate, notwithstanding every care and expense; and the infusion of new blood failed to keep of the breed. The same observation applied to hores. In this district the horses wanted muscle and weight for the lack of corn, &c.; but even then they could not compete with the breeds of more favourable counties. He knew men who did wonders with stock on both land, but this was an exception to the rule, as they bestowed extraordinary care, and incurred unusual expense. Shorthorns, again, he believed to be the best breed in England—fattening sooner, giving more milk, and being altogether more perfect animals; but under ordinary management they soon depreciated, becoming nearly as bad as the Norfolk home-breeds, which was known to be the worst in England. With inferiority of soil it was no use to attempt breeding. The celebrated Norfolk hack was almost as extinct as the Devonshire pack-horse. He had himself obtained from a high-bred mare and a good cart-horse, a lot of fine strong colts. He believed very good backs, approaching the park breed, might be obtained from a best bred Exmoor pony and a horse of good system and right action. As to the land in Devonshire, he allowed that a large portion was unfit for flat ploughing unless drained; but it might be mentioned that the drill was introduced into Norfolk from Suffolk, where the soil was a strong clay, and utterly unsuited for the drill till drained. Hundreds of pounds might be laid out in manure and cultivation, but it would be a waste of outlay

unless land was drained. It was a *sine qua non* towards having a good crop to get rid of the water. He had been endeavouring to discover the best way to do this, and though he had been so far successful, he had not proved the thing. When he had he should be ready to impart his experience to his agricultural brethren. In the matter of wool, he believed the Devonshire farmers were more imposed upon than any others. This year the same quality of wool which sold here for 1s. 2½d. per lb., realized in Norfolk 2s. The only way, in his opinion, to obtain a good price was to establish a good wool fair, whose quotations would regulate the market; by this means every farmer might learn the correct value of his wool, and not sell at so great a disadvantage as at present.—*Mr. J. H. Holly, of Oaklands, Devon, at the Okehampton Agricultural Club.*

THE OLD WOODEN PLOUGH.

[A STAFFORDSHIRE DITTY.]

Up by th' Blake Mere o'Morriddge, not long time ago,
There lived an old chap, w' an old wig o' tow;
His name was Tom Morris, and I'll tell you how
He made a discourse on an old wooden Plough.

Gee ho Dobbin! gee ho Dobbin! gee ho Dobbin!
Gee up and gee ho!

'Twas the tenth of October, and th' oats were just ripe,
On the settle he sat, and he smoked his long pipe;
And he thought a long time about this thing and that,
And said "Tummy! sit down and I'll tell thee what's what."
Gee ho Dobbin! &c.

"These are terrible times, lad, I prithee come nigh,
And I'll gie thee a wrinkle or two ere I die;
I can't stand it much longer, it shortens my breath,
These new-fangled notions will soon be my death.
Gee ho Dobbin! &c.

"They're going too fast, lad, I tell thee, a deal;
There's Lord Talbot, o' Ing'stre; and Ralph Sneyd o' Keel;
And Sandon, and Butler, and Main'ring, and Bill—
Lord! the stuff they've been talking! it mak's me quite ill.
Gee ho Dobbin! &c.

"With their bones and their acids; their drills and gu-lanner;
Thy grandfather, Tom, never farmed? that manner:
He'd ha' stared hard enough, if he'd heard what they say
About boiling o' oilcake, and chopping o' hay.
Gee ho Dobbin! &c.

"Then *soughing's* a thing as in course they mun alter,
So they go a mon's depth for to get at th' top water—
And they scoop out the dirt w' a thing like a spoon,
And for tiles! they'll be using o' *bacco pipes* soon.
Gee ho Dobbin! &c.

"Then they prate o' their carrots and mangels and sich—
As if carrots and mangels would mak' a mon rich!
Of hoeing o' turmints, and clearing o' yellows—
Stuff and nonsense! and growing o' wheat without fallows.
Gee ho Dobbin! &c.

"It makes me to loff! without fallows indeed!
Why, I think they mun ha' a soft place in their read!
But what dun ye think they've been doin' just now?
Why they've got up a loff at an old wooden plough.
Gee ho Dobbin! &c.

"Aye! an old wooden plough—and they say to be sure,
As the wide-awake farmer mun use 'em no more:
The mun a' be o' iron, and wood there's no trade for—
Why, what do th' fools think as ash trees was made for?
Gee ho Dobbin! &c.

"Talk o' ploughs made o' iron! why, th' next thing they'll do:
As sure as yo live, they'll be painting 'em blue:
Then they've two tits abreast, as they call a 'gee ho'—
They may *call* long enough, but they never can go.
Gee ho Dobbin! &c.

"No! gie me a good wooden plough as is *strong*,
And a good pair o' big wheels to help it along,
And four long-tailed tits and a mon and a lad,
And a good steady pace, and it shannar be bad.
Gee ho Dobbin! &c.

"But Tommy, my lad, never heed what they say,
But get thee on still! p' thy father's old way:
They'll bring all their hogs to fine markets just now,
But stick while thee liv'st to thy old wooden plough!"
Gee ho Dobbin! &c.

THE PURIFICATION OF WATER FOR CATTLE.

Should the water given to live stock be filtered, to free it from those impurities which it generally holds in suspension? And where injurious substances are held in solution, can we precipitate these, or otherwise render them innocuous, so as always to present to stock, whether grazing in the field or being fed at the homestead, a full supply of pure, wholesome water? It is long since that ever-venerable philosopher Bacon drew attention to the importance of the proposition in his work on natural history,* *alias* "Sylva Sylvarum." The subject has often been discussed by farmers and it is now being reduced to practice amongst dairymen in the British capital, with a degree of success hardly credible, but singularly corroborative of Bacon's views.

The proposition involves a fundamental principle in the feeding of live-stock, the soundness of which cannot be denied. It is one of those practical questions, too, that does not admit of proof, for pure water for our cattle is as essentially necessary for their health as it is for our own.

The subject, it will thus be seen, when examined from a practical point of view, is—the dirty water now given to cattle—its injurious influence upon their health—the consequent loss sustained thereby—the chemical and mechanical means proposed for the purification of the water—and that universal omega of all agricultural propositions, "*Will it pay?*" Such are the principal practical topics that claim investigation.

Our "horse-ponds" and "cattle-ponds" present, generally speaking, a very disgusting appearance; and when examined microscopically and chemically, the dirty water they contain is many degrees worse than it appears to the unassisted eye. A more revolting sight can scarcely be imagined than a herd of cattle in a "watering pond" on a summer's day. Drink they must, to quench their thirst; while to keep up, as it were, a state of equilibrium in the pond, as well as internally, they never fail to empty themselves at the same time. We talk of adulterations, and pass long windy statutes in Parliament, imposing heavy fines and imprisonment on those who mix our own food and drink with deleterious substances injurious to health; but the watering of our cattle involves a wholesale system of adulteration more easily conceived than described.

* Extracts from Bacon's "Sylva Sylvarum," on the purification of water: Century I., Ex. 7.—"The clarifying of water is an experiment tending to health, besides the pleasure of the eye, when water is crystalline." Century IV., Ex. 391.—"It is a thing of very good use to discover the goodness of waters," for which seven rules are given, too long to quote *extenso*, but in substance they are thus: 1, By weight—the lighter the better. 2, Evaporation by boiling, "that which consumeth away the fastest you may account the best." 3, "That which holdeth unputrified the longest you may likewise account the best." 4, "That which maketh drinks, as beer, the strongest—the best." 5, The best for washing. 6, Springs on the top of high hills the best. 7, Springs from fine gravelly soils. Century VIII., Ex. 778.—"There is a kind of stone about Bethleem which they grind to powder, and put into water, whereof cattle drink, which maketh them give more milk. Surely there would be some better trials made of mixtures of water in ponds for cattle to make them more milch, or to fatten them, or to keep them from murraine. It may be chalk and nitre are of the best." Throughout the work examples of upward and downward filtration of water are quoted, and frequent allusion is made to the symtomic effects of putrid matter.

A very great diversity in the quality of the water in these watering-places may be pleaded, from that exemplified in the running stream to that in the stagnant stinking pond containing the accumulated filth of ages. Even the water in the watering troughs, into which the cattle cannot go with their feet, soon becomes full of decomposing animal and vegetable matter from the grass and saliva that drop from the cattle's mouths while drinking; so that unless they are daily cleaned, they do not supply pure water. In other cases railing is put up, to prevent the cattle getting into the pond or river; but it is seldom that matters are much mended by this provision, as the excrements of the animals left while drinking are washed into the pond the first rainy day, and sometimes sooner. Throughout the whole system of watering stock an unpardonable indifference to cleanliness prevails, from which very few, we fear, can plead an exception.

It is not, therefore, surprising that it should have occurred to the highly scientific mind of Bacon that such a state of things is of necessity injurious to the health of cattle. The man must experience a sad obliquity of vision who can see the subject in any other light. That the mind is often blinded by the force of habit will readily be granted, and therefore many may see such a state of things as if they saw it not. So long as they do, for example, as their fathers did, and their grandfathers before them, they may move unconsciously, as it were, in the same beaten track. The ox knows the watering-place as he knows his stall, and his owner knows no more. But, however strong may be the force of habit, and however unwilling some minds may be to leave the beaten track of the past, it would be unreasonable, or at least uncharitable, to suppose that any owner of stock, when called upon to think for himself, would conclude that dirty water must be good for cattle because they drink it, and even from force of habit, or a vitiated taste, may prefer it to clean. No doubt the time was that owners of stock might have been allowed to conclude that, because they saw the frogs, newts, *et id genus omne*, crawling in the bottom of their watering-ponds, the water consequently must be clean; but in these days of microscopical and chemical progress, innocent deductions of this kind can no longer be tolerated.

The amount of injury done to health by dirty water is of course a question of degree, the two extremes of which are wide asunder. The principal cause given for the degeneracy of men, and consequent depopulation of the native tribes of New Zealand, is the consumption of large quantities of putrid vegetable matter. The taste of the Maori, for example, has become so vitiated, that they prefer vegetable matter in a state of decomposition to fresh, and the consequence of this is scrofula and other diseases of a kindred character, that shorten life, reducing the mental and physical stamina of the people below its original standard. The putrid vegetable matter in the water now consumed by so many cattle is equally productive of disease. If the constitution of the ox or the horse is stronger than that of man, there may be a longer struggle between health and disease, so to speak. In the former case Nature may throw off the putrid poisonous matter for a longer period of time before she succumbs; but no constitution, however strong, even

of the ox, will resist for any great length of time the continuous action of putrid matter in the circulation.

The period of life, in the case of cattle reared and fed for the shambles, is, no doubt, now short; but short as it is, less or more injury must of necessity be sustained where bad water is consumed.

The farmer's loss lies in the less return for the food consumed by his cattle. Whether his ox succumbs to disease or reaches the shambles in a comparatively healthy state, he sustains, in this respect, a threefold loss. In other words, by giving dirty putrid water to cattle he experiences a general loss produced by the joint agency of three distinct causes, to each of which we shall give a separate notice, as each involves a distinct proposition in the management of live stock.

The first of these considerations has reference to the economy of the raw materials of food. When bad water is given, a waste of such raw material is experienced, *i. e.*, a waste of the ordinary food given—such as grass—less of it being assimilated, and more going to the dunghill. Whether the manufactured article is butcher-meat or milk, a large quantity of water is required, and that water should be pure. If it is mixed with noxious putrid matter, healthy digestion and assimilation are prevented, while decomposition is promoted, the fermentation that takes place in the alimentary canal, often terminating in the worst kinds of purging: at other times the kidneys may be affected, and so on, according to predisposing and contingent circumstances. But whatever may be the unfavourable chemical change that is produced by noxious matter in the water, we cannot by any rational system of logic arrive at the practical conclusion that elements of food differing so widely from each other as putrid and pure water are equal to one another in their chemical results.

The second proposition has reference to the economy of live organism. There is a daily waste upon the ox, and this waste is increased by the consumption of bad water. If by a vigorous and stronger constitution than that of man, the ox throws off an extra quantity of putrid matter from the system, it is at the expense of that system itself, a greater tear and wear, or daily waste, being experienced by it. Where the nervous system is much excited, as it generally is when poisonous putrid matter is present in the circulation, the extra tear and wear upon the system may be something considerable; for it is the very nature, so to speak, of such putrid matter to produce by inoculation the rapid waste and even dissolution of organic substance, winding up with the extinction of the vital principle. The consequence of this extra waste will be simply this—the animal, if preparing for the shambles, will not increase so fast in weight for a given quantity of food consumed; or he may even lose weight, as many do: young stock will not grow so fast, while they will be deficient of nervous and muscular stamina, and also of symmetry; and milch cows will be wanting in good milking properties. Less or more, all these results are realized where bad water is used. We may not be conscious of them, but that does not mend the matter one jot. It is principle we are discussing, and the extra waste upon the body daily is matter of fact which cannot be denied.

The third point has reference to the deterioration of the quality of butcher's meat and dairy produce, and also to the deterioration of the healthy robust characteristics of breeding stock, where bad water is consumed. This view of the subject comes home to the sanitary condition of ourselves, as we cannot for a moment suppose that if putrid matter has entered the circulation of the ox when

in the stall, that the brief short processes of slaughtering, bleeding, and cooking remove it all, and that what remains must necessarily enhance the flavour of the flesh. Such meat must of necessity by the peculiar ferment or zymotic properties which it thus contains, take on a rapid state of decomposition, producing, it may be, ferments of a more poisonous type than the original; and although such food might be preferred by semi-barbarous nations, such as the Faroese, yet in this country taste has not become so vitiated. Milk is still more liable to be adulterated with the putrid matter of the water drunk by milch cows; and with regard to breeding stock, and the health of stock generally, it is a well-established fact that all animals, in the daily habit of consuming putrid food, are of a feeble constitution, and more liable to zymotic disease than those fed on a fresh, healthy diet; while putrid drink is perhaps more injurious to health than putrid solid matter.

A very clear case has thus been made out against dirty water for cattle. The stomach of an ox, or of any of our domestic animals, is but too frequently presumed capable of consuming almost anything, or at least of disposing of it, without experiencing harm. A more fallacious doctrine can hardly be propagated. But even granting it were true, two of the three losses sustained by the disgusting practice of placing before cattle food either solid or liquid when in a certain state of decomposition have still to be borne. Of late years the fearful catalogue of zymotic diseases arising from sewage and other putrescent matter getting into wells, and the rivers from whence our large manufacturing towns are supplied with water, has occupied a very prominent place in medical journals, and in the columns of the press generally, and there cannot be a doubt but similar causes produce similar results amongst cattle; and, therefore, that many of the zymotic maladies now experienced in the live stock department of husbandry are greatly due to the consumption of improper food and drink.

The principle of purification is thus as sound in the one case as it is in the other, and the means now being used in precipitating and filtering are similar. To throw down matter held by the water in solution, lime is being used. Charcoal is employed as a filtering medium, and the water is exposed to the influence of the sun and atmosphere to produce softness.

Such means have been used from time immemorial in the purification of water, both for man and beast; and although far from being chemically perfect, they nevertheless, when properly used, render water comparatively pure in the vast majority of cases. In the metropolis a fine charcoal filter only is employed, and for general use this might probably be sufficient, if the charcoal is frequently changed, as farmers could readily do, by applying advantageously the dirty charcoal to the land as a manure.

It is rather an interesting feature in the march of improvement—one deserving of special notice—to witness a metropolitan dairyman filtering the water generally used by the bulk of the inhabitants, because not sufficiently pure for his milch cows! It has long been a fact observable to the writer that the most successful feeders, breeders, and dairymen were those who paid the most attention to cleanliness; and even the animals themselves exemplify in their own cleanliness and thriving condition a very forcible illustration of the same principle. But when the cows of the metropolis are ahead of the inhabitants generally, as to the purity of their water, it certainly affords proof practical that the schoolmaster is abroad on sanitary affairs.

There are now patent filters for cattle in the market, but any farmer can make as good a one for himself as any we have seen. Portable ones may be made to travel from field to field in summer, for filling troughs with pure filtered water. Sometimes the filtering apparatus is placed between the pump and the water to be filtered, so that in pumping the water is drawn upwards through the charcoal. In other cases the water percolates downwards through the charcoal. Tanks and wells in our fields, instead of the present dirty ponds, and the filtration of water into these, involve a vast amount of mechanical detail, and also no little chemistry; but into questions of this kind we do not propose to enter at present, as almost every case requires special data for itself.

We now come to the *finale*—"Will it pay?" And to this interrogatory an affirmative answer must without doubt be given. The question, it will have been seen, is one of economy under three separate heads, and in each of these there will be a balance in favour of pure water more than

sufficient to cover the extra expense of purification. In other words, (1) a saving will be effected in the economy, or rather perhaps we should say the chemistry, of food, which will do more than cover this extra expense—(2) the reduction in the daily waste upon the body—i. e. the increase in the quantity of butcher-meat and milk—with an improved state of health, will likewise do more than cover the extra outlay—and (3) the improvement of the breed and quality of butcher-meat and milk will also do more than pay for the extra expense of purification. Moreover, where the subject is practically taken up, the pollution of rain, river, and spring water is greatly prevented, so that the work of purification is in a corresponding manner reduced thereby. The present sanitary movements in all our large towns have for their ultimate object the purification of our rivers and streams, now everywhere polluted with sewage, so that both these movements are now being made to include alike man and beast. X. Y. Z.

THE CULTIVATION OF MADDER.

It is discouraging to find that with the progress of our manufacturing industries—for the textile ones, and even some others—we are becoming largely, and in some instances exclusively, dependent on foreign countries. The greatest part of our cotton still comes from the United States. For wool we are less dependent, as we have our own southern colonies. For flax and silk we are largely indebted to foreigners; and in like manner we draw from foreign sources a great portion of our supplies of dyes and tanning materials. The dyes are of great importance, and offer large returns to the producer. Our Indian possessions furnish us with supplies of indigo; but there is a wide field for enterprise in the supply of colouring substances in many of our colonies. As an instance we may take the article of madder, for which there is now an immense demand. Why should we pay a million annually for this dye root to the Continent, when it might be produced so easily in many of our colonies? The culture at present centres chiefly in some of the departments of France, in southern Europe, Turkey, Syria, the two Sicilies, and Spain. Although it is a crop demanding care and outlay, yet the return is considerable, the average price ranging at about £2 5s. or more the cwt., while the yield is fully one ton per acre. There is a large demand, not only in Russia, Austria, and other European countries for madder, but the United States pays annually about £200,000 for this article. Hence attention has lately been prominently directed by the American government to the importance of extending the culture of the root there, many of the States being well suited to its production, both as regards soil and climate.

Madder has occasionally been cultivated in England, but without any very great success or beneficial results, owing to the unsuitability of the climate and the high price of land. Hence, a crop which takes three or four years to mature and harvest will scarcely pay. That, however, there are many of our colonies in which it might be raised to great advantage, we fully believe,

especially in Australia and Southern Africa; and with this view we desire to draw attention to the subject, and to collect and arrange a few instructive hints, so that some of the hundreds of thousands of pounds now spent on the Continent may go into the pockets of our countrymen in the Colonies, rather than into those of the foreigner.

In France the culture of madder is chiefly carried on in the department of Vaucluse, of which the town of Avignon is the centre. The soil is peculiarly favourable to the development of the root, being calcareous, light, and rich. A clayey soil will produce good madder, but its working is difficult. A soil, therefore, in which sand enough prevails with the clay to render it friable, is that which is to be chosen. It must be deeply cultivated, as the roots, which constitute the value of the crop, run down very far. The ground requires to be well manured. The rich polders or re-deemed meadows, both in Holland and Flanders, are favourite spots for the cultivation of this crop. The fine alluvial "bottoms" produced by the sea abound in soda and siliceous sand. Such differences in the constituents of the soil exercise a great influence on the production of the red colouring matter of this root. Hence, Zealand madder contains more of the yellow and less of the red colouring matter than the better sorts of the French product. In Vaucluse madder is raised from seed sown in spring; in Zealand it is propagated from shoots or offsets planted in May.

We need not follow in detail the culture, which merely requires loosening the soil, keeping clear from weeds, and feeding off the herbage. The roots of the older plants have much more value than those which are younger. The madder which is not taken up until the third year produces much more and of a better quality than that which is gathered in the second; but the increased expense and rent of the land are seldom compensated by the increased product.

The harvesting appears to be a work of much labour.

The roots, which in a well-prepared soil extend to a great depth, must be taken up with care, and without injury. Sometimes a plough is passed along the line, and then the work is finished by the spade, but generally it is wholly done by the spade; the intervals between the beds being dug out to the depth of two feet, and the plants carefully displaced and taken out by means of forks or narrow hoes. The excellent condition in which, under such cultivation, the land is left for other crops, is a considerable indemnity for the expense and trouble bestowed upon the crop of madder. The plants lie upon the ground three or four days, in small heaps, in order to dry, and, in case of rain, are covered with straw.

In the preparation of madder for market, there are three modes of drying the roots—by the sun, in the shade, and with stoves. When dried by the sun there is a considerable loss in weight and in the quality of the roots; it is, therefore, preferable to dry them in the shade, exposed to a current of air, although the operation may be more promptly effected with a stove; but by the latter process they lose seven-eighths of their weight.

When the roots are sufficiently dried, they are reduced to a powder, first by placing them on close osier hurdles, where they are lightly beaten with flails, which separates the earth as well as the epidermis and radicles, the smallest of which are used for inferior dyeing. The large roots, which are good and of a red colour, are then ground and cleaned once more, and reduced to a fine powder by passing through a bruising-mill; then packed in barrels or casks for market or use.

In Holland the best quality, which is known under the name of "krap," anglicised to crop, is prepared only from the heart of the root, that has been previously deprived of the other parts of less value: there is considerable difference also between these parts of the root, in the loss of weight, which they respectively sustain by drying. When the heart and surrounding layers are separately treated, the amount of this loss is, in the case of the former, 57 per cent., but in that of the latter 76 per cent. The total loss of weight in drying the raw root as it comes from the ground is from 72 to 80 per cent., or on an average 75 per cent. After a preliminary drying, which takes place in the southern parts of France in the open air, the roots before being ground, are dried a second time, in kilns or stoves, and undergo further loss, say 7 or 8 per cent. But such a loss, according to experience, is at least from 10 to 15 per cent. of the light red coloured, and from 20 to 25 per cent. of the red roots; the latter, which are in the greatest demand, being on that account not dried quite so well by the cultivators. We have no data as to the quantity of land under culture with madder in France, but looking at the local consumption, and large export, it must be considerable.

Madder produces to France an annual sum of one million sterling. Its yield varies from £40 to £50 per acre, and the expenses upon its proper culture should not exceed one-half that amount. The colouists would find it to their interest to turn their attention

to such products as this, for which there is an extensive demand, instead of confining themselves exclusively to the commoner and bulkier products, which they export at a much less profit, and which, when once the market is fully supplied, may fall to a price at which they cannot afford to sell.

The progressive increase in British consumption of madder is shown by the following return of imports, both of the root and ground madder. In 1839 it was 179,431 cwt.; in 1849, 254,722 cwt.; and in 1859, 355,552 cwt. To which is also to be added now about 42,000 cwt. of garancino, a concentrated preparation of the dye, obtained by sulphuric acid. On the Continent the root is called "alizari," and the powdered root "garauce."

THE LAW OF MASTER AND SERVANT.

By C. MANLEY SMITH, Esq., Barrister-at-Law.

II, Sweet, Chancery-lane.

Special treatises are now the order of the day; and, in fact, there is hardly a phase of life, the law relating to which has not been seized on and epitomised, either by some

"Serjeante at law, wary and wise,
Who often had been at the Parvise,"

or a humbler "gentleman of the long robe." Horses, The Farm, and Game have all found their legal exponents of late years; and when we consider how many and conflicting are the disputes which arise about servants in the country, we hail the present work as a very fitting adjunct to a landlord's, steward's, or farmer's library. It is but a few years since Mr. Smith published his first edition; and the welcome which it received from the public and the profession, as well as the frequency of the cases arising in this branch of law, is best proved by the fact that the present edition is nearly twice the size of its elder brother. The work is most methodically arranged under eleven heads—to wit: The Parties to the Contract; The Contract; Duties of Servant to Master, and Rights and Remedies of Master, and vice versa; Liability of Master for Acts of Servant; Liability of Servant to third Persons for Acts done on behalf of Master; Servant's Character; Offences against Master; Jurisdiction of Justices, and Disputes between Masters and Servants; Combination amongst Masters and Workmen; and, lastly, Legacies to Servants. Under these heads may be found everything appertaining to that class, who are either the greatest comfort or the "greatest plague of life;" and a careful study of them, before giving servants a dismissal, may tend to save many a perplexing dilemma and weary trail to the County Court, as defendant, as well as heavy costs into the bargain. On no subject are masters so positive or so ignorant. The book is most carefully edited and arranged for reference, both as regards index and marginal notes, and written in a style which cannot perplex the veriest tyro.

THE LAW OF THE FARM: including the Agricultural Customs of England and Wales. By Henry Hall Dixon, Esq., barrister-at-law, of the Midland Circuit. London: V. and R. Stevens and Sons: 1859.—The simple fact that this book has quickly reached a second edition is a proof, not only that such a work was needed, but that the author has satisfactorily performed the duty with which he charged himself. He has materially altered, and, in our judgment, improved the general arrangement of the work; he has modified parts of it by the addition of cases decided since the issue of the first edition, and has had freer recourse to quotations of judgments from the bench, where they explained or illustrated the question under consideration. This is a work of especial value to country attorneys and landowners, to whose attention we therefore recommend it.—*Law Times.*

LONDON, OR CENTRAL FARMERS' CLUB.

The introducer of the subject at the Farmers' Club Meeting, chose for himself, according to his own interpretation, a somewhat difficult and delicate duty. In treating on the public and private trials of implements, Mr. Fisher Hobbs would make no direct reference to anything that was just now passing "elsewhere;" while Mr. Hobbs himself was in no way to be regarded either as a Field Steward or as an active Member of the Council of the Royal Agricultural Society. He was to be looked upon simply as one of the farmers, endeavouring to ascertain how they might make the system of testing agricultural machinery more efficient and reliable. A very well-considered paper was palpably toned down to this view of the case; although almost every point taken up, or amendment offered, went as plainly to the trials of "the Royal," and to the speaker's own experience of them. With a laudable desire not to offend nor to provoke any bitterness of feeling, the address was still by no means a tame nor unsuggestive one; and the implement-makers appeared inclined to take it as a very fair exposition of the question.

And with the implement-makers and Mr. Hobbs the matter almost entirely rested. It is true that some few Judges had forwarded certain recommendations, which were embodied in the opening essay; while of these Mr. Shackel spoke with some emphasis and effect. But the spirit of the debate was with Mr. Allen Ransome, Mr. James Howard, Mr. Crosskill, and Mr. Samuelson. Scarcely, indeed, had Mr. Hobbs sat him down, than the first-named of these manufacturers rose to follow him; and "the quarrel with the implement-makers" was at once on the carpet. Then it came out that the trials of the implements were not long enough—that the trials of the implements took up too much of the exhibitors' time—that prize implements, unlike Peter Pindar's razors, were *not* made to sell—that adjourned trials were the only proper tests now to be adopted—that adjourned trials were by far the most grievous mistakes of any—and "that after ten years' experience a farmer would find that a new implement had not made a difference—or a benefit—of five shillings a year to him!" In short, "there was nothing like leather." Mr. Crosskill, who had not been generally successful with the reaper at the adjourned trials, would have no more of them. Mr. Ransome would not object to such tests for new implements, although he might for those of established use, such perhaps as the plough, the steam-engine, and so on. Or, at any rate, let there not be *one* great first prize; but let six or seven men who were pretty "equal" be alike commended. Mr. James Howard, however, the now acknowledged author of the pamphlet against the prize system issued under the auspices of the Society of Agricultural Engineers, "agreed with nearly every word that Mr. Hobbs had uttered."

Or, if he doubted anything in the opening paper, it was the possibility of procuring Judges generally up to that ideal standard Mr. Hobbs had portrayed. Dismissing, then, the peculiar whims, or "hobbies," as Mr. Ransome calls them, of one or two recusants, this paper on the public and private trials of implements, has so far the rare merits of pleasing both parties. The farmers cheered it, and gave their thanks for it; and the implement-makers adopted it as the statement of what was required to make these trials—in accordance with the reading of the card—"more efficient."

The remedy is summed up in two words—*TIME* and *SEASON*. Let the judges have more time to conduct their investigations, and let these be only when the entry is in season—"so that reapers shall cut the corn when the corn is ripe, the plough go to work when the land is in a working condition, and the steam cultivator and thrashing machine when they are the daily requirements of the farm." There are many minor matters of detail that the report of the meeting will go to clear up. But these are the points, and the question now is what is next to become of them? Are the differences between two great interests—for into this the matter really resolves itself—to be settled, or rather to be still left unsettled, after just talking them over? Or, cannot something more be done? At the meeting Mr. Shackel "thought the best course under the circumstances was to form a committee in which the Society and implement makers could be represented, with a view to a proper settlement of the dispute. He would fearlessly assert there were gentlemen representing the Royal Agricultural Society, who knew no more of ploughing, reaping, or sowing than one of his cart-horses. In this case there should be practical men to meet practical men. Farmers and implement-makers should meet together in consultation." Mr. Shackel spoke as a farmer, and Mr. Samuelson, who followed him, of course as an implement-maker. The latter also "thought if, instead of gentlemen whose knowledge of the subject was very slight being appointed by the committee of the Royal Agricultural and other Societies to fix the conditions of the trials, the matter were entrusted to practical men who thoroughly understood what they ought to do, *there would be no difficulty in bringing about an agreement between the Society and those who competed for their prizes.*" This is a strong recommendation, backed as it is by both sides of the House, while we are happy to add that it has already been acted upon. The Implement Committee of the Royal Agricultural Society was thus constituted—Colonel Challoner (chairman); Lord Portman; The Right Hon. the Speaker; Hon. W. G. Cavendish, M.P.; Sir J. V. Shelley, Bart., M.P.; Sir Wm. Miles, Bart., M.P.; Charles Barnett; Humphrey Brandreth; H. B. Caldwell; B. T. Brandreth Gibbs; Anthony Hamond;

William Fisher Hobbs; C. Wren Hoskyns; H. S. Thompson, M.P.; and Lieut.-Col. Towneley. These may or may not be the gentlemen who know no more of ploughing or reaping than "Blackbird" or "Bowler." It is, however, remarkable that although three leading manufacturers of machinery sit at the Council table of the Society, the name of one of them was not to be found on the Implement Committee—the place of all others; it would have been imagined, where their aid and advice might have been of service. This omission was remedied at the Council Meeting on Wednesday following the Club discussion, when all three were added; and Messrs. Howard, Shuttleworth, and Exall called to act upon the Implement Committee. With them were as properly associated Mr. Amos, the civil engineer; and Professor Wilson, and Mr. Owen Wallis, both of whom have recently acted as Judges of Machinery. The last-named of these, it is gratifying to see, has just been elected on the Council. The first duty of this Implement Committee is to prepare the Prize Sheet for the Leeds Show. But they have a further duty before them. The three implement-makers who sit on this committee are all, at this moment, non-exhibitors; or, in other words, opposed to the system sanctioned by the Society. In their presence some explanation is surely imperative. Mr. Hobbs, too, is a member of the same committee, and might hand in his paper as something to go on. The public will never be content to let this dispute rest where it does. From either side alike are there calls for its adjustment.

It is curious to notice that the Official Report of the Proceedings of the Council does not say a word as to the addition of these new names to the Implement Committee—rather an important point, as we take it. A member of the Council who was present, and who forwards his name, designates it as "a meagre Report, that does not give half of what was done; and, beyond this, is mistaken on the facts that took place."

LONDON, OR CENTRAL FARMERS' CLUB.

THE PUBLIC AND PRIVATE TRIALS OF AGRICULTURAL IMPLEMENTS: CAN THEY BE MADE MORE EFFICIENT?

The business of the Club was re-opened on Monday, Nov. 5, when at the meeting of the committee Mr. SPENCER SKELTON was elected Chairman for the ensuing year. At the discussion which followed the dinner, Mr. L. A. COUSSMAKER, of Westwood, the present chairman, presided; and there were also present Mr. W. Bennett, Mr. H. Trehewy, Mr. T. Owen, Mr. W. Fisher Hobbs, Sir James Duke, Mr. J. Bradshaw, Mr. James Wood, Mr. John Thomas, Mr. W. Cheffins, Mr. E. Little, Mr. W. Gray, Mr. T. Congreve, Mr. E. Purser, Mr. Brickwell, Mr. Spencer Skelton, Mr. J. B. Spearing, Mr. J. A. Williams, Mr. Cressingham, Mr. Allen Ransome, Mr. James Howard, Mr. J. Shuttleworth, Mr. B. Samuelson, Mr. A. Crosskill, Mr. C. R. Ransome, Mr. H. Cameron, Mr. Amos, C.E., Mr. G. Shackel, Mr. T. F. Wilson, Mr. G. Wilsber, Mr. P. J. Page, Mr. H. Shotter, Mr. S. Sidney, Mr. P. H. Frere, Mr. J. Goodwin, Mr. E. B. Waite, Mr. J. Parkinson, jun. ;

Mr. W. Batcher, Mr. Trehonnais, Mr. Hooker, Mr. Rix, &c., &c.

The subject for consideration standing in the name of Mr. Fisher Hobbs, of Boxted, Essex, was thus put upon the card: "The Public and Private Trials of Agricultural Implements: Can they be made more efficient?"

The CHAIRMAN in opening the proceedings said: "After the very inclement weather which they had recently experienced he was glad to see so many farmers present to prove that agriculturists were not entirely washed away with their crops—(laughter). Misfortunes sometimes read them a lesson, and they had certainly that year proved to them the value of agricultural machinery (Hear, hear). Happy was the man who had recently possessed good, simple agricultural implements, enabling him to take advantage of the few fine days which had been seen at one or two intervals in the course of the year. Such a man had a great advantage over his neighbours who depended entirely upon manual labour. That the quantity of agricultural implements at the command of farmers was yearly increasing no one who had been in the habit of attending the meetings of the Royal Agricultural Society, the Smithfield Club, and other agricultural societies, could for a moment doubt: in fact, they covered acres of ground. Among the vast number of implements exhibited, many were doubtless very valuable: others were marked by great cleverness, but owing to this very cleverness some were of scarcely any use to agriculturists, while others were of no use at all (Hear, hear). The value of an implement which was destined for the cultivation of the land, or for the ingathering of the crops, must depend to a great extent on its simplicity: in his opinion such a machine could not be too simple. In the first place, where there was simplicity the implement would probably not be too expensive; in the second place, it would not be as liable as it otherwise must be to get out of order; while if it did require repair, a village blacksmith with a head on his shoulders could speedily put it in proper condition, and the farmer would thus be saved the expense of sending it back to the implement maker, and the loss of very valuable time at a critical season. Neither must they forget in what kind of hands such implements had to be placed. If an implement were not simple, those who had to attend to it, not understanding its construction, would knock it about and inflict injury. What farmers wanted was a simple, strong, useful implement, and that was the sort of implement which would be found to answer best. Now, at most of the agricultural shows held of late years, certain days had, as they were all aware, been set apart for the trial of the implements exhibited. That was a very great boon to the farmer, who went there partly to see whether particular implements were likely to answer his purposes. Moreover, it often happened that a spirited farmer bought an implement which had been a good deal talked about, and, having had it brought to his farm, invited his neighbours to come and see it in operation, in order that they might be able to judge for themselves whether it was a good implement or not. Such, then, were the public and private trials of implements. They were advantageous alike to the agriculturist and to the machine maker, showing as they did what was most likely to be useful, and the discussion of that evening would turn on the question whether such trials could be made more efficient than they had been hitherto. The subject would be introduced by Mr. Fisher Hobbs—a gentleman who was well known to agriculturists generally; and he thought they would all agree with him, that it could not be in better hands (cheers).

MR. FISHER HOBBS SAID: I am inclined to think that these discussion meetings of ours by no means depend for their success or utility on the introducer of the subject; but, on the contrary, that our meetings really act up to what they are called, and that the discussion itself is frequently the most interesting part of the evening's proceedings. Fortunately for myself, I feel that such will certainly be the case on the present occasion. My chief duty, as I take it, will be really confined to introducing the question, enumerating such as I consider to be the chief points we should dwell on, and then leaving these to the practical analysis of the members of the Club; whether they be the cultivators of the soil, the judges at our great meetings, or that influential body the manufacturers and exhibitors of implements, all of which classes, I am happy to see, are represented here to-night. To show that I have already acted upon this view of the case, I will at once read to you a circular letter which I have addressed to the Judges who have taken office during the last three years, to many of the implement makers who have exhibited during the same period, as well as to a number of other gentlemen whose opinions and advice I knew might conduce to a satisfactory development of this question. There are many, no doubt, I have omitted to send to, while from several of those I have addressed I have received some valuable suggestions; and I hope that many of those who have not answered my letter have come here to-night prepared to speak to the subject:

London, 10th October, 1860.

DEAR SIR,—At the request of the Committee I have consented to open a discussion here at the next monthly meeting of the Club, on Monday, November 5th, on "The Public and Private Trials of Agricultural Implements—can they be made more efficient?"

I shall engage to do this as one practical man addressing his fellow-members of the Club, with a view to ascertain how far the trials of machinery have hitherto been compatible with ordinary farm work; or, how such tests may be made more reliable and trustworthy. Knowing the interest you have long taken in this subject, and the experience you have had of our more modern agricultural machinery, I write to request that you will favour me with your opinion as to how we should proceed.

The chief points, as it strikes me, are: The duration of the trials: should more time be allowed, to obtain a satisfactory result? The nature of the ground, and the season of the year best adapted for the trials of different kinds of machinery; The duties of the judges, and the necessity for some earlier report from them; The comparative merits of public and private trials, and the advantages that might follow from extending these, or having them more frequently adjourned to seasonable periods.

There are other branches of the subject which may have had your attention, and that I trust you will also advise me upon. As, however, the time is drawing near, I shall be obliged by any reply you may favour me with being forwarded at your earliest convenience.

I am, dear sir, yours faithfully,
W. FISHER HOBBS.

I wish to mention here that this subject has long occupied my attention, and if you will turn to my "Report of the Trials of the Implements at Carlisle, in 1855," as given in the 16th volume of the *Journal of the Royal Agricultural Society of England*, you will find that I then insisted on the trials of machinery and implements being more thoroughly adapted to the ordinary work of the farm. It is precisely with this view that I now entertain the question, and it was in this light that I recommended it to the attention of the Committee of this Club, in December last, considering it to be essentially one of those topics that might be discussed with much advantage by those who, after all, are the most interested in it—the farmers themselves; but I had then no idea of undertaking the duty myself, and it was not until it was most strongly pressed by the Committee that I consented, at the last moment, to fill up the gap. The question may perhaps by some be looked upon as rather a delicate one, although I am not prepared to see it in that light. You must again understand that it is

not as one of the Council of the Royal Agricultural Society of England, or as an old steward of implements at several of its country meetings, but simply as a member of this club that I am now addressing you. The subject on the card, as you will see, resolves itself into two divisions—the public and private trials of implements; and it may at the first glance appear somewhat difficult to separate them; but I may as well explain at once that the private trials are those necessarily confined to the inspection and examination of the machines by the judges and engineers; and the public trials are intended more to illustrate the kind of work an implement is equal to have after the judges, in some degree formed their opinion on its merits. I need not say how strongly I insist upon the necessity of these trials under the inspection of competent judges; for you must remember that the purchasers are not always the best judges of the implements they should select; inveterate habit and strong custom will frequently induce a farmer to persevere with implements of an inferior character, simply because such are and have been long in use in his own locality; then, the influence and representations of neighbouring manufacturers or active agents are very great, and as often lead to the agriculturist adopting a certain description of implement, not so much of his own choice or for his own advantage, as from the self-interested advice of those who are anxious to secure him as a customer. Even the public exhibition of implements would lose much of their effect, but for those reliable and authoritative tests; for here too the farmer is equally open to the cupidity of the exhibitor or his "showman," who may have more "knack" in pushing a sale than in producing a good implement; hence, it becomes palpably necessary that a rigid examination should be made by impartial and able men, who should have every available opportunity and ample time to decide which is the best amongst the implements offered to the notice of the public: in fact, as I said in my report of the Carlisle Meeting, "the agricultural mind is scarcely yet in a position to discriminate between the claims of competing machinery, or to form a satisfactory judgment on its practical value for farm purposes." Of the different kinds of machinery, that adapted to field-work may be witnessed with less inconvenience by the general body of spectators; while there are certain minutiae and delicate tests in fixed machinery and some in-door implements, which it would be almost impossible to try in a satisfactory manner, were the public permitted to be present at the time the judges are engaged in their duties. However, whether public or private, the great point comes very much to the same issue: "Can these trials be made more efficient?" in other words, can we afford the judges more opportunity for their inspection, and of coming to a conclusion, occasionally, perhaps more satisfactory to themselves? Can we give the exhibitor more time to develop a really valuable implement, one that shall not merely aim at the speed of a "racer," or get through, by some "clever jockeyship," a few minutes' or at the most a few hours' work; when, without such "nice handling, and if once committed to the care of ever so intelligent a farm labourer, it would, most probably, "break down" in a week? One of the chief points then, as I have said in my circular letter, is "the duration of the trials:" should more time be allowed, to obtain a satisfactory result? I may here quote some of the evidence with which I have been favoured on this branch of the subject.

A. remarks that "the trials of many implements and machines are carried on at a time of the year when such

- practices may be said to be out of season." Again he says, "But whether the machine be a little or a great one, it ought never to be stamped with the approval of an agricultural society, without first being submitted to so thorough and practical a test that no doubt can exist of its being a useful farmer's implement."
- B. says: "You plough, and the land is utterly unfit. As a farmer you would not plough under such circumstances: it would be lost time and madness to do it. You reap by the same rule, with corn as green as grass, and totally unfit for operation."
- C.: "The trials of field implements should not take place if the soil is not in a fit state for them. How can ploughs and harrows fairly work upon land baked as hard as a stone? Or how can clodcrushers and rollers fairly work in soft wet land? Therefore these trials should be postponed, if the soil is unsuitable and the work is unbusiness-like. Reaping machines should be tested on ripe corn only; mowing-machines before the grass is dead and tough; hay-tedding machines, immediately the grass is mown; hay-rakes, as soon as the hay can be winnowed. Steam cultivation should be specially tested in all its variations, on different soils and under all the varied conditions of the land."
- E. states, "I think a much longer trial should be given to the more complex machines; as steam-ploughs, combined thrashing-machines, reapers and mowers, than is the present practice. The simpler machinery, as cake-crushers, bruisers, chaff-cutters, &c., have not so many chances of disturbance in their arrangement, and therefore need less-prolonged trials; these, however, are generally knocked off far too quickly. In all cases I would test the different machines at the season for which, in practice, they are intended to work."
- F.: in referring to a public trial of ploughs in July, says: "The land was baked as if in an oven; the day was broiling hot, and the men and horses irritable from excitement and the heavy nature of the work; never was patience more required and given, to decide the contest."
- H. says: "The trials of agricultural machinery are much too short, and in all cases the judges should have really a private trial, so as to be perfectly satisfied with the merits of each machine; it is impossible in the short space of time of five or ten minutes to arrive at a satisfactory decision. When the judges have decided, then give the public every opportunity of forming their own opinion. In the second place, the truest mode of testing each machine individually, would be the working it at the season of the year on the crop for which it is intended."
- J.: "I think that more time should be given to each implement than is generally the case, particularly in reference to mills, cake-breakers, &c. Care should be taken as to durability: I have known a prize cake-crusher purchased, and all the small teeth smashed at the first trial with hard cake, when attached by a strap to an engine."
- M.: "Time should be given at any meeting, to enable judges to make such experiments as fully to qualify them in supporting their decisions."
- N.: "The public trials of implements at our agricultural shows, and especially at those of the Royal Agricultural Society, should be so conducted as to give the judges appointed to decide on the relative merits of the implements which are brought under their notice the fullest opportunities of coming to correct conclusions: otherwise, the public can have no proper reliance on their decisions. The trials of the steam ploughs and cultivators take place under very exceptional conditions. The generally favourable nature of the land selected, and the small amount of it, can give no real test of their capabilities on the generality of farms. The actual cost, and quality of the work, on soils of a mixed and variable character; their liability to derangement, by breakage and other casualties; their power of overcoming the difficulties incident to fields of great inequality of soil and surface, and also irregularity of boundary; their capability also of completely ploughing or grubbing the whole of fields so circumstanced, and finishing them in a workmanlike

manner—these are all points upon which the judges should have the fullest opportunities of coming to correct conclusions, and are very essential conditions on which their decisions should be based. With regard to thrashing and dressing machines, I have seen many occasions on which the shortness of the trials has been very conducive to the credit which some of them have gained, and which a trial of proper duration would have altogether negated. They start with their riddles, screens, shakers, &c., all perfectly clean, and are just coming to that point when they are about to choke and waste the corn, when the trial ends. With regard also to the reaping machines, the time of trial renders it impossible to obtain fairly ripened corn. The small quantity of unripe rye assigned to each machine renders the trials little better than a farce."

The next point is, "The nature of the ground and the season of the year best adapted to the different kinds of machinery;" and with this I may associate the policy of having such trials more frequently adjourned to seasonable periods. There is no doubt that the consideration of this feature must be attended with considerable difficulty, which would be especially felt by agriculturists, who, however much they may be inclined to give up two or three days for an object, will not be very ready to repeat the sacrifice. Now, if we have several meetings, at several seasons of the year, according to the character of the machinery to be tested, it would be not only next to impossible, *even if it desirable*, to collect together a large attendance, but the difficulty of obtaining efficient judges would be further increased, and this is already very great. Under the triennial, or, as it is now, the quadrennial system, it is so arranged that certain classes of implements only come on for trial in the same year, and so far the difficulty may be said to be solved; but, is the month of July the best time for testing the merits of some of our field implements? If not, it would seem at the first blush that two meetings would be necessary—one for the show of stock and the exhibition of implements at the usual time, and another for the trials of those implements whose *turn* is on for that year. I fear it would be very impolitic to attempt to organize two such distinct meetings, and hitherto the difficulty has been overcome by the adoption of *adjourned trials*; that is, by deferring the adjudication of certain implements until the season of the year when they come properly into use. This has been attempted with some success in the case of the reaping machines; and I do not see why such an example might not be adopted with some other field implements which might then be put upon the land at a time when it is more fit for their use, and when the farmer himself could more thoroughly judge of them at work. The third item in my category is "The duties of the judges, and the necessity of some *earlier* report from them." In touching upon this subject, let me say, I believe that the duties of the judges of implements have been very ably and conscientiously performed. They are, too, entirely "labours of love," and are frequently pursued under difficulties, annoyances, and an amount of hard work, which none but those engaged upon such occasions can have any due conception of. I believe, moreover, that the intelligence and fitness of the judge for his office have generally advanced as the machinery which he inspects has itself improved. No man, in short, with his wits about him, serves an apprenticeship with more advantage than a judge, or, I may add, a steward of the implement department. The actual duties of a judge should be self-evident. In the first place, he must be a man of unimpeachable integrity; he must likewise have great practical acquaintance with the class of implements he under-

takes to adjudicate upon; he must understand something of their mechanical construction; he must be able to appreciate the wear and tear belonging to them, and to make a due estimate of their value as working adjuncts of the farm. Even, beyond this, he should have that knowledge of the world which will enable him to allow for the "nice arrangement" and "skilled-handling" of the exhibitor and his assistants, and so to recommend to the farmers' attention only those inventions which will carry with them further proof when employed every day upon the farm, as well as on high days and holidays at great agricultural exhibitions. There are many gentlemen thus qualified, and you must allow me to say that I have had many opportunities of witnessing the earnestness and devotion with which they will begin their work, and the pluck with which they will finish it, after several days of much labour and fatigue. It is not perhaps in human nature to be perfect, as it certainly is not for an unsuccessful man always to be satisfied; but I believe that the more we bear of the judges the more we shall appreciate their services, and that when their reports are published at a more early period much of the idle talk we now sometimes hear will be corrected. As to implements not always acting up to that high character obtained for them at the trials, we must ever bear in mind that any such disappointment may arise from no fault or mistake on the part of the judges, but simply from the successful exhibitor having sent a really good implement to the show-yard, and manufactured an *inferior* one afterwards. It is right, I should say, that many of the exhibitors are very desirous to have *longer* trials for their "entries," but it is frequently attributable to their own negligence that so short a period is occupied in the examination of their own inventions; and it often happens that the judges themselves, in addition to their other duties, have to assist in putting an implement in working order before they can proceed. Then a wheel, a band, a strap, a screw, or a wedge is not uncommonly found to have been left behind, or some more palpable excuse is offered for not proceeding in due rotation—the delay being as often the result of clever "jockeyship" as of mere chance or accident. Let me offer to your notice the miseries that a judge of many years' standing has experienced in this way. He says: "I could complain of the carelessness and inattention of exhibitors who continually bring untried and unprepared implements for trial. No implement ought to be brought to the test of chosen judges until it has undergone repeated trials in preparation; our most successful exhibitors do not thus commit themselves." Again he says: "Now, supposing exhibitors came prepared in perfect order for trial, then a long ordeal is not at all necessary; but the time of the judges is often most unfairly drawn upon by the various adjustments required, and thus the trials are further curtailed; this ought not to be, and the first thing I would suggest is that implements *improperly* prepared for trial should be at once thrown out." You will gather from all I have advanced and quoted that the efficiency of the trials of agricultural implements depends in a great degree upon a sufficient length of time being allowed for the due examination and thorough testing of the many articles brought into competition; this is, as I consider, the main point of the whole question before us to-night. The system adopted after the Carlisle meeting, of classifying the several varieties of machinery, and only bringing them on for trials at longer intervals, *should*, of course, directly tend to more time being spent in investigating their merits. The same principle should also facilitate the adjournment of certain trials to

more fitting seasons of the year; so that reapers should cut the corn when it is ripe, the plough go to work when the land is in a working condition, and the steam cultivator and thrashing machine when they are the daily requirements of the farm. It is, I think I may say, by no means improbable but that this practice will come more and more into use, as many gentlemen whose judgment is generally regarded with respect have a growing opinion in favour of *adjourned trials*, and are making efforts in the right direction for that purpose. It is not my intention to conclude with any formal resolution, as I find that such a custom has grown out of use at the club's discussions; but I would suggest that one of the chief topics the meeting should turn its attention to might be *the suggestion of adjourned trials, and how far they can be carried out, with due consideration for the convenience of the judges, the exhibitors, and the public.* I have no doubt in my own mind that such a system of reasonable testing of certain implements would be much more reliable, and that the awards would be depended on by the agricultural world with more confidence and certainty. I must repeat that I maintain the necessity for an annual exhibition and trial of our agricultural implements; that I uphold the energy and abilities of the judges; and that I appreciate the ingenuity and spirit with which the exhibitors have persevered, and so successfully advanced the mechanics of agriculture (cheers).

Mons. TRÉHONNAIS hoped he should be excused for saying a few words on a subject with which he had, he must confess, very little practical acquaintance. He thought they ought all to feel very much obliged to Mr. Hobbs for introducing a question of so much importance. As regarded the breach which occurred last July, at Canterbury, between some of the principal exhibitors and the Royal Agricultural Society, all the friends of agriculture and of agricultural progress must have felt that it was highly desirable that this dispute, or quarrel, whatever it might be termed, should be adjusted, and he thought the best way to arrive at an adjustment was through the practical remarks of practical men, who were themselves deeply interested in the question at issue (Hear, hear). It was obvious that a show of implements was a very different thing from a trial of implements (Hear, hear). At shows a great variety of things were inspected, and it did not require much ingenuity or knowledge to admire the very queer things which were arranged under the sheds of the Royal Agricultural Society. But it was by a trial that the value of an implement had to be ascertained; and the utility of a trial depended, as Mr. Hobbs had stated, not merely on the knowledge and experience of the judges, but also on the opportunities which they had of testing the merits of the implement submitted to them. Therefore he thought the question lay in a nutshell, so far at least as the implement makers were concerned. Such persons having explained that sufficient time had not been allowed for the testing of their implements, the question was whether that evil could be remedied in future. He well recollected that at the Chelmsford Meeting the trial of the reaping machines was deferred, and many of them afterwards had the pleasure of seeing them tested in the vicinity of Boxted Lodge, near Colchester, through the hospitable invitation of Mr. Hobbs; while on the same occasion he for one saw the principle of steam cultivation carried out and proved to be practicable.

MR. ALLAN RANSOME (Ipswich) should not have risen so early but for the remarks made by the last speaker. That gentleman had spoken of the increased necessity of discussing the subject on account of the breach, as he termed it; afterwards magnifying the breach into a quarrel between some of the agricultural implement makers and the Royal

Agricultural Society. Now, he had risen to deny, on behalf of the implement makers with whom he was in any way associated, any breach or quarrel on their part, or that any animus against the Society actuated them in the course they had pursued. What led to the difference between the implement makers and the judges and stewards of the Society was a desire on the part of the former to diminish an evil which they believed to be growing. The remarks of Mr. Hobbs, in opening the discussion that evening, tended to show that the manner in which the trials had been conducted hitherto was not likely to lead to the accomplishment of the great object in view, namely, the informing the agricultural public of this country as to the best kind of machines for their purposes. Mr. Hobbs had shown that, from the limited nature of the opportunities of testing, the shortness of the time in which the judges had to make their award, the unsuitable condition of the land, from one cause or another, the result was that the awards were generally not such as the agricultural community could rely upon. On this point he could speak from experience. For several years his firm gained first prizes in almost every class in which they exhibited; and he had often asserted, and would now repeat, that for many implements for which they had a prize they ought not to have had one (laughter); while for many of those which, he believed, deserved a prize, they had none (renewed laughter). He had had very painful experience that the agricultural mind had been wrongly informed by the judges with regard to the merits of agricultural implements. He had known the time when his firm sent out numerous implements of one class, the invention of a practical farmer which had a prize in its favour, almost every one of which they accepted back, returning the price to the purchasers rather than leave in their hands an instrument which would have been a disgrace to them, and a source of annoyance to the possessor (Hear, hear). He agreed with Mr. Hobbs, as probably did everyone present, whether he were an implement maker or an implement user, that it was highly desirable that opportunities should be afforded of fully testing the merits of the machines which were offered to the agricultural public as a means of improving their cultivation. But he denied that the course by which it was attempted to attain that object at present was anything like efficient. The amount of time given to the work of testing was far too small for the purpose of ascertaining whether a particular machine was efficient or not. The breaking or throwing-off of a strap, or the breaking of a cog-wheel, was an accident far more likely to happen amid the excitement of a very short trial than under an opposite state of things, and on such a mere accident was a good implement frequently condemned. As regarded the suggested extension of the time, however, for the trial of particular implements—the fixing of the ordeal for the season when they were most likely to be required—was undoubtedly necessary. No trial could be perfect without that. But then the question arose how this object was to be attained. It could hardly be attained without very great loss of time to the implement maker, to whom time was money (Hear, hear). It was at an immense cost to a manufacturer that a week's absence of himself and his manager could be abstracted at any period of the year; but on the other hand, that was an infinitely less evil than that of submitting implements which they knew were excellent types to the risks which attended trials conducted as at present. The gaining a prize was, under present circumstances, quite a lottery, subject to many unforeseen incidents which might affect the judgment formed as to its value, and manufac-

urers could not afford to risk their reputation upon that which the breaking of a strap might turn into a condemnation. The question, then, resolved itself into how much time implement makers could afford to give to the exhibitions of their machines. Now, it appeared to him that the trials of the Royal Agricultural Society were unnecessarily numerous, and spread over much too wide a surface. Days and weeks year after year had been expended on trials of ploughs, and now, after ten years neck-and-neck competition between the principal rival prize winners in this instrument, would any farmer tell him if an advantage to the extent of 5s. per annum could be obtained by the use of either one of these over the other? Where then lies the advantage of continuing to occupy further time in this class of trade? (Hear, hear). As regarded scarifiers, not long ago there was great competition and much novelty in this class of invention, and it was very desirable that there should be a close investigation into their relative merits at the meeting of the Royal Agricultural Society. But it was evident that no one particular week was sufficient to determine whether or not any particular implement would be a good one all the year round. That time was now passed away, and there were at present many scarifiers of almost equal merit. To come to the reaping machine, in that case the different ideas of a number of men had produced a considerable number of implements, and in this case careful trials and tests were necessary. It might be that the time at which a trial took place was more favourable to one class of implements than to another; it might happen that in one year one implement would get the prize, and that in the next year different circumstances would lead to a different award; and thus, there being two implements of equal value, one being tried under one kind of trial would give the stamp of merit to one, and another to the other. Hence the necessity for fuller and more satisfactory trials, in order that the award might be of any value to farmers, by showing them what kind of implement was most satisfactory for their every day purpose (Hear.) The same remark applied in a great degree to steam-ploughs; it applied also to thrashing-machines, in consequence of the introduction of steam having rendered such implements available for more varied operations than the old thrashing-machines were adapted for. A very different system of trials was needed to prove philosophically and mechanically to show what machines were most fitted for the various purposes for which they were designed. He would say, then, if the time was too short for the testing of so many of the implements exhibited, why not take such of them as were familiar to general use out of the category of the implements to be tried, contenting ourselves with such information as every body possessed respecting them? That would be far preferable to forming hasty conclusions for want of time with regard to difficult, complicated, and, as perhaps could ultimately be seen, valuable implements. One word on a point on which it might be thought that he was riding a hobby of his. He was firmly convinced that the benefits of competition at shows could not be secured so long as one prize crowned the whole. When six or seven men, all possessing about the same amount of mechanical knowledge and ability, had each spent hundreds of pounds in endeavouring to present a good implement, when each had produced what he thought was the best and what might in fact be the best under particular circumstances, the fact that if they competed for a prize, one of them would be sent up to the seventh heaven of glorification, while all the others would be nowhere, would naturally disincline

them to exhibit at all. If they were wise they would refrain from entering into such a competition. Again, if the difficulties which presented themselves in the way of engineering trials were to be surmounted, there must be a clear detail of the points on which the competition was to depend, and upon which the award of the judges would be founded (Hear, hear). No man would send a racehorse to the field unless he knew whether he was to race over turf, or to cross the country; and, in like manner agricultural implement-makers must be informed beforehand what was desired by those who were to sit in judgment on their productions. Without this they would not dare to incur the risk of failure. The question was, he believed, much too difficult to be decided at that meeting. They (the agricultural implement-makers) admitted that trials were desirable, and that plenty of time should be given to them, in order to make the awards perfect; but they thought that so long as prizes were part and parcel of the stimulus of competition, great care should be taken that it should be wholesomely stimulated (Hear, hear). When persons had applied to his firm for an implement, they had often said in effect, "If you want a racing engine to make a great show under skilled manipulation buy the prize machine," but "If you want an implement that will do a day's work regularly, if you want a good machine, or a good engine, don't take the one that has got a prize" (laughter). His desire in making these remarks was to show that whatever they might have sought, whatever they might be seeking, or whatever they might hereafter seek, they had *not* already attained (Hear, hear). He agreed, therefore, with Mr. Hobbs that it was desirable that this question should be fully, carefully, and thoroughly sifted; and he felt perfectly certain that upon its being well sifted and brought to such position as would tend to show the results of a trial were not those of chance, there would be found on the part of the implement-makers no hesitation, and no backwardness in rendering all the assistance in their power (cheers).

Mr. JAMES HOWARD (Bedford) said, in considering the question so ably introduced by Mr. Hobbs, it was, he thought, but fair to assume that the great object of the Royal Agricultural Society, and other similar societies, in instituting trials of implements, was to guide the farmers of this country in the selection of instruments which they might use with advantage (Hear, hear). He believed it might also be conceded that that object had been, to some extent, secured. But as times changed circumstances changed, and what was easy enough in the early history of the societies to which he referred had become difficult as time and agricultural improvements had advanced. At the first show of the Royal Agricultural Society any intelligent farmer walking round the different sheds was able to pick out the best implement of its class; but they would all agree with him that one result of the rapid strides of engineering skill, as applied to agriculture, was that the difficulty of choosing was very much increased (Hear, hear). Not only were the implements marked by superior excellence, but a much greater number and variety were exhibited from year to year. He was very much pleased that Mr. Hobbs had taken the view that he had done of the trials; and he agreed with him in almost every word he had uttered. It was no new thing for implement-makers to complain that the trials of the Royal Agricultural and other societies were of too short duration to test the merits of their machines. Nor were these complaints confined to the unsuccessful candidates; and, paradoxical as it might seem, he thought the loudest complaints had proceeded from the successful candidates.

(Laughter.) The successful candidates, as a rule, understood their business better than the unsuccessful, and therefore their opinions were the more valuable in reference to a question like this. Mr. Hobbs having raised the question whether trials might be improved, he must say, and he thought all present would agree with him, they might be improved very greatly. He believed the proper remedy for the present state of things was to have deferred trials. (Hear, hear). Such trials were, in his judgment, absolutely necessary to accomplish the object in view. They all knew that although the Royal Agricultural and other societies had partially succeeded in the object they had in view, they had also committed a great many mistakes. (Hear, hear.) Everyone who had bought many prize implements must know that such was the case; every implement maker, on looking back at the awards made at various periods, could point to numerous mistakes on the part of the judges. One fact was worth a dozen general remarks. He remembered the deferred trial which took place at Mr. Hobbs's of the reaping machines. Although that trial was an extended one, deferred from the Chelmsford meeting, it was by no means a satisfactory one, nor was the award one which ought to have guided the farmers of this country. The first prize was awarded for a reaping machine which he (Mr. Howard) happened to buy—being present at the trial—and which no doubt did its work best under the circumstances. He took it home, and it did its work in a most efficient manner upon the land on which he tried it—that was to say, land as flat as the table before him; but immediately he tried it on land which had a rise of not more than one foot in twenty, it proved perfectly useless. (Hear, hear.) A number of farmers bought reaping machines fashioned upon the same model, and they were equally disappointed at the result. There had been a trial of reaping machines since, at which he was not present. A few days after, one of the judges told him what award he had made. On hearing it, he remarked that he knew what kind of crop was reaped—that it could not have been above four quarters per acre. The judge, astonished at his guess, remarked that that was in fact about the heaviest crop on which the machine had been tried. He (Mr. Howard) added that he had felt perfectly satisfied of that before hearing it, for had the machine been tried on a heavier crop it would have stood no chance whatever. He believed that the agricultural community had ceased to be guided by the prizes awarded; but he maintained that if the societies did not aim at doing so much, if the trials were fewer and were conducted by such men as Mr. Hobbs had described, he (Mr. Howard) did not know where they were to find them (laughter); public confidence would be regained, and the change would be very advantageous to the agriculture of this country. He was inclined to the opinion that there should be much fuller and more elaborate reports with regard to the various machines that were tested. (Hear, hear.) The present system was very defective. The judges picked out some one machine, no matter whether it were a new or an old one, and pronounced that the best; and that for months was all the world knew about it. Now, he maintained that that was not the best mode of proceeding. He would, by way of illustration, refer to the case of steam cultivators or steam ploughs. He would suppose that three or four of such machines were brought forward for inspection and trial. The judges found that in one case with the apparatus employed they could plough or cultivate six or seven acres of land per day with an ordinary eight-horse engine; that in another case they could cultivate from ten to twelve acres of land with a

16-horse engine; that in a third, they could cultivate or plough proportionately less with an intermediate power. The award of the society went forth to the world, declaring that A., B., or C. had produced the best cultivating apparatus, and that was all the world knew. That was clearly a defective method of procedure, and did not tend to guide the farmer as to the particular apparatus which he ought to buy for his own use (Hear, hear.) He thought there should be short explanatory reports setting forth that A., B. and C. used an engine of such a power, ploughed a certain depth, burnt so much fuel, and that the cost of cultivation was so much per acre (Hear, hear.) The farming community would then be far more likely to arrive at an accurate estimate of the merits of the several machines, and be able to judge which was the best for their own particular requirements.

Mr. BRADSHAW (Knowle, Guildford) said, no practical farmer having yet risen since Mr. Hobbs introduced the subject, he wished to say one or two words. Some fourteen years ago, when he commenced farming, wishing to do everything in the best possible manner, he ordered half-a-dozen carts on the recommendation of the first prize of the Royal Agricultural Society in that department. He was satisfied with those carts, with one exception, namely, the chest of the vehicles. He found that in working the carts a man had about eight inches of unnecessary elevation every time he lifted a spadeful of manure from the ground. He had unfortunately been burdened with those carts ever since (Laughter.) He had been bitten on one or two occasions since (A laugh.) He had been led to purchase Hussey's reaping machine. He did not know exactly what he paid for it, but any one might have it for £5. He had, he admitted, purchased another reaping-machine lately; but, then, in that case, he paid little regard to the awards of the Royal Agricultural Society, preferring to make careful inquiries of practical men connected with that Club. He thought that whether a man wanted a plough or a grubber, or any other machine, whether he cultivated a light soil or a heavy soil, or whatever might be his position, he ought to be enabled to place some dependence on the implements recommended by the Royal Agricultural Society which he ordered for his farm (Hear, hear.) Such was his own experience, however, in this matter, that having ordered modern ploughs some years ago, he had since been compelled to revert to the 45s. plough of his own village.

Mr. A. CROSSKILL (Beverley) thought that after the remarks which had been made it might be taken for granted that there was no public confidence whatever in awards made in consequence of trials of implements carried on as they had been hitherto. The discussion seemed now to turn entirely on the question how far trials could be improved, and the improvement suggested had so far been limited to the providing for adjourned trials. That was in fact the only thing mentioned in Mr. Hobbs's paper as likely to lead to improvement, and he would now make one or two remarks on that point. He had himself been engaged at all the adjourned trials of the Royal Agricultural Society, and more particularly at the trial held at Boxted Lodge under the presidency of Mr. Hobbs, who showed the most earnest zeal and generous hospitality in adopting every means to secure if possible a useful result from the trials, as well as to provide for the personal comfort of judges, exhibitors, visitors, and spectators; but the conclusion to which he had been led was, that adjourned trials would prove just as ineffectual and just as futile regarded as a means of gaining public confidence, as the trials

hitherto conducted in the show-yard. As had often been said, an ounce of practice was worth a ton of theory. He appealed to past verdicts of the Royal Agricultural Society in support of his view. Four times had that society had adjourned trials of the reaping machines, and in every case after the first, the award was in direct contradiction to those made previously (Hear, hear.) He had, therefore, most reluctantly come to the conclusion that it was impossible so far to improve the trials as to render them of real practical benefit to the agriculturist. The advocates of trials thought they ought to be continued, chiefly for two reasons: first, because they pointed out to agriculturists the best machines for them to buy; and secondly, because the competition which trials excited led to great improvements in agricultural machinery—improvements which without trials would not be made. Now, he held that these notions were great fallacies (Hear, hear.) As to agriculturists basing their purchases on the results of trials at agricultural shows, he was confident that that was a state of things which was rapidly passing away. He believed that the farmers of England were as capable as any other body of men of forming a correct judgment as to their own business and interests. They did not want engineers or amateurs in mechanical science to be judges for them as to what implements they required for their farming operations. As regarded the second reason urged for the continuance of trials, namely, that they were the cause of the improvements in agricultural machinery, it was contrary to common sense to suppose that any man could get his living by making such machinery and not be continually improving it (Hear, hear.) Competition produced the same results in that branch of trade as in every other, and every manufacturer would for his own sake make as good machines as he could, whether the Royal or any other Agricultural Society put its stamp on them or not. To show that this view of the matter was being adopted more and more by the public, he begged to refer to an article which appeared only a few days ago in the *Times*. On the 15th of October that journal said, "The societies might give prizes for a reaper or a plough, or for the best samples of produce; but private interest would be at all times a more powerful incentive to calling these into existence." He believed that to be the true state of the case. Entertaining the greatest respect generally for the opinions of Mr. Hobbs, he entirely differed from him on this question. He believed there was a growing feeling in the public mind that it was not necessary to have such trials, to enable farmers to know what they ought to buy; and common-sense would tell every one that such trials were not necessary to ensure improvements in agricultural machinery.

Mr. BENNETT (Cambridge) thought the discussion had borne more or less with unmerited severity on the judges appointed of late years by the Royal Society, at their annual meetings. [Mr. Howard: No, no!] He (Mr. Bennett) must insist that the discussion had unhappily taken that turn. He fully, however, acquitted the gentleman who opened the discussion, and gave him credit for the ability he had displayed. It had, however, been complained of, that the present trials were insufficient, because if a man exhibited an excellent machine, and the strap perchance flew off, or a cog started from its position, the machine, however good, was discarded; such a circumstance would, truly enough, be unlucky for the exhibitor; and certainly if another machine performed

equally well, and the cogs stood their ground, and the straps kept their position, the judges would be warranted in rewarding the machine that performed well and escaped these accidents. (Hear, hear.) The case named by Mr. Ransome strongly reminded him of what took place some years since, where he (Mr. Bennett) acted as one of the judges, in the trial of the chaff machines, some eighteen in number. The judges placed them in competition, and requiring them all to cut a certain length, allowed them to employ any man they pleased—he thought it was for five minutes. When they concluded that the machine which did the work well, and the most of it in the time, was the best, the lot fell upon Mr. Cornes, and he thought they pretty well succeeded, as that maker had kept his position nearly ever since (Hear, hear). Now, on that occasion he recollected a very excellent maker, Mr. Garrett, was unlucky enough to have his machine choked, performing next to nothing. That gentleman begged for another trial; but our reply was, we felt bound to select for reward if possible a machine that would not choke. Now, it is doubtless known to most of the gentlemen present that certain very eminent manufacturers of implements had become weary of these trials, and resolved to discountenance them by ceasing to exhibit at the Royal Society's meeting ("Order"). He contended he was in order; the question was, could any better system be adopted of bringing out and keeping before the public the best class of agricultural implements? He, for one, could not consent to have the present system abused or discountenanced till a better one was substituted. If, however, the truth must come out, these gentlemen are the very Leviathans of their order, and they are resolved not again to swim in these shallow waters; the consequence is that the smaller of the funny tribe can revel now in their absence with far less danger to themselves. But to drop all figure, he contended these gentlemen were in great error. It might be very inconvenient, and doubtless was, to keep up this competition, and they had to pay individually a heavy penalty for their own popularity, still the community reaped the benefit. And he would contend that the proceedings of the Royal Society, ever since its establishment, had by encouraging competition effected immense benefit to the country, and was making British agriculture the envy and admiration of surrounding nations. No one would rejoice more than himself to see any improvement effected in the mode of testing the merits of different implements; but let well alone, and he begged them most of all not to cease to encourage the spirit of emulation among all classes of the agricultural community (cheers).

Mr. S. SIDNEY thought that Mr. Hobbs had clearly shown that the trials had hitherto been in the highest degree unsatisfactory. He agreed with Mr. Bennett that the Royal Agricultural Society had, by exciting competition, done a great deal of good to the cause of agricultural improvement. But when gentlemen claimed the whole merit of the improvements of the last twenty years for that society, they forgot that machinery not agricultural was, comparatively speaking, in a very backward state twenty years ago, and that it had improved without the help of judges. If he now had occasion to buy a watch, a locomotive engine, or a printing press, he would find that mechanical skill had made great strides of late years, and it would be great injustice to the agriculturists, as a class, to suppose that if they had been left to themselves they would not have made any advance. As regarded steam cultivation, he could not help remarking that Mr. Smith, of Woolston, had on one

occasion been entirely excluded from the competition; and although he had done more to promote that kind of cultivation than any other man in the kingdom, he had been entirely ignored by the Society. But, like many others, he had earned a very fair share of success without winning one prize. He agreed with the preceding speakers, that many of the decisions of the judges were altogether contradictory. As regarded mowing machines, one year the palm was given to one machine, the next year to another, and the next to a third. He would defy any one to form a correct idea from the reports as to which was the best mowing or reaping machines; under these circumstances he would not undertake to say whether or not it was desirable that the trials should be continued, but he would undertake to prove that up to the present time they had rendered no service to the agriculturists of England, except by leading to increased inquiry. If any advantage was to be derived from trials, they must be conducted in a different manner from that now practised.

Mr. SKELTON: You don't say how.

Mr. SIDNEY: I do not pretend to say how; it is too difficult a point for me to pronounce an opinion upon.

Mr. SHACKEL (Erleigh Court, Reading) said, as one of the judges at Chester, he must say that he felt very much indebted, personally, to the Royal Agricultural Society for increasing his knowledge of agricultural machinery. He believed that the trials had rendered very great assistance to the agriculture of this country. He had attended every meeting of the Society since the Oxford meeting, twenty years ago, and he had observed a vast improvement, which extended throughout the country. It was very easy to say that agriculturists would have improved without trials, but he very much doubted that they would have improved at the same rate as other classes of society. They were a slow-moving body ("Hear, hear," from Mr. Sidney), and they could not be expected to move unless there were something to impel them forward. He agreed with Mr. Hobbs that it was desirable that in some cases more regard should be paid to the season which was most suitable for trials. The greatest facilities had been afforded for the trial of thrashing machines; but as respected ploughing, he agreed with preceding speakers, that the conclusions arrived at had not been as satisfactory as they would have been if the trials had taken place at the proper season. No man could fail to see that Mr. Hobbs had on that occasion come forward fearlessly on behalf of the Royal Agricultural Society. At the last meeting there was something which manifestly required to be adjusted in some way. He trusted that the difference of opinion which had arisen would ere long disappear. He thought the best course, under the circumstances, was to form a committee, in which the Society and the implement makers could be represented, with a view to a proper settlement of the dispute. He would fearlessly assert that there were gentlemen representing the Royal Agricultural Society who knew no more of ploughing, reaping, or sowing than one of his cart-horses (laughter). In this case there should be practical men to meet practical men. Farmers and implement makers should meet together in consultation, and he had no doubt the result would be satisfactory.

Mr. B. SAMUELSON (Banbury) said, the gentleman who spoke last had hit on one of the most vulnerable points in the trials, namely, the want of practical knowledge on the part of those who laid down the conditions according to which the judges were to give their awards. He thought that if, instead of gentlemen whose knowledge of the subject was very slight

being appointed on the committees of the Royal Agricultural and of other societies to fix the conditions of trials, the matter were entrusted to practical men who thoroughly understood what the implements were required to do, there would be no difficulty in bringing about an agreement between the societies and those who competed. But, even then, he believed it would not be desirable to adhere to the system which had hitherto been followed, of giving awards in the shape of prizes as a sequel to the trials which were made (Hear, hear). He could not agree with his friend Mr. Crosskill and some other speakers, that the trials of the Royal Agricultural Society had not been productive of benefit. He believed they had been productive of very great benefit in two ways; first, by directing the attention of that section of the agricultural public who required such assistance to the existence of improved machinery for farming purposes; and secondly, by bringing before the agricultural community the results of dynamometrical and other tests, which could not otherwise have been obtained. But at the same time he did think that the awards which followed these tests frequently partook of the character of a *non sequitur*. The reports of the judges might be relied on as a conscientious statement of facts, but the opinions based upon them might not be of equal value; and he held that, if those who were called judges, and who, he believed, generally discharged their duties with great ability, and with perfect impartiality, would confine themselves to the making reports on trials, leaving farmers to form their own opinions as to what in each particular case would best meet the requirements of individuals, those reports would command an amount of respect and attention, which was not given to their awards and to the prizes which they conferred (Hear, hear).

Mr. WILSON (Althorne, Essex) had not intended to take part in the discussion, but the speeches seemed directed to find fault with the Royal Agricultural Society and its proceedings, and not to the subject introduced ("No, no"). Have not the principal machine makers ceased to exhibit at the Society's shows? If the judges give wrong decisions, let them bear the blame. I remember the formation of the Royal Agricultural Society by the late Mr. Handley. His object was the information of the farmers, not the profit of the implement makers; and the shows were established to enable farmers to become better acquainted with the machines connected with their trade. The remarks, therefore, made against the Society appear to me both unkind and unjust. The Society does not desire the machine makers to exhibit unless they find it profitable to do so. I believe that the object of Mr. Hobbs, in bringing forward this discussion, is to show that a greater acquaintance with machinery would be advantageous to the farmer; and in that opinion I concur.

Mr. A. RANSOME wished to say a word or two in explanation. Mr. Wilson had assumed that his remarks were made in a spirit of hostility towards the society, whereas he had commenced by disclaiming on his own part, and on the part of those with whom he was associated on this question, any such feeling. No man perhaps valued the Royal Agricultural Society more highly than he did; he admitted that it had in many respects done a great deal of good; that the general diffusion of the knowledge of agricultural implements, and the increased sense of their value on the part of agriculturists, was owing in a great degree to the course which it had pursued. He did not impugn the motives either of the council or of the judges; but he thought that the proceedings with regard to prizes were not adapted to

aid correctly the judgment of farmers. He and his friends thought that the circumstances under which the trials took place were not such as to render the decisions of the judges reliable, and justice to themselves required that they should take steps to save themselves from the unfair disadvantages that must arise to them, or perhaps to all of them in turn, from the saddle not being put on the right horse.

Mr. J. A. WILLIAMS (Baydon, Hungerford) would have taken no part in the discussion had it not been for the observations of Mr. Sidney, that the judges had completely ignored Mr. Smith's system of steam cultivation. He thought, after the pains those gentlemen had taken to ascertain the cost per acre of coal, time, manual labour, &c., they deserved to be more courteously treated than appeared to him had been done that evening. He thought it desirable that the trials of the Royal Agricultural Society, and more particularly those which had to do with steam cultivation, should be conducted on a larger scale. Steam cultivation would, he believed, within a few years be found prevailing over a very large proportion of the soil of Great Britain. It ought not to be conducted on a small scale, for it required the fields generally to be enlarged; and he maintained that fields of twenty acres each at least were required for the experiments. A field large enough for this could scarcely be found in the month of July, but an adjourned trial could take place after harvest, when sufficient space could be obtained, and the merits of each system would be more fully developed. With a field of five acres a fixed machine appeared very simple, and might afford all that could be desired; but in the case of a larger field, when shifting the tackle must be resorted to, the result might be clearly in favour of a portable one.

Mr. FREERE wished to say a few words, his motive being the interest which he felt in the subject, and not any special knowledge or experience with regard to it. He was certainly of opinion that the trials should be more full than they had been; and that in order that they might be fuller, they should be fewer in number: As regarded prizes, it was but natural that when the Society was founded they should be offered for all the objects which it was desired to collect at the show. That was the usual course of proceeding; and the *onus probandi*, with regard to deviation from it, rested, he thought, on the objectors to prizes (Hear, hear). Prizes must be continued until good and sufficient reasons had been shown for departing from the national mode of getting up a good show. The societies, he might add, were not so flush of money as to continue spending a portion of their funds in prizes, if they thought the end could be realized without that (Hear, hear). What, then, was the use of prizes? He thought they might be of service to an ingenious man without capital—a man who had funds enough of his own to bring one implement into the yard, and whom a prize would enable to raise money afterwards for the creation of a number of the same implements. Prizes might, he said, tell in that way in favour of the small rising man. He doubted whether a favourable report would be equally efficacious in procuring him loans (Hear, hear). He would also remark that the question, in his own mind, whether he should order a machine which he required, at Ipswich or at Bedford, had depended not so much upon whether Mr. Ransome or Mr. Howard obtained the first prize at the last meeting, as upon there being a continuous line of railroad to convey it to his place of residence. The general public did not know how much injury was done to an

established manufacturer by his failing to win the prize. At the same time no good implement ever failed to be in demand in consequence of its not having secured a prize. He well knew an established implement in his own neighbourhood for which there was a steady demand, though it never obtained a prize or commendation from the Society. Therefore, although a prize might be of great service to a man devoid of capital, the withholding of a prize could not do much injury to the man who was well reported of, and an established maker. One gentleman had spoken that evening of the injury which he received through having followed a recommendation of the Society, and chosen a prize cart. He (Mr. Frere) must admit that he also had been led by the Society into choosing a certain implement when he might have chosen a better; but he had been much more injured by following the advice of one of the most upright and intelligent agents in England (laughter). Acting under that gentlemen's advice, he bought an implement which had rendered him hardly any service whatever. As regarded prizes, he must confess that he preferred the report which accompanied the prize, to the prize itself. As regarded the defects of competition mentioned by Mr. Ransome, he (Mr. Frere) had no experience to guide him in forming an opinion; but if he had that gentleman's powers of expression, he would show that in his own field of observation, in which the competitive system had been largely developed—that of the open examinations at the University of Cambridge—the objections now offered were equally applicable. Strong, therefore, as those objections were, they were not confined to agricultural shows, but extended to all competition (Hear, hear).

Mr. WILSHERE (Kimpton Hall, Welwyn), concurred in all that fell from Mr. Hobbs in introducing the question. He admitted that agriculturists were very much indebted to the implement makers, and he thought that longer trials should in future be given to their new machines.

Mr. AMOS, C.E., said he gathered from the discussion that it was the general opinion that if fewer implements were tried at each meeting and longer periods were allowed for trials, the change would be beneficial to all concerned. In that opinion he entirely concurred, whether there or elsewhere he was prepared to advocate it. He had probably seen as many of the trials as any one in that room, and he could bear testimony to the zeal, integrity, and ability with which the judges had generally performed their duty. He had seen much greater ability evinced than could fairly be expected from men whose own pursuits absorbed so much of their time, an ability which combined not merely a knowledge of the requirements of the farmer, but also considerable power of judging of the mechanical construction of the machine under trial. The system of trials had, he believed, on the whole worked well, and those who had the conduct of it were not opposed to the light of reason and common sense (Hear, hear.)

Mr. H. TRETLEWY (Silsloe) expressed the satisfaction which he felt as an old member of the club, jealous of its reputation, that the Royal Agricultural Society had been so ably defended.

The CHAIRMAN, in concluding the discussion, remarked that there was this value at all events in the public trials, that they had enabled farmers to judge for themselves as to which of the competing machines was the best. They need not be guided by the awards of the judges, seeing that

they could form their own opinion as to the implement which was most suitable for their respective farms. In that respect he thought the public trials had been of great advantage to agriculturists (Hear, hear.)

Mr. HOBBS then replied. As regarded adjourned meetings he denied that they had been of no use hitherto. At the meetings at Pusey and Sir Wm. Miles's there was a thorough trial of the reaping machines; every one who was present would admit that never before was there so thorough a testing. Mr. Howard seemed to think that the trial at Boxted was of no use, because in the following year the decision was reversed. The explanation of that reversal was that in the second year the machine which won the prize in the first year had some new tackle which failed. Mr. Crosskill said that the manufacturers were continually improving their implements. He would appeal to Mr. Ransome whether the plough which he exhibited at Southampton could bear comparison with the new ploughs of the present day. Would he say that his Y L plough could work as well as some of his more recent ploughs? Scarcely six months elapsed without witnessing some improvement in implements. As regarded prizes, he must remark that the Royal Agricultural Society must, *volens volens*, give prizes at their annual meetings. The charter provided that at the meetings in the country this society should "by the distribution of prizes and by other means encourage the best mode of farm cultivation." How was the Royal Agricultural Society, the Yorkshire Agricultural Society, or any other similar institution to distribute prizes without having competitive trials? He trusted that in future not one word would be said in the way of objection to prizes. The main object of instituting trials was that machines might have an honest and thorough testing before they were purchased by the farmer. As regarded the future, he thought that if the manufacturers, who had a society in that house called "The Institute of Agricultural Engineers," were to talk the matter over together by themselves and prepare to lay before the Council their view of the manner in which the competition should in future be conducted, and tell them what they wanted, the Council would be happy to see them, and he hoped the result would be that arrangements might be made which would be more satisfactory to them. Let by-gones be by-gones; let them act as men of business, and the competitive trials of the next ten years would perhaps be more beneficial than those of the last twenty.

On the motion of Mr. James Howard, seconded by Mr. A. Ransome, a vote of thanks was given to Mr. Hobbs for his opening.

Mr. SPENCER SKELTON, in moving a vote of thanks to the Chairman, said, though only a small farmer, he would take upon himself to state, even before so many scientific gentlemen, that in his neighbourhood a plough-labourer had, with the assistance of the village blacksmith, improved the common swing-plough to such an extent, that on the deep soils in marsh-land—county of Norfolk, and at Long Sutton, South Lincolnshire, where the Local Agricultural Society's meetings were lately held—he with that plough beat out of the field all the scientific wheel-ploughs made and sent by some of the great manufacturers.

The motion was then seconded and adopted, and with this the proceedings terminated.

THE KENT PLOUGH.

MAIDSTONE AGRICULTURAL ASSOCIATION.

The 22nd anniversary of this association was held on Wednesday, Nov. 8. Twenty-four implements were entered for competition in the ploughing match, which took place on a cloverley in the occupation of Mr. Barrow, at Boxley. Of this number only two were iron ploughs, and, as will be seen by the remarks of Mr. Hills at the dinner, their work was not such as to convince the judges that they were superior, or even equal to the old Kent plough. The work generally was scarcely on a par with that of previous years—partly attributable, perhaps, to the state of the ground; but the prize-winners were quite up to the mark, though Mr. Elvey's renowned ploughman, Waters, who, as the winner of the first prize at Canterbury, may be considered the champion of Kentish ploughmen, eclipsed all competitors.

The judges of the ploughing were Messrs. G. Hills, Statham, G. Pierson, H. Barrow, and Bridgland.

At the dinner in the evening, Mr. HILLS, who answered for the judges, said that he could not honestly congratulate them on the ploughing, for on the whole it was not quite so well done as last year; but there were several admirable catches and between these the judges had considerable difficulty in deciding. With regard to the two-horse ploughs, it was the opinion of himself and his brother-judges, with, perhaps, one exception, that their work did not equal that of the turnwrist or old Kent plough; and he believed that any additional expense which might be incurred through using the latter was amply repaid by the better manner in which the work was performed, and the more abundant crop produced. The iron-plough appeared to do its work uncommonly well to the eye, but in fact it did not turn the furrow bottom upwards like the old Kent plough, and this wouldn't do on a poor piece of land like his, and which was terribly addicted to growing couch. For his own part, he thought the county motto, "Invicta," might yet be applied to the old Kent plough. As for Howard's ploughs, he would rather give a guinea an acre to have his land ploughed by the old-fashioned implement than let Mr. Howard do it for nothing. (Hear, hear, and a laugh.) He was glad to see that a fair trial of the merits of each kind of plough was about to take place at Mr. Elvey's, who had acted in a very public-spirited manner thus to take up the question.

Mr. WHITTAKER said, they all ought to be much obliged to Mr. Elvey for the public-spirited manner in which he had taken up this question, and he hoped those present would be at Bowhill on Thursday to witness the trial. He had heard some persons out of the county ridicule the idea of the Kentish farmers sticking to the old four-horse plough. Even in the county, above Dartford, the Messrs. Russells had used the iron plough for more than twenty years, and they, of course, said "If we had found that our land had become so exceedingly foul, we should never have continued to use it for this length of time." To whatever cause this difference of opinion was owing, whether to the nature of the soil or anything else, he could not but think that there must be some advantages attending the use of the old Kent plough, or it would never have been so long adhered to.

Mr. PUNNETT said, for some years past they had heard a

great deal as to the superior merits of the iron ploughs compared with the old Kent implement; and those entrusted with the management of the affair were very anxious that the latter should be pitted at the Royal Agricultural Show at Canterbury against all comers. In consequence, however, of a prior arrangement in existence between the society and the implement-makers, a trial on this comprehensive scale could not take place, while at the same time, through mismanagement on the part of the local committee, the Kent plough was placed in a very awkward position. That match had given rise to considerable controversy, and now Mr. Elvey, as the owner of the plough, and the employer of the man that took the first prize on that occasion, was prepared to hold his ground against the iron ploughs. But there was one thing which it is important should not be forgotten, and that was that the two ploughs were essentially different in principle. The old Kent plough turned the furrow completely upside down, leaving a good seam; whereas the iron plough only partially turned over the soil, with the additional disadvantage of making ugly backs and wide furrows. However, on Thursday next, the 15th, Kentish men brought up to the use of the iron plough would be pitted against Kentish men who had all their lives been in the habit of using that old-fashioned antediluvian implement, the Kent plough, and then the merits of each would be fairly tested. For himself, he had no prejudice whatever in the matter. He had seen as good work done by the iron plough as by the other, but he had never yet been satisfied that ploughing could be done by it at less cost, and therefore he thought it the best policy to adhere to old customs rather than introduce new methods strange to the men, and against which a prejudice existed, in cases where no benefit was to be gained. He hoped, therefore, they should now have at last what had long been desired—a fair, honest, and competent trial; and that all present would attend the match, either to be convinced that the iron plough was after all the best, or to return home with their opinion as to the superiority of the old Kent plough confirmed, and the conviction that Kentish farmers were the cleverest set of fellows under the sun (Cheers and laughter). Either way, it would do them good. They ought, however, to thank Mr. Elvey for the spirit he had shown in this matter, and he therefore begged to propose his very good health.

Mr. ELVEY, in responding, expressed the pleasure it would afford him if he could assist in any way to settle this long-venued question, and determine whether the old Kent plough which their ancestors had for so many years employed was really that lumbering, useless old thing it was represented to be, or whether it did possess merits which justified Kentish farmers in still adhering to it. He had seen ploughing of all kinds—even so primitive as that with an old cow and a jackass in front, turning up the soil to the depth of two inches, as well as more elaborate systems; but after all, he had not yet found an implement which to his mind surpassed the despised Kent plough, turning as it did the furrow completely upside down, and producing a good crop of corn. People from Essex and Suffolk had come into his part of the country, and were going to do all sorts of things; but, after the lapse of two or three years, he literally almost lost sight of them, for their

land was generally smothered with weeds. Mr. Punnett and Mr. Abbott had kindly consented to act on his behalf at the trial at Bowhill, and he repeated in public the request which he had made to them in private, that they would give their decision without bias either for one plough or the other, so that the implement which did really make the best work should be known. Throughout the whole matter Mr. Russell had acted in the most fair and honourable spirit, and he therefore

hoped that this question would now be set at rest. Mr. Elvey concluded by inviting all present to visit Bowhill on that occasion, observing that a luncheon would be provided for them, and expressing a hope that afterwards they would swell the company at the dinner table in the evening, not for his own sake, but as a compliment to Mr. Russell, who would send his ploughs from a distant part of the county to engage in the competition.

CRUELTY TO ANIMALS: A WOMAN'S MISSION.

SIR,—The account given by Professor Spooner of the unparalleled barbarities exercised on horses in the veterinary schools of France, to which you have so earnestly called the attention of your readers, must have sent a thrill of horror and indignation through every Englishman who has read it.

When Bruce, in the narrative of his travels, asserted that the Abyssinian soldiers frequently cut off flesh from living cows for food, and continued to do so from day to day till the animal died, the story was disbelieved, the existence of even a savage people capable of such inhuman atrocities being considered incredible. But to the disgrace of Christendom it appears that cruelties more horrible are actually perpetrated on defenceless animals, day by day, "under the hypocritical mask of science," in the heart of a Christian nation, which boasts itself to be in the van of civilization.

I shall make no apology for again holding up before your readers the Professor's direful picture of these veterinary horrors:—"The facts are these: At Alfort, which I visited, and still more I hear at Lyons, the pupils are instructed in surgery by cutting up living horses! Oh, then, is surgery fiendhood? Two days a week, at 9 o'clock in the morning, the doomed horse is cast; and then he is subjected to all sorts of surgical operations, such as firing, neurotomy, cutting away pieces of cartilage of the foot—operating as for stone in the bladder, extirpating the parotid and other glands, or the eyes; or any organ that forceps can pull, or that knives and saws can reach. Steel and fingers, guided by stony hearts, invade the poor animal at all points. These operations on the same horse lasts from nine o'clock in the morning until four in the afternoon; unless, indeed, he becomes unfit for the diabolism by dying in the meantime."

What were the cruelties of the savage Abyssinians compared with the deliberate, long-protracted, and reiterated torments now inflicted in the so-called pursuits of science, by French veterinarians? Men who mercilessly carve and dissect the living palpitating members of a noble animal with as much cool indifference as they would pull to pieces the component parts of a railway engine. Disregard of the infliction of pain and suffering on the defenceless has ever been considered a distinctive trait of savage life; but where amongst the Red Indians of America or the Dahomees of Africa could you find worse devilries practised than these?

It is preposterous to plead the necessity of such fearful inhumanities in the cause of science, since the fact is incontestable that it is not necessary, even could it ever be justifiable, to dissect the living animal for the purpose of teaching surgery, any more than, as the learned professor remarks, it is for the human surgeon to cut and slash the living human subject. Such practices are the fruit of brutal and depraved minds, of a wanton and ignorant barbarity.

Besides, scientific knowledge implies—and in exact proportion to the degree of it—the cultivation not only of the intellectual faculties, but of the whole moral being; and accordingly is incompatible, philosophically considered, with the exhibition of cruel propensities.

Professor Spooner warns us, and I trust unnecessarily, to be on our guard against the growth of tendencies to similar practices in this country. If any Englishman knows of the existence of any approach to such devilism, he incurs a heavy responsibility if he hesitates to expose it, that it may be branded by public abhorrence.

Instances of savage depravity will occur in every community; but so much has the public mind of England been raised and softened by the progress of intelligence and refinement, that the humbler classes would now turn with sickening horror from the brutal spectacles once in favour with our ancestors, and would certainly pursue any scientific dissection of living animals from the police-court to the treadmill with well-merited execrations.

All history shows that familiarity with the sufferings of inferior animals infallibly leads to cruelty towards one's own species. Tastes are vitiated, hearts hardened, minds brutalized by such acts, till they acquire an *appetite* and thirst for blood. Thus the barbarities of the Coliseum, where polished Romans sought their sport and pastime in the savage rending and dying agonies of brute animals, led in due time to the demand for hecatombs of human sacrifices; and who can tell how often from such scenes as these veterinary amphitheatres of France, reeking with the warm blood of writhing victims, may have gone forth a Nemesis to mete out the same measure to the sons and daughters of the land?

In the hideous catalogue of cruelties which have marked each successive revolution in that country, human creatures have in numberless instances been mangled, mutilated, and tortured to death with equally ruthless indifference. "Murders were committed wholesale," as one of their own writers has observed, "not from any lust or revenge, or avarice, but merely from the luxury to the perpetrators of seeing their victims die, to feast the ear with their groans, and to delight the eye with their contortions," till these fiends in human form attained to such a refinement of cruelty, that witnesses of their deeds are known to have died with horror.

But it is only amongst the dregs of any civilized nation that these propensities of the uncultivated savage prevail, and it is impossible to conceive that these diabolical horse-tormentors can spring from any but this class. What good result then could be expected from any deputation of our Humane Society to the heads of these institutions—to men who have themselves sanctioned, directed, and participated, perhaps for years, in these horrible vivisections, till they have become so inured to them as to be insensible to their

brutality? It would be a libel upon our gallant allies to suppose that the existence of practices so dastardly would be endured for a day by a brave people, if known, as it should be, to the nation at large.

There is one man, however—and he not wanting in that “quality of mercy” which “becomes the throned monarch better than his crown”—who could abolish these iniquities by the mere declaration of his own will; and would the women of France (and this is an Englishwoman’s suggestion) but prefer a petition on the subject to their chivalrous monarch, the end were gained.

Time was, as Pope tells us, when our huntsmen passed upon the ladies of quality who were present at the death of a stag the savage compliment of putting the knife into their hands to cut the throat of a helpless, trembling and weeping creature; but time and manners have changed: our women are now cast in softer mould, and loathe the infliction *and the inflictor* of cruelty. The bare recital of these veterinary atrocities moves them to tears; and are French women less

compassionate and tender-hearted than their English sisters? Surely in the land where Rosa Bonheur has shown, upon the glowing canvas—in touches of nature which make us feel “the whole world kin”—how like ourselves horses may be in their affections and their joys, there are not wanting noble women who can feel that, like us, these poor dumb fellow-creatures of ours have their sufferings too—miseries enough from the injustice and ingratitude of man, without any aggravation of them from his wanton barbarity. Surely in a country which sends forth her sisters of charity in thousands, to minister, with unwearied self-devotion, to suffering humanity, and whose loveliest and most exalted lady is ever foremost to sympathize and relieve, some good angel will be found to set about this work of mercy—a task which will win for her the honour of the good and the brave, and be not unremembered of Him whose “tender mercies are over all His works,” in the day “when the accountable shall give account, and but the merciful shall mercy find.”

I am, sir, your obedient servant,

C.

A WORD ON THE BUTCHERY.

[TRANSLATED FROM THE FRENCH OF THE “JOURNAL D’AGRICULTURE PRATIQUE.”]

A perfect silence has reigned on the subject of the trade in fat cattle since the day in which the Parisian butchery was surrendered to the reign of freedom. The decree of the 24th February, 1858, was received favourably, as will ever be the case with the adoption of a true principle, and excited great expectations. We had solicited it as the only means of rendering to meat—an article of first necessity for all in the present day—its true commercial value. Many persons were under this delusion upon the first view of the measure. The Optimists declared that the emancipation of the Parisian butchery would lead by a very rapid route to the solution of the important problem of cheap living. If they had dared, the Peasimists would have asserted the contrary theory. Responding to the first only, the partisans of freedom said—“Wait; the consequences of such a measure cannot be immediate. They will develop themselves one by one in time. The benefit that we hope from the new system is beyond doubt, and you may consider it certain that it will be large and complete; but have patience.” In spite of the restriction, this was perhaps going a little too far, and promising more than time might justify, at least in a delay relatively near. In his report to the Emperor on the question, the Minister who proposed and countersigned the decree of the 24th February has shown himself more judicious. “Without a doubt,” said he, “the new system will not produce absolute and permanent low prices, but it will establish the genuine value, disengaged as much as possible from parasitical expenses and extravagant profits; that fair value which is only produced by competition and the natural course of commerce. Meat will be dear when cattle are dear, that is evident; but when cattle are cheap, the public will necessarily profit by it.”

This is the truth, and these words place the question upon its true ground. They throw out, in the second proposition, as secondary, all that is commerce, properly so called, of the butchery, and bring back the mind to the essential causes of the market price of fat cattle.

The opinion of the consumers is too much circumscribed in the circle of facts that have reached their final period: the attention of the Minister, proceeding from effect to cause,

attaches itself more particularly to this, and the signal as an evil to be opposed.

The excessive dearness of meat had therefore two sources—the one secondary, owing, it is thought, to the mal-organization of the butchery; the other, primordial, which we must attribute to the too high price of the first matters of meat—forage, and the insufficiency of the means of producing cattle.

We have endeavoured to remedy the inconveniences of a defective organization of the butchery, but we have done nothing to relieve the true cause of the dearness of meat, and as, definitively even according to the foresight of the Minister the effects of a monopoly always outlive, whatever we may do, for a certain time, the decrees that pronounce their suppression, no modification favourable to the public has been manifested in the commerce of the butchery since the month of March, 1858.

The importation of foreign cattle has decreased, the rearing of the native breeds has not increased, and the consumption has certainly continued its onward march. Under the influence of these facts, it is easy to foresee that, far from being lower, the price of meat is much more likely to rise than to maintain the present rate, which is already found too high.

Political economy and commerce appear to have established for ever and ever what are called food crises—that is to say, the misery and sufferings resulting from bad harvests of cereals. It is necessary that, in unison, both should be now occupied in preventing the privations that may arise from the insufficiency of cattle. The quantity of meat slaughtered is not less than heretofore, the facts showing quite a contrary result; but they say, also, that the demand is greater than the supply—that the exigences of consumption greatly surpass the activity of production. The consequence is easy to perceive: the produce will be scarcer and dearer. Now it is not a matter of indifference that the most indispensable objects of life should be scarce or abundant, sold dearly or at a low price.

What causes the low price of a commodity is, either great abundance or the absence of a demand. On the other

hand, all produce is dear, the supply of which is inferior to the demand; and it is scarce on the market, in spite of the eagerness of the purchaser, when the means of production are insufficient—in short, native production, active and large, is a necessity, when foreign industry, otherwise insufficient from the same causes, is unable to supply the poverty of neighbours.

Such, we believe, is the present condition of the butcher's trade. The question of Customs has nothing to do with it now: all the limits of the problem involved in it, belong to the domain of agriculture.

Meat is dear in price, and insufficient in quantity: that is an established fact. It will be so a long time yet, because the number of consumers increases in geometrical proportion, while production progresses, with great trouble, in a proportion simply arithmetical. On the other hand, the removal of the population, which continually increases in the cities, and sensibly diminishes in the rural districts, multiplies the great consumers of meat, at the same time that it takes from the fields a part of the strength necessary to produce it in greater abundance.

The commerce of the butchery, I repeat, is only the lesser side of the question. Let us take from it nothing of its real importance, but let us not forget the agricultural side. We have done well to re-establish "the common right, in a profession in which privilege and exception are no longer justifiable;" but the monopoly of the butchery was only a very weak part of the evil to which it was proposed to apply a remedy, and the greater evil has not yet been attacked at its source.

The most urgent and necessary economic reforms may become a cause of trouble, in not producing the good effects which were promised from them—at any rate, they are ineffectual when they are incomplete. In 1848, for example, the abandonment of the right of town dues upon meat benefited so little the consumer, that, in order to make the city of Paris one of the elements of his budget of receipts, the Minister suddenly re-established the tax; and the price of meat was not affected by it. The measure was inoperative so far as exercising no influence on the market, because it was incomplete. It remedied not the evil, which since then it has aggravated, it being essential that all reforms of this kind should have a counterpart. Those which have been effected in England at different periods have never been checked in their effects, since, by aiming at the cause, they have always guaranteed the utility, the benefit. Those which are prepared in France are not now presented under one only of their aspects; and they promise more and better results. We may hope that they will embrace them all in their operation, and that, after having been at the bottom of things in what relates to the exterior Customs, for example, they will apply themselves, with not less practical utility, to all that concerns the interior management, in which we find a Customs law at once very complicated and very burdensome.

Has the suppression of the butchers' monopoly in Paris been advantageous to the grazier of cattle and the consumer of meat? Evidently, no; and the complaints are renewed. The grazier sells at a price so little profitable, that the certainty of the market and the activity of the demand exercises hardly any influence on production. We find that the benefit remains, on one hand, too much with the middlemen—that the butcher enriches himself too quickly at the expense of those of whom he buys and those to whom he sells. This double operation causes severe recrimination; and as it is general, and bears upon the

consumers of all classes, and in all parts of France, they demand on all sides at once a more immediate and effectual intervention in the surveillance of the butchers' trade—now monopolized, in fact, by a few, to the injury of the masses. This is, therefore, a question to be taken up again, for it has been neither completely elucidated nor completely solved.

In 1858 the Society of Agriculture, Commerce, Sciences, and Arts, of the Department of La Marne, had proposed it for consideration in the following terms: "*What have been the causes of the advance in the price of butchers' meat, and what means should be employed to bring it back to a moderate rate?*"

Amongst all, we may allow ourselves to state, in passing, the Agricultural Society of La Marne distinguishes itself by the practical character and importance of the subjects to which it yearly calls the attention of reflecting men and publicists. Unfortunately the slenderness of its resources does not allow it to offer to competitors rewards which would be proportioned to the researches it proposed to them; and, on the other hand, its means of publicity are too confined to summon to the work all those who might give themselves up to it with advantage. The consequence is, that the meetings are really only half-successful; whilst elsewhere the reports, analyzed and certified, remain nearly ignored. Thus are many efforts lost.

In the meanwhile the meeting on the question of the butchery has produced two memoirs. The society considered them sufficiently remarkable to divide the prize and award distinction to each of them. They do not say that the question was completely elucidated, but they have admitted that it was conscientiously studied; and they thought that this double work would certainly furnish to those who might wish to resume it valuable elements for a new examination and a satisfactory solution. The laureats, Messrs. Ch. Gillet and Felix Mennesson, will think it no harm that we should draw our inspiration from their studies in the following passages, since it is a means of making them known:

With them the question of the butchery is not only administrative and commercial, but, above all, agricultural, and is bound up in the most effectual manner with the production of cattle. They then ask by what means this object should be pressed forward in the path most conducive of progress. Agriculture has already realized great improvements and advances towards perfection; an end removed from its efforts in proportion to its resources. Unfortunately these are not in accordance with the extent of its requirements, and there is but little hope of adding to its proper forces the help of those which would be needed to enable it to fulfil the task with which it is overloaded.

The soil requires large advances to raise it to the maximum of fertility. The advances are of two kinds—labour and capital. Labour has not, up to the present, been wanting; but capital has never been furnished in sufficient amount.

The agriculture that makes the smallest return, is that which receives the least; in this it yields to the common law. The most productive animal is that upon which we expend the most; but the principle is barren when the application is impossible. The hectare of land in cultivation in England yields 152 francs, in Germany 130 f., in Belgium 120 f., and only 68 f. in France. Between the first and last of these figures the difference is 84 f. to the advantage of England, where for additional produce they employ only ten days' labour, where we employ thirty-three. This is assuredly a proof of the inferiority of our implements, that is, of the insufficiency of the resources which admit of acquiring implements of greater power. But we may make one

step further in this compared position, and say to what extent the produce of cattle enters into the total revenue furnished by a cultivated hectare on this side of the Channel and the other. It is 103 francs in England, and does not exceed 25 francs in France: And this is certainly not the highest expression of the return of the soil. As to ourselves, we are much too far from it. It would now be thought sufficient if we approached it some degrees nearer, in order to increase in a perceptible manner our wealth and the general welfare. The fact is well worthy of attention. Agriculture is never stopped; unfortunately abandoned to its own insufficient powers, it advances only by little steps, *lento gradu*, when the wants of society would impose upon it the obligation of proceeding by forced marches. It is necessary to come to it powerfully in aid, and to tend to it largely on all points of the territory, if we wish it to return much more without delay, if we desire that it quickly raises its products to the level of the necessities of consumption.

So much for the whole question. Let us now return to the part of the subject which brings us in view of the public administration.

We know not the motives which oblige the authorities to watch over the free-trade of the butchery. There is in it one of those necessities which renders it imperative, which we accept on one hand as a duty, and receive on the other as a benefit; but in order that the latter may be real and complete, it is necessary that the former be fulfilled in all its extent, exactly and rigorously if need be.

The profession of a butcher is not one of those which everybody would wish to, or can exercise. It has its bad side; those who adopt it perform, beyond doubt, great services to society; and it is but just that they should derive advantage from it; but it is not necessary (thanks to a situation in some other respects exceptional), by or without concerting together, that they should establish for a length of time, and in manner almost indestructible, a perfect monopoly, something iniquitous and crushing at once to the producer and the consumer. It is not necessary that it should be a custom, for example, of the trade, if we may thus speak, that dead meat should be sold at a high price by retail, when by wholesale or alive it has been purchased at a low price. We have known how to prevent the inconveniences which threatened to attach themselves to the corn trade; and the bakery, strongly organized in the great centres, is very severely overlooked when the circumstances require it; and no one dreams of complaining of it. We should know too, if it was desired, how to apply a remedy to the numerous abuses which have enrooted themselves in the butcher's trade. We might shut our eyes when meat was in some respects an article of luxury, used almost exclusively by the rich, and when the working population was as yet thinly scattered in the cities. It is no longer so now. The consumption of meat is generalized, and has become an aliment as common and necessary as bread to the dense and crowded population existing in cities. It now requires bread, meat, and something else. This is what will compel us, in a given time, to make regulations more stringent over a trade which knows not how to find in the existence of a great competition a salutary counterpois to that of an *entente*, always easy, and too *cordiale*, of monopolizers. These no longer appear as honest merchants, worthy of interest and protection, but as speculators, hungry and dishonest, imposing the law, fleecing without mercy their defenceless clients. This is assuredly a case for intervention, in order to repress or prevent intolerable

abuses. A profit of 66 per cent. cannot be the lawful share of the seller, in the trade of an essential article of life. It is to this rate that almost all the calculations arrive that we have instituted, in order to fathom the question of the butchery. We do not allow the baker to charge the kilogramme of bread at 1f. (10d.), when he can sell it at 33 centimes (3-3 d.). By what title should the butcher enjoy such a privilege? Both have a right to profit sufficiently remunerative; but no one ought to be victimized by monopoly.

In the meanwhile the price of meat is enhanced by other causes. Wheat and bread are emancipated from the city dues, and why not cattle and meat? The latter, besides, is of necessity subject to particular and unavoidable expenses inherent in its commerce, and which tax the return price. Such is, for instance, the *abatage* tax, which incessantly tends to increase itself more by the mania of the municipal councils to transform the *abattoirs* into public monuments. Where will luxury settle itself? No place now can content itself with humble edifices, commodiously situated and disposed, proper and salubrious. There is no city or town so small as not to aspire to grandeur, and which through imitation, envy, and unthinking enthusiasm does not wish to expend large sums foolishly in erecting a monumental *abattoir*. They are proud of it! Is there not reason to be so? And we vote, gloriously too, five hundred millions of francs and more for such constructions!

In order to meet such large expenses the ordinary resources are not sufficient. They therefore impose extraordinary taxes for ten, fifteen, and twenty years, and raise the charges of *abatage* to an extent to cover the interest upon the sums borrowed. In the end, the city which has caused it to be built is benefited, but who supports this charge? The butcher pays, but the consumer repays him with usury.

The City of Roubaix solicited recently the authority to borrow a rather large sum, for the purpose of erecting, for slaughtering and dressing cattle, one of these monuments, of which they do not know how to appropriate any portion to their humble rise; and the reporter of the law proposed to this effect says, "the taxes will produce annually, according to the adopted tariff, about 22,000 francs." This is a *bagatelle* compared with the millions which circulate; but the population of Roubaix, which is essentially of the working class, ought to have calculated that if the city possesses twenty-two butchers, each of them ought to pay annually to the municipal budget a sum of 1,000 fr. for the *abatage* tax, without prejudice to the other duties and charges, and that in a final analysis it is the consumer who pays all the false expenses whatever, even to the last fraction.

There appears to be a good deal of agitation to ascertain the causes of the increasing dearness of provisions, but there was no need to search so long and so ardently. They are at hand, and easy to point out. The remedy to meet them ought not to be more difficult to discover, but the thing found is nothing if the application should be repulsed.

There is one sure principle in that which bears upon the public administration, namely, to exempt provisions from all useless expenses, those necessary being already too heavy. The problem of cheap living can be solved with clearness only by attention to the principles of a rational and healthy science. Be doubly economical of charges which bear upon the food of the people.

EUG. GUYOT.

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

The Council resumed their sittings after the Autumn recess, on Wednesday, November 7, when a monthly meeting was held. Present: the Right Hon. the Earl of Powis, president, in the chair; the Earl of Macclesfield, Lord Berners, Lord Feversham, Lord Tredegar, Lord Walsingham, Hon. Colonel Hood, Hon. A. Vernon, Mr. Amos, Mr. Barnett, Mr. Barthropp, Mr. Bramston, M.P., Mr. Caldwell, Mr. Druce, Mr. Exall, Mr. Frere, Mr. Brandreth Gibbs, Mr. Fisher Hobbs, Mr. Wren Hoskyns, Mr. Howard, Mr. Lawrence, Mr. Shuttleworth, Mr. Torr, Professor Simonds, Dr. Voelcker, Mr. Jonas Webb, Mr. Burch Western, Mr. Wilson (of Stowlangtoft), and Professor Wilson.

Before the commencement of business, the President wished to call the attention of the members to the melancholy circumstance of the death of the Duke of Richmond, which had deprived the society of one of its original members, of one who had held the office of president three times, and who always gave the greatest attention to agricultural matters. His Grace had carried off many of the society's prizes, and his live stock always held a distinguished position in the shows. He was unable of late years to attend the meetings as formerly, but every one connected with agriculture must feel the great loss the society has sustained by his decease. The names of 28 candidates for election at the next meeting were read.

FINANCES.—Mr. Barnett, chairman of the Finance Committee, presented the report on the accounts of the society to the end of the previous month, from which it appeared that at that date the current cash balance in the hands of the bankers was £1,624 18s. 6d. The Secretary's receipts had been duly examined by Messrs. Quilter, Ball, and Co., and were found correct. During the recess, the Committee had met several times to take into consideration the subject of the arrears of subscriptions, and had thought it necessary to issue circulars, calling on members to remit the subscriptions due to the society. The result has been that whilst many have paid their arrears, about 400 names have been struck off the list, consisting of those who from death, insolvency, or misfortune are incapable of paying. There still remain a great number of members who have taken no notice of their liability; it has therefore been deemed advisable to divide England and Wales into districts, and a list of those in arrear will be sent to members of the Council residing in them, in the hope that they will endeavour to procure the payment of such arrears, and give any information in their power to the Secretary as to their ability or inability of paying, and in order to the preparation of a correct list of members, which it is important should be ready for insertion in the next number of the Journal. The amount of arrears collected during the present year is £2,258,

and a large sum still remains due from members in arrear.

The Committee have to lament the death of Mr. Huxley, late senior clerk in the office, where he had served with zeal and fidelity for 18 years.

JOURNAL.—Mr. Thompson, M.P., chairman of the Journal Committee, presented suggestions from that committee on the subject of the cost of delivering the Journal to the members of the society. The committee take this opportunity of announcing to competitors for the prize to be given for an Essay on the Agriculture of Hampshire, that for the purposes of this prize Hampshire will be considered to include the Isle of Wight.

Authority was given to this committee to allow the use of the blocks used in printing the engravings in the Journal to authors and other members of the society in such cases as they shall think fit, all cost to the society or injury to the blocks being provided against.

The subject of the late period of the publication of the Reports of the Judges on Implements exhibited at the country meetings having been brought forward by Mr. Brandreth Gibbs, it was resolved, after long discussion, that the times of publication of the two numbers of the Journal be on the 1st of February, and as early in August as the Report of the Judge of Implements can be published, and within one month after the country meeting.

On the motion of the Hon. Col. Hood, seconded by Mr. Thompson, it was resolved that at the country meeting the Implement Yard shall be open to the public on Monday, on payment of 5s., and the Stock Yard at 1 o'clock, or as soon as the judges have made their awards, without extra payment. On Tuesday the Show Yard of live stock and implements to be open to the public on payment of 5s. On Wednesday the admission to the Show Yard to be 2s. 6d. On Thursday and Friday the admission to be 1s.

On the motion of Mr. Fisher Hobbs, Mr. Owen Wallis, of Overstone Grange, Northampton, was unanimously elected a member of Council, in the room of Lord Southampton, resigned.

The time for the General Meeting of the Society at their house in Hanover-square was fixed for 12 o'clock at noon on Wednesday, the 12th December.

The Council decided that the date of the Leeds meeting should be the week commencing Monday, July 15, unless the assizes or local arrangement should interfere.

A communication was received from the Foreign Office, accompanied by a Report of the Committee on Agriculture of the United States respecting the cattle disease, which was referred to the Veterinary Committee.

The Council then adjourned to Wednesday, the 5th December.

OXFORD FARMERS' CLUB.

MANURE WASTED AND LAND STARVED.

Mr. G. R. CLARKE said that he had great pleasure in complying with the request made by the Secretary, in the name of the Oxford Farmers' Club, and he proposed to bring before their notice a subject in which he felt a deep interest. The subject might be termed "Manure Wasted and Land Starved," and he regretted that the time allowed him was so short that he could not put his views before them in the shape of a paper. He was, however, full of the subject, having recently returned from France, where he had been for the purpose of investigating how far they made use of night-soil there. He proposed to speak of the value of night-soil as a manure, the best method of collecting it, removing it, and applying it to the land. His mind had been brought to this subject in two ways; first, by observing the way in which their streams and rivers were polluted by being converted into flowing cesspools; and next, by the enormous amount of valuable manure lost to the kingdom. After having made a sewer from his house to a brook, he saw the error of it, and made a fresh cesspool, in order that his garden might have the benefit of its contents. In 1858, he addressed a letter to the Royal Agricultural Society, and suggested that they should consider the subject under the following heads:

1st. The amount and value of the manure which is lost to the agriculturist through the ill-construction of cesspools, and the difficulty of emptying them. 2ndly. The amount and value of the manure which is lost to the agriculturist, by the modern plan of conducting the sewage into streams and rivers. 3rdly. The effect of different kinds of water on the health, growth, fattening, and length of life, of cattle. 4thly. The effect of sewage, when introduced into water, on the health, growth, fattening, and length of life, of cattle.

The following, amongst other prizes, might be offered:—

1st. For essays treating of the above subjects generally. 2ndly. For the best mode of constructing cesspools, both for privies, and as receptacles for sewage from drains, farmyards, &c., whether of separate houses or villages; and for intercepting the sewage passing through existing sewers. 3rdly. For the best contrivances for emptying cesspools and ponds, as regards both liquid and solid matter, with a view to its use for agricultural purposes. 4thly. For the best method of disposing of the materials when emptied out, whether in combination with other solid substances, or otherwise. 5thly. For the best plan of collecting the sewage of villages and towns, and of delivering the same to the agriculturists on equitable terms, keeping in view the health, convenience, and advantage of all parties; and their mutual co-operation, and their fair rateable contribution towards the labours and expense of the operation.

As that Society, however, had taken no notice of the subject beyond acknowledging the receipt of his communication, he thought the time had arrived when an effort should be made to call public attention to the matter. Accordingly he published a pamphlet, entitled "Reform the Sewers and Rescue the Rivers. Where shall we bathe? what shall we drink? or manure wasted and land starved." With these introductory remarks he should at once proceed to deal practically with these different heads, in order to show that

he had touched upon no one head which was not practical and of great importance. In the City of Manchester there were 66,000 houses, of which 51,000 were of the rent of £10 and under. The Corporation of Manchester cleansed the privies of 36,000 of those houses. In order to put the inhabitants in a way of preserving the soil in the best manner, they combined the ash pit with the privy, and this operated in two days, for the ashes absorbed the moisture, and next deodorised the soil. It was not taken in combination as with the earth, but by superficial attraction; there was no combination of ashes with the ammonia and gas, but they were attracted by the innumerable surfaces of the ashes. The Corporation exported the whole of 36,000 privies; they removed annually about 100,000 tons of night soil, for which they charged 1s. 6d. a ton, exclusive of carriage. He (Mr. Clarke) was anxious to follow this manure to the farms where it was used, and to make inquiries respecting the results. Accordingly he wrote to Mr. Wallworth, Superintendent of the Scavenging Department at Manchester, to put him in communication with the farmers who bought the manure, and he received from him the following reply:—

"Scavenging Office, Police Yard, Clarence-street,
Manchester, March 20, 1860.

"Dear Sir,—Yours of the 21st, accompanying your second edition of the 'Reform of the Sewers,' came duly to hand. Your inquiries appear to relate chiefly to the sale of the refuse from our ash-pits. You will be aware that, in a large city like Manchester, there is a considerable portion of the contents unsaleable; for instance, broken vessels, and such like, from the houses; for we have not here, as in London, rubbish-carts or dustmen to remove house refuse; this is carted to fill up old brick-fields, &c.; but the fine ash and night-soil are removed to our *depôts* adjoining the Canal and Railways, and sold, as you state, at 1s. 6d. per ton without the carriage, or from 2s. 6d. to 7s. per ton delivered; the Corporation do not hire or use any waggons except their own, and have eighty running on three lines—viz., the Manchester, Sheffield, and Lincolnshire; the Lancashire and Yorkshire, and the London and North-Western. The sales are effected without difficulty, and the four months in each year it is sent off as fast as it can be removed from the pits; but of course, during harvest operations, the farmers cannot receive it, and it remains in the *depôts*; I do not know of anything to prevent its sale to an unlimited extent, except for the cost of carriage; it is useful for almost every description of crops, turnips, wheat, grass, potatoes, cabbage, &c., and is often mixed with stable-yard manure by the farmers previous to using. I believe its fertilizing properties are equal, if not superior, to any artificial manure, and certainly its effect upon land is seen for years after.

"I think it is not necessary to refer you to any farmer particularly as to its value; for there are none in Lancashire, Cheshire, Nottinghamshire, Yorkshire, or Lincolnshire but would gladly avail themselves of it if they could obtain it at a reasonable cost; the difficulty has been to obtain cheap rates by rail or other carriage. You ask me if I think any improvement can be introduced in dealing with the subject; and I am frank to confess that, so far as this city is concerned, I do not; for if soil and ashes are allowed to mix in the pit, and water excluded (except the urine), I cannot imagine a cleaner mode of removal, or one less likely to injure the health of the inhabitants, or the men engaged in such duties. In first taking up this matter, the Corporation's exertions were directed to remove the soil; having accomplished that, their attention is now directed to the best mode of cheaply getting it to their customers, the

farmers; and when the Railway Companies can be induced to aid them by lower rates, the Corporation, I doubt not, will do the work for much less than at present.

"I am, dear sir, yours faithfully,

"JOHN WALWORTH, Superintendent,

"G. Rochford Clarke, Esq.,

Spring Garden-terrace, London."

He (Mr. Clarke) would now tell them the result of his investigations in France and Belgium, where he spent his last vacation for the purpose of ascertaining what they were doing in this matter. He was introduced to the firm of Messrs. Reitchie and Co., of Paris, who cleansed an immense number of privies belonging to private houses and public establishments. He went to their establishment at Bondy, where he saw a great many acres of land, from 60 to 80 acres, divided into compartments, where the soil was taken out to the depth of eight, ten, twelve, and fourteen feet, and into those receptacles the liquid manure ran from Paris, by means of a sewer; it remained there until it made a deposit; the liquid was then let out to another tank until it was exhausted. Ultimately there was a great accumulation of deposit till it was dry enough to be removed. He saw immense tanks of it, and it was subsequently packed for Paris; there was nothing unpleasant or offensive about it, and it smelt to him like sal volatile or ammonia. He went into their cellars at Paris and found three modes of collecting nightsoil; one was of a simple nature, namely, a tub or barrel in communication with the closet above, and when the tub was full another was substituted. The next was what was called the divided system, namely, of zinc or galvanized iron, with a strainer on the side and at the top, and the liquid ran out by a pipe on the side into another tub. The tub with the liquid was obliged to be removed four times oftener than the other containing the solid matter. The third system consisted of a similar cask for dividing, but instead of the pipes being connected with another barrel, they were with a tank; it was then pumped into pipes or a sewer, and was thus carried to Bondy. He (Mr. Clarke) stood by and observed all these processes, and never detected the slightest smell. He (Mr. Clarke) had visited a cellar which was a baker's shop, and found himself among the sacks of flour and loaves, and in the same cellar he saw the nightsoil-collecting tubs, and perfectly free from any unpleasantness. He (Mr. Clarke) next visited the public institutions and prisons. He went to the Military Fort at Vincennes, where an intelligent officer, an engineer, showed him that everything went into a tank covered with a flat stone in the garden; the contents were pumped into carts constructed for the purpose, and carried away to a farm two or three miles off; and it was a remarkable fact, that it all went to the Emperor's farm. He (Mr. Clarke) went to the Emperor's farm and saw his agent, but he was too busy to attend to him, as some French grandees arrived there about the same time, so he could not speak as to the results of this manure there. He had visited, under the authority of the Prefect of the Seine and the Minister of the Interior, various other places—in fact, he had visited places north, south, east, and west, extending from the British Channel to the Mediterranean, and from the Pyrenees to the Alps, and found every person using this nightsoil manure, which they carried away to their farms, and applied to the land. He understood that at the institution for juvenile offenders at Tours, where they were put to agricultural labour, they collected and used their nightsoil; but the weather prevented his going there. With regard to Belgium, he could not get to Brussels, as he intended, owing to his having

received intelligence of the illness of a relative, which disarranged his plans. Mr. Dolman, of London, however, told him that great use was made of it in Belgium, where they kept the liquid in tanks, into which they threw clean straw, A man got into the tank barelegged, and trampled down the strew until it was quite saturated: it was then put on sticks, and placed in carts, carried to the farm, and laid along the furrows. What was the effect or value of it, he was not informed; but it showed the great importance which they attached to these materials; and they were not likely to go to such trouble or expense, if the results were not satisfactory. He had seen enough in France to satisfy him that the farmers in this kingdom would do well to appoint some good practical man to investigate these things, and report the result. As to the mode of collecting night-soil they were lamentably deficient, and had made no improvement whatever on the old privy and cesspool. It was not surprising, then, with such disadvantages, that, when an ingenious contrivance like the water-closet was introduced, both stood no chance, until they began to discover the folly of carrying away into the river this rich manure, and losing the whole of it. Mr. Clarke then said that he had been informed by Mr. Brown, of Cirencester, that he had tried to improve the old privies by taking a flat stone a little above the ground, and putting over it a close box, with a door at the side or back, with a tray, into which he put earth or ashes. He (Mr. Clarke) thought the receptacle should be above the ground, so that it could be emptied easily; and that it would be advisable to go up steps to it, and have waggons under, very low; and when full, they might be taken to the farm with the ashes of the house. The first point for consideration was, how they could make use of this manure; and next, as to the best ingredients for mixing with it. Many processes had been patented for deodorizing the manure; but the result was, that it destroyed its properties on this point. The Rev. H. Moule, Vicar of Fordington, Dorset, had supplied him with the following information:

He had everything which previously went into a cesspool received and removed in buckets. "At first," he writes, "the contents of these buckets were buried in trenches about a foot deep in my garden; but on discovering that after three or four weeks not a trace of this matter could be discovered, I had a shed erected, the earth beneath it sifted, and with a portion of this the contents of the buckets every morning mixed, as a man would roughly mix mortar. The whole operation of removing and mixing does not occupy a boy more than a quarter of an hour. *And within ten minutes after its completion, neither the eye nor nose can perceive anything offensive.* When all the earth, which did not exceed three cartloads, had been thus employed, that which had been first used was sufficiently dried to be used for the same purpose again, and it absorbed and deodorised as readily as at the first: A portion of it is now being used for the *fifth* time for the same purpose; and thus all that offensive matter, which otherwise would have been wasted in the vault, a nuisance to my house and the neighbours, and a source, it may be, of sickness and disease, is now a mass of valuable manure, perfectly inoffensive both to the eye and the nose. I have taken fifty or sixty persons to see it, without previously acquainting them with its nature, and not one has guessed it. I have the same day submitted some to strong fire-heat, and that which unmixed with earth would under such heat have been intolerable, in this mixed state emitted no offensive smell whatever.

"This advantage of earth over water for such a purpose

is complete. Water is only a vehicle for removing it out of sight, and off the premises. It neither absorbs, nor effectually deodorises. It rather, both in cesspools and in sewers, aggravates the offensiveness of the fermentation which soon sets in, and is often repeated; and further, it dilutes and wastes a most valuable manure. Whereas dried surface-earth both absorbs and deodorizes the most offensive matter, and that almost instantaneously; and under such circumstances as those narrated, it seems to preserve its full value for agricultural purposes. One experienced farmer who has visited my garden, is so fully satisfied of this, that within a fortnight he prepared a shed that he might pursue the same course.

"An assistant of Professor Way inspected the seven months' heap last November, a few hours after the earth had been again mixed with those other materials for the fifth time. He handled it, and smelt it, without discovering the slightest offence; and took some away with him in a deal-box with a loose cover tied only by a string in brown paper, and in his carpet-bag."

With these facts before them there was every encouragement to adopt an improved method of collecting and mixing the manure, which had this additional recommendation, that it was always at hand, and could be used when it was wanted. If that were feasible, they had discovered the best method of deodorising, and found out what might be called the philosopher's stone. By the present system of sewers every thing was carried away into the river, but Mr. Mechi's plan was to divert it over the land, which he had done with good result, and it might be done where the natural fall permitted it, but at the same time much of the manuring qualities was dissipated in the water. They had heard of numbers of acres near large towns being benefited in this way, but great waste attended it, as was evident from the fact that the sewage of Edinburgh manured only about 300 acres, which showed that there must be an immense loss in the strength of the manure by evaporation and the mixture of water. Although they had thus to deal with an immense quantity of water, still this plan was better than doing nothing. Men were too apt to conceal the results of their experiments, particularly if they were successful, and a friend of his, connected with a Nobleman who used night-soil largely, told him that he did not want the results known, as others then would take it up. Various modes of deodorising the manure had been tried at Leicester and Cheltenham, but they had not answered, because they accumulated the material. One great mistake which Boards of Health made was to compel people to do away with cesspools, and turn all the sewers into the rivers. He could say a great deal more upon this subject, but he recommended the Oxford Farmers' Club to take the matter up and discuss it fully, and he should be happy to co-operate with them. He had found that it would not do to mix lime with the manure, but that gypsum or gas-tar might be mixed with it to advantage. A friend of his in London mixed the night-soil with road-scrappings, and sent it away in a liquid state to Kent for the hop growers, and used to export it to Scotland. He recommended this Club to offer prizes for the best Essay on the subject, and as his object was not to benefit agriculture only but the health of towns and the well-being of all classes, he should be happy to give a prize of £5 (Much applause). He found it difficult to get attention to the subject, notwithstanding that they spent 7½ millions of money on the sewers in London, when the contents of them might be made serviceable to the land. The people at Manchester sold their manure for upwards of

£6,000, and though the expenses amounted to £16,000, they had cleansed 31,000 houses and increased the productions of the land. England did not keep pace with the population, and though they congratulated themselves on the advancement of agriculture, they were not able to feed the people. Once they were an exporting people, but now they imported 12,000,000 quarters of corn, and had already sent to their colonies upwards of 4,000,000 of people—a nation, it might be said. The population of Ireland was much less than it was twenty years ago, and yet they could not grow sufficient to feed the people who remained behind. They exported (at the rate of 200,000 people a year, and yet they were obliged to purchase 8,000,000 quarters of corn, and therefore, while they continued to waste the manure of the country, they would not be able to keep pace with the population. By making a proper use of the manure which they had at their command, they would greatly increase the producing powers of the whole kingdom, and make many a barren field yield an abundant crop. Mr. Clarke resumed his seat amid much applause.

The Rev. Mr. CLUTTERBUCK had listened with great pleasure to what had fallen from Mr. Clarke, for it was a subject of very great importance to agriculture, and there was much truth in the old saying, "Muck is the mother of meal." With respect to the arrangements in France, alluded to by Mr. Clarke, he (Mr. Clutterbuck) had witnessed the same in Algeria. He had observed at Nice, where he spent a winter, that in the vineyards there were facilities afforded for the collection of night-soil. Experiments had been made at Watford for utilizing night-soil, which was collected in tanks, and the Earl of Essex paid £50 a year to be allowed the privilege of having the sewerage into his tanks, and it was then pumped over his park with great success. The strength of the manure was very much lessened by its being mixed with water, as in the case of sewers; and when it was borne in mind that 60,000,000 gallons of water were supplied by the Water Companies in London, besides the fall of rain, they might judge in what a diluted state it was when it reached the Thames. With regard to the use of night-soil, he believed that when it was mixed with road scrapings it became very beneficial to the land, and he tried it upon a piece which would bear nothing, not even a mangold, and now it yielded a good crop. Mr. Clutterbuck suggested that Mr. Clarke should submit some drawings and plans, as to the best mode of carrying out what he had recommended, and concluded by moving a vote of thanks to that gentleman for the able and lucid manner in which he had brought forward this subject.

The PRESIDENT supported the motion; and bore his testimony that one load of night-soil was worth ten of any other manure, and so satisfied was he with his experience of it that he was open to purchase it to almost any extent.

Mr. Alderman TOWLE remarked that the system which Mr. Clarke had witnessed in France, and recommended to be adopted here, had for many years been acted upon in Nottingham, Derby, Mansfield, Chester, and other places in the North, where the privies were built so as to combine with them the ash-heap. He condemned the system of deodorising the manure in any other way, and thought that the error which people had fallen into was in using the manure too strong.

Mr. WILLIAMS (of Northcourt) urged upon them the necessity of bearing in mind this fact, that they should endeavour to return to the land what had been taken from it. He had tested the value of nightsoil as a manure, by having

taken a farm which was out of condition and exceedingly poor, but by the application of nightsoil only he made it produce a good crop of turnips where it yielded nothing before, and at a lower cost than he could have done it with any other manure. They were too prone to consider that this subject should be dealt with delicately, and regarded it as rather distasteful, whereas it was one of the most important and practical subjects, and deeply concerned the cultivation of the land. If they brought all back to the land which they took from it, they would be enabled to produce sufficient sustenance for the country at large. They gave large sums for artificial manures, which produced great results, whereas they had a much more effectual manure within their reach, and only wanted the necessary appliances for collecting, preserving, and making the best use of it. Agriculture, although advancing, was always open to improvement, and it would be a long time before they would arrive at that state of perfection which they wished to attain. Nothing was more difficult than to arrive at a correct appreciation of the value of various manures; and therefore, if by investigation, thinking the matter over, making experiments in a small way, and profiting by the experience of others who made them on a larger scale, they could attain that object, they would have great reason to be satisfied with their day's discussion.

Mr. RICHARD CHAUNDY (seedsman) had had considerable experience of the use and value of nightsoil, for, forty years ago, when he was in Kent, they used to fetch a great deal from London, starting at six o'clock at night and returning at six in the morning. They used it for a crop of turnipseed, took it into the field, threw it on the land, and next day ploughed it in, and let it lay till spring. They used it for beans, peas, and oats; and it suited the latter so well, that they grew 16 quarters to the acre. If they found the manure too strong, they mixed it with old tan, and threw it into a tank. They also mixed it with the sweepings from Greenwich, for which they paid 2s. 6d. a cart load, and they applied it to crops of fruit, and to fruit trees, and found nothing like it. All the market gardeners near London used to apply the manure, and Mr. Miatt, a large strawberry grower, grew some surprising crops with it. It was a lamentable fact that the nightsoil produced in this city was wasted, notwithstanding that there was no manure so cheap, or one which answered so well.

The MAYOR of OXFORD (Alderman Sadler) observed that Professor Liebig had assured him that the ammoniacal liquor at the gas works was one of the most valuable manures, provided it were diluted, and the Oxford Gas Company were willing to supply it gratuitously to any farmer who would send for it.

THE CORN FROM "THE CHAFF" AT THE DINNERS OF THE SOCIETY.

THE ADVANCE OF AGRICULTURE IN WALES.

AT THE MACHYNLETH MEETING,

Earl VANE, the president, said: I read, in a speech delivered the other day by one of the most distinguished lawyers of the day, I may also add by one of the greatest ornaments of the House of Commons, Sir Hugh Cairns, who was appointed Solicitor-General under the late Government of Lord Derby, the following sentences. They are taken from a speech made at a dinner given by a noble relative of mine to her tenantry in the sister country, and in addressing them, he says: "Agriculture is becoming every day less and less of a more manual occupation, and more and more of a science. It must be learned and studied if farmers would turn their land to profitable account, if they would desire to win and keep their place in the race of competition. They must not leave their farms unimproved, dirty, and half cultivated, yielding merely that poor return which would satisfy the rent, and leave, perhaps, some meagre subsistence for the owner. For as in their moral and Christian life they might be asked by their spiritual adviser what progress they had made in the application of their conduct to the great truths of Christianity, so also, with reference to their world concerns, the annual recurrence of a festival like the present might be well made an opportunity for each of them asking himself what was the use he had made of the worldly advantages and opportunities which he had enjoyed? Had his farm been better laboured, better stocked, or more productive this year than last?" Truly these words may apply to us, and if all act upon them sure am I that they will profit by them. I do not profess to know, individually, much of the science of agriculture; but any casual observer cannot fail to remark in this neighbourhood various faults which might easily be remedied. One of these is the great scarcity of turnip and root crops. Truly it may be said that in this there is some

improvement since the formation of this society, which, by the prizes it gives, has given a slight stimulus to this particular subject. Last year we were told by the gentleman who kindly officiated as one of the judges (Mr. Edmunds): "You give a prize for the best two acres of swedes and mangolds. In accordance with which we have given the first prize to Mr. Lloyd, of Llanbrynmair, when, if the judges had had discretionary power, they would have given the first prize to Mr. Owen, of Mathavern, for the manner in which he has cultivated an unpromising field (eight acres) of swedes and turnips." In order to meet the remarks of this gentleman, with which I entirely agreed, I have done myself the pleasure of offering a cup, to be held for two successive years, to the farmer who grows the largest amount of root crops, consistently with good husbandry and cleanliness of land; and I would fain hope that each succeeding year will find an increase of green crops over the breadth and length of the land. If not deemed presumptuous, I would also recommend attention to another great fault by the very dirty and slovenly state of hedges and ditches. The first are never cut; the latter are never cleaned out. The consequence is, that much land is lost, and each succeeding year finds the plough making its turn from the hedge further and further off. I remember the late lamented Sir John Conroy (than whom no better farmer existed) telling me that well-kept hedges and clean ditches made a difference of many acres on a large farm."

Mr. PHELPS, the honorary secretary, observed that he was exceedingly gratified to notice the progress the society had made since its commencement about five years ago, and he hoped it would still go on and prosper as it had hitherto done. It had three objects in view—to encourage the cultivation of turnips; to introduce good implements into the country, and to improve the breed of stock. With regard to turnips it was patent to all who visited the districts around that those who only cultivated a few when the society was first formed now

grew a much larger quantity, and that others who never cultivated a swede before had now large fields well managed. He regretted they did not use more artificial manure to their turnips; for the more and better the stock they kept, the better would be their manure heaps and corn stacks. With regard to good implements, "seeing" was "believing." He could assure them that in every instance after they had seen the implements so very kindly given by Lady Edwards as prizes, he had been applied to, to get more like them. Last year three or four more turnip cutters like those gained by Richard Evans were purchased in the neighbourhood. As to the cattle, there was an improvement, but not so great as he could wish to see. They wanted to go further from home for better blood; they kept a very useless number of bulls. There were thirteen on the river side between Cemmes village and Dovey-bridge. He thought it would be more paying to keep half the number of animals instead of having two not worth more than £10. They should club together, and give twenty guineas at least for one good one. And if they would like to carry out his suggestion he would gladly give a prize of £5 to any farmer who would give not less than £25 for a good Hereford bull not bred within thirty miles of Machynlleth, if the judges at our next show consider it worthy of the prize.

Mr. O. JONES said he would urge upon them all the importance of paying greater attention to the cultivation of turnips: he believed that nothing would pay them better in the long run. He could see with pleasure as he rode along the country that there was a decided improvement out of doors, the growing of green crops, &c., being much more extensive than in former years. There was yet room, however, for improvement; and he had the most sanguine hopes that the future would be fruitful with still greater results. He should be glad to see more of the excellent implements, exhibited by Mr. Halford on that occasion, introduced generally amongst the tenant-farmers. The labour would be essentially diminished for themselves, and the trifling outlay would soon be returned fifty-fold to the purchaser. These are days of progress; and for a Welsh agriculturist to hope to compete with his Saxon neighbour, having his improved implements in the way of horse and steam power, with his antiquated ploughs, harrows, &c., would be as hopeless as for a manufacturer, with his hand-loom and ancient sorting process, to compete with his modern machinery under the influence of steam, which works wonders, and which was beyond the comprehension of our simple forefathers.

Mr. MILLER said there was a decided improvement on what had appeared at the society's first meeting, which he had had the pleasure to attend. Their stock was upon the whole good, though he certainly would encourage them to introduce more of the Hereford breed of cattle into their stock. Their sheep had no particular characteristic; it was a kind of admixture of all sorts, which, in fact, was no breed at all. Let them endeavour to preserve cattle as much as possible. Whatever the breed may be, it should be quite distinct. They would find this plan, if adopted, to answer. Their fields of turnips were not so large as they supposed they were. What they supposed to be an "acre" was often found, when properly measured, to be no more than three-quarters; they consequently supposed that they cultivated much more than they actually did. Let them not be afraid of overdoing it; for nothing would answer them better than a good supply of turnips, swedes, and mangolds. He criticised most severely and most justly the neglected state of the farmers' hedges and ditches in the country, which was a great defect in their management, and which would entail great losses.

THE PAST SEASON, AND THE ROOT CROP.

AT THE GROOMBRIDGE MEETING

The chairman, EARL DELAWARE, said he had been afraid that so unpropitious a summer would have cast a damp over the spirits of those connected with agriculture, and that the present meeting might have suffered in consequence. They had had to go through a season which, he believed, was almost unexampled for severity. The continued wet weather had caused great uneasiness and anxiety as to the result of the harvest. It had pleased Providence at length to allow them to gather in the fruits of the earth in more favourable condition than was at one time expected. They had had great reason to apprehend that a very large quantity of corn in England would have been much damaged and harvested in a very inferior condition. They had been very properly admonished that it was their duty to submit patiently to the dispensations of Providence; not to despair, but to do all that lay in their power to alleviate existing distress, and thus by patient submission, and by a more lively gratitude than they had exhibited in times of abundance, to render themselves more worthy of future blessings. That they had no occasion to despair would be at once evident if they formed a comparison between the results of the harvest in this part where agriculture had very much improved, and in those where it was not in such a forward state. The result of his inquiries upon the subject was that he had found where land had been deeply drained and well cultivated and cleaned, the injury sustained by the crops was by no means so great as where those operations had been less attended to. He was told that where land had been well drained for several years past, well cleaned and kept free from weeds, the crops had been brought earlier to maturity, and therefore suffered less from the influence of the weather, as the farmers had been able to take more advantage of the few opportunities offered by fine weather for gathering in their corn. Those circumstances showed how very important it was that the cultivation of land should be strictly attended to, and that deep draining especially should receive more attention than it had yet done in this part of the country. It would be found that in other parts of England, in the north and midland counties, where the fields formerly produced inferior crops of wheat, the agriculturists had, by means of deep draining, rid the land of its superabundant moisture, and the crops were now in some instances larger by a third. It was thought that in this part drainage was not sufficiently attended to, but he hoped agriculturists would begin to see the great advantage of it. With reference to the proceedings of that day he was happy to state that the ploughing, though it could not be considered to be better than any that had been previously done in connexion with that association, it was much better than, from the nature of the weather, the judges had been led to expect, the land on which the work was performed having been found to be in a better condition than was anticipated. Under these adverse circumstances, however, some of the carts had been admirably done, and would bear a successful comparison with that in any other part of England. Speaking on the subject of crops, he was reminded that he was told the other day it was not advisable in this part of the country to grow turnips in a wet season; that crop in this part was a very precarious one, although this year it was a pretty good one, which was a convincing proof that they were able to grow all kinds of turnips; and he was convinced that many fields, described as being unfit to produce a crop of turnips, would yield a very good one. As compared with turnips, however, the mangel-wurzel was a certain crop, and he thought the agriculturists in this part should rely more upon it and less upon turnips; this year the mangels had turned

out a very decent crop. Recurring to the subject of ploughing, his lordship observed that the association had been led to expect that a steam plough would have been set to work in the neighbourhood on that occasion, and he hoped some day they would have one. He would not, however, express an opinion that a steam plough would answer in this part of the country; indeed, he thought its success, considering the great unevenness of the soil, was very questionable. The implement, however, might be tried, and it would then be seen how far it could be adapted to this soil. There were many improvements in agricultural machinery of which the farmers in this part might avail themselves with great advantage. Some of them, he had no doubt, were present at the last meeting of the Royal Agricultural Society at Canterbury, in the summer, and had learnt some useful lessons from what they saw. Some of the implements were constructed upon the latest and most valuable improvements, and although many were not adapted to this part of the country, some undoubtedly were. He was convinced that the steam cultivator might be generally used here with great advantage, as also the haymaking machine, which was but little seen here; but none of them who had seen one at work could fail of being convinced of its great utility and value in the saving of time. There was also a machine for lifting corn from a waggon to the rick, which would be found very useful and could be adopted anywhere.

AT THE BROMYARD MEETING

MR. KING KING said he was afraid the past season had not altogether been a very prosperous one for farmers, of whom he was one; but he was happy to say, as far his own experience went, that he thought [it would be found they had] righted on their legs, and that things would not turn out quite so bad as there was at one time reason to expect. He had thrashed out some seed wheat, as most farmers had done, and he was glad to say that it was a very decent sample. Although the hay crop was a total and entire failure, there was still a good deal of fodder of one sort or another, which he hoped would enable them to bring their stock creditably through the winter. He also hoped they would never live to see, at least not for many years to come, such a season as they had lately passed through.

LORD WILLIAM GRAHAM said he could not but condole with them on the unfavourable season they had had; but, with his hon. friend, he trusted that their worst anticipations would not be realized, as he believed that a considerable breadth of corn had been harvested in good condition in various parts of the country. At the same time, the damaged hay crop, with the partial failure of the roots, would, he was afraid, require all their ingenuity to enable them to carry their cattle in a good and wholesome condition through the winter. That, however, was a matter which he had no doubt had occupied their attention, and that they had taken the opportunity, or were about to take it, of obtaining as much artificial food as they conveniently could before it rose to an enormous price. He had been told that the best way of treating the damaged hay crop was to steam it, as it was thereby made more nutritious and more valuable for the animals, and that a machine for steaming might be obtained for £7 or £8. Two or three farmers, therefore, by combining, might easily obtain such a machine, to their great advantage. That was really a matter of great importance, because if they were obliged to sell their cattle during the winter from want of keep, they would probably be enabled to do so only at a ruinous sacrifice.

THE PRESENT POSITION OF THE FARMER.

AT THE LOUGHBOROUGH MEETING

MR. CHAS. WM. PACE, who presided, said: I happen to

remember the time when farmers were enabled to make very large fortunes. I do not believe it is possible in these days for farmers to make large fortunes. The cost of production is so great, and the situation in which you are placed in regard to cereal and animal produce is such that the same means do not now exist for making those fortunes which have been made by farmers. I could name now the sons of those who made large fortunes by farming, but I do not believe it is now possible to do the same. Gentlemen, in commencing this matter I am led to refer to language which fell from the Right Hon. the Chancellor of the Exchequer, who said that the consequence of (I must use the word) Free Trade in corn to the farmers had been such, in stimulating their success, that this prosperity of the agriculturists was the groundwork which led him to propose to Parliament the late measure of Free Trade. Now, gentlemen, there is not a more patient race of people, I believe, in her Majesty's dominions than the British farmers. Let me take you back for the last 70 years, and compare your situation now as farmers with what it was during the greater portion of that period. During those 70 years I will take the averages of the value of cereals, issued by order of Parliament, once in seven years, on which, since the commutation of tithe, the tithe averages are paid. Now I think that from 1790 to the end of last year comprises 70 years, and let us see the experience of that period and the prices obtained, and then we will not be at a loss to know why many farmers who were once making considerable fortunes have been barely making sufficient during the last fourteen years to enable them to live respectably. The average from the year 1790 to 1796 was 56s. 1d.; from 1796 to 1802, 76s. 8d.; from 1802 to 1808, 84s. 6d.; from 1808 to 1817 (nine years), 92s. 5d.; from 1817 to 1824, 63s. 9d.; from 1824 to 1831, 63s. 3d.; from 1831 to 1838, 52s. 3d.; from 1838 to 1845, 58s. 8d. And then we come to the two periods of seven years which are the fourteen years' averages since Sir Robert Peel's Act passed in 1846; and the first average is 48s. 5d., the other 57s. 8d. But let me tell you that the fluctuation during the last 14 years was very much greater than at first sight appears, for the prices for six years out of the 14 years named were down the highest to 44s. 3d.; and the years 1792 and 1835 were the only two years during the past 70 in which the prices were reduced to those of the six years to which I have alluded. Now these are facts which are sufficient to show that we have no right to take for granted what the Chancellor of the Exchequer says, who is not a practical man, and who does not understand the practical working of agriculture as we do. He does not understand it, I say; and yet, with a smile upon his face, and cheered by a section of the house, he says, "Look at the farmers; see the agriculturists—see how they prosper under Free Trade, and therefore I propose to you (the mercantile classes) an extension of Free Trade by the French Treaty." Now I have a right to criticise that statement, that the agriculturists have prospered under Free Trade; but let us see what has been done during the last session. Wherever anything has been done, whatever could be done has been a stab at the British farmers. In the first place, we have now what we never had in operation during the last 150 years; foreign malt can be imported into this country. Since the days of Queen Anne foreign malt has not been admitted into this country. You may, indeed, be able to compete with the foreigner in barley, from the difficulty they experience in bringing it over; but whatever may be the difficulty in the way of importing foreign barley, no such difficulty exists in the article of malt, because in malt the grain is quite dry, and freed from all moisture; and this competition in malt may some day be a serious disadvantage to you. What else besides

that measure has been done? Why, everything that can be done to replace the British beverage of malt and hops by French wines. I hope and trust, and believe, that such is the character of Englishmen, that they will not be led into that error, however much the Chancellor of the Exchequer may desire it; and he has put down as increased revenue from that source a large item. He has done all that he can to introduce foreign wine into this country, and every glass that is drunk must diminish the consumption of malt and hops, and is not for the benefit of the farmers; and the law has been altered by the Chancellor of the Exchequer in order to tempt Englishmen to drink French wines instead of the national beverage.

After referring to the Treaty as it affected other interests he said: I have no wish to speak on politics, but as a farmer, and a man endeavouring to make the best I can by the management of my farm and by agriculture, I will speak out as a farmer, however we may be galled. We should do all that we can to push forward agriculture: but, after all, we ought to look at the main chance, and see, when all has been done that is possible to improve our position, if we can have a fair return. I do not know what the population will be found to be next April, but at the last census the agricultural classes more than doubled any other class in the community, and I say they have a right to have their interests attended to. I have done with the farmer now; let us come to the grazier. He has equally suffered with the agriculturist by the importation of foreign cattle into this country. Have not these men suffered by the importation of poorish cattle, which, if they have not died on their hands with the disease—which an Essex agriculturist very facetiously called "the Peel disease"—at least, have gone back several months, so that instead of being fit for market at the time they calculated upon, they were, by being in a poorish condition, a serious loss to them? Although these animals did not die, they became deteriorated. But that has not been the only loss, for graziers have reason to complain that diseases not formerly known have been introduced by the importation of foreign cattle through the operations of Free Trade. Many have been taken in, in that manner; not that the persons who sold the cattle knew them to be diseased; but a man went into the market, and he bought a number of foreign sheep or cattle, on which he thought he could soon make a profit, and he took them and put them among his own flock or herd, and thus communicated disease to them. I have lost enormous quantities of lambs within forty hours of their birth on this cause; and also sheep from rot and foot disease; and you all know what many have suffered from the loss of sheep. Now, as most farmers are not only agriculturists, but also graziers, because the one is so intimately blended with the other that you can't well separate them, much mischief has been done in that way, and the British farmer has suffered as well from loss in cattle as from the depreciation in the price of corn. Everyone knows that for the last two years, 1858 and 1859, there were not such low prices current since 1790. I would not say anything about it, however, if they did not crow over us; but they have no reason to crow over us, as we are not so extremely prosperous and puffed up with high prices. In previous years we have been more prosperous. I have paid a great deal of attention to this subject, and although I do not mean to trench upon party politics, I do wish to speak on those matters that affect the well-being and welfare of the farmers.

AGRICULTURAL EDUCATION.

At the LOUGHBOROUGH MEETING,

Mr. HERRICK said: We may now congratulate ourselves

that we have established an agricultural school in this town that will be of importance to the community at large. We had some difficulty in getting a schoolmaster, but when it was known that he would not have any duties to discharge in the school except those in connexion with agriculture those difficulties vanished, and we got Mr. Scott, who comes highly recommended by the institution in Edinburgh, and who will carry out our instructions in every respect. We can't expect too much at once; but to the farmers in the neighbourhood it must be of importance when by payment of £1 a-year they may provide a theoretical and general education for their sons as agriculturists, and this great advantage will be heightened when it is known that this school is not confined to boys coming from the district, but to boys from all parts of the kingdom, and I have no doubt that in the course of time numbers will flock to it for instruction, and thus make the school prosperous and important. A farmer's life, especially at this season, is one of great anxiety and difficulty. He has very much to do: and it may be truly said of him that he earns his bread by the sweat of his brow, for he has enough to do to keep down the weeds and thistles that spring up. But farmers are advancing; they are men of progress and education, and now that it has been shown that science has come to their aid, they are willing that their children should receive an education which would fit them to take advantage of those aids science affords. I have no doubt, therefore, that the future generation will make as much progress in the science of agriculture as the present generation has done.

Mr. S. B. WILD (vice president), said, the addition that has been made to the school of this place for the especial advantage of the farmers of the neighbourhood, and not only so, but of the agricultural classes generally, is, in the first instance, an emanation from the intelligent committee of this society. It had been for years mooted in the committee that a school for scientific knowledge, with regard to the cultivation of the soil, was most desirable, and some attempts were made, but we were at a loss how to supply that deficiency; but when my excellent friend, Mr. Herrick stepped in with his energetic and practical mind, and with his purse also, we were enabled to accomplish the object we so earnestly desired. We do not profess in this branch of instruction to accomplish miracles; but we do profess to learn the first principles of that science which is so intimately connected with the cultivation of land. We want the A B C of our learning, before we make further advance, and we can't proceed to the more advanced studies, as it has been well said, until we have acquired that elementary instruction. After learning to read and write, and acquiring a knowledge of arithmetic and the history of England, we have, as farmers, to learn the history of the earth—to learn the elements of which it is composed, and with which we have every day to do. We do not profess to attain to that knowledge by a jump, but we do by that regular progress by which every attainment is accomplished, by beginning with the elements of knowledge. We do not propose to supersede practice, which is so essential to the agriculturist, and bring in science. No, science is the handmaid of practice, and may be able, perhaps, to inform her mistress gently (for the mistress must be reproved gently by the maid) of her faults. We accomplish that object by steadily supporting that branch of instruction now connected with the school. Why do practical men fail, I ask, in the management of farms? We know not why, and it is then for science to step in and tell us why. It is not, as I said, to substitute science for practice, but to add to the advantages of experience the knowledge that science supplies

With that object in view, I trust that it may be accomplished, and that the agricultural community may especially see the great advantage resulting from it.

THE COMING WINTER.

At the WELLINGTON MEETING,

Mr. A. SANFORD said: At our meetings on these occasions we sometimes talk of things that may be useful to us, and there is one subject which I cannot help calling to the attention of the cultivators of the soil. We have had an extraordinary summer, and we must look forward, I fear, to a very severe winter and a difficult spring. Let me entreat you to do that which they do in other countries, but which, I am sorry to say, we don't do here. We are excessively extravagant in feeding our cattle. We don't economise in the way we ought to do. We ought to pay more attention to the different kinds of food we possess, and see if we cannot make them go further than they do. I am sure those farmers who don't take care to chaff their hay, to chaff their oats, and to chaff their straw, will not be able to live through the spring with the same degree of comfort as those who do. When I go through the country I see the straw scattered about the fields for feeding the young stock; but depend upon it there cannot be a more extravagant way of doing it. If the hay and straw were chaffed, and the stock put in hovels, they would go much further. I give you this hint because I think it may be useful to you as agriculturists. Again: how few of us think of cutting up our turnips! Don't give them to sheep whole, and let them break their teeth in biting them, but cut them up with a little straw, and they will be much more comfortable. When we meet in this way, if we can give a hint or two to one another we ought to do so, and I am sure you will give to any one your attention.

Mr. KNOLLYS said they were much indebted to Mr. Sanford for the practical turn he had given to the meeting. It rarely happened that they could get together so many gentlemen, representing so many soils, holding different districts, and they ought to get from them some practical lesson that might be carried out with advantage. He thought that what Mr. Sanford had said in reference to the maintenance of stock, during the next winter was of great importance, for unless they could call in some extra aid it would be almost impossible to support the cattle upon the fodder. He thought, however, he might carry the hint still further, for if they would damp their chaff and sprinkle it with a small quantity of linseed, they might keep their stock at small cost. That was a hint which he ventured to throw out, and he was of opinion that it might be acted upon with advantage. This season, in consequence of the wetness of the weather, the hay, generally speaking, was very bad; and he would call their attention to the advantage of steaming. That was a thing easily done. If nothing better could be obtained, a chest with holes in the bottom, or a wicker-basket might be used, and by this means the disagreeable properties of the hay be carried off. If they would do that, and would use a little barley and damp the chaff, it was surprising how well their stock would thrive upon it. Again, on hill-farms they might use gorse or furze for their horses. In ordinary years it became a question whether anything which gave additional labour was worth a farmer's trying; but in extraordinary years it was different. In North Devon he kept his horses without hay, and fed them upon bruised gorse, and no man's horses were in better condition than his were. Some might ask, "But how are we to bruise gorse?" There was no reason why they should not perfectly bruise gorse, because they might pass it through an old chaff-cutter, although with considerable waste.

If they were going to carry it on for years, he would say get something better; but for a time they could make an old chaff-cutter answer the purpose.

The CHAIRMAN (Sir A. Hood) said they were all highly indebted to Mr. Sanford for having introduced agricultural subjects, for it was truly desirable that those matters should be brought before them. They were subjects of the gravest importance at the present time. Turnips were not a quarter what they generally were, and the mangold crop was not a half. Hay was bad, generally speaking; and straw had been much injured. He perfectly agreed with Mr. Knollys, that where hay had been damaged it ought to be steamed. He had tried it, and he should like to compare notes with gentlemen present. He began by putting up a wooden chest, and that lasted him three years, at the end of which time it became rotten and useless. He next tried an iron one, which lasted him about as long as the wooden one, and then became rusty. He then inquired of a gentleman who was a good practical farmer (Mr. Gray, steward to Mr. Dickinson), and he told him he had been using a brick one. He put up a brick one, and found it answer capitally, besides being very cheap. With regard to the feeding of horses upon gorse, it was the most useful thing they could have. Those who had steam-power had only to get two rollers, and then it might be easily bruised.

Mr. CORDWENT: Would it grow in our valleys?

The CHAIRMAN did not think it would answer except where it grew naturally. Five or six years ago he went to Scotland, where the cultivation was as good as it could be, and he found at Stirling they fed their cart-horses in the winter upon chump bean haulm, a chemical analysis of which showed that it was nearly as good as hay. The straw of oats had more protein in it in Scotland than in England, and perhaps that might be the case with bean-haulm, but still they ought to take the subject into their consideration. One question he wished to ask, and that was, whether steaming bad hay was the most economical manner of feeding? In giving cold food they lost a considerable portion in giving heat to the animal's body; but some said it was cheaper to do it that way than to buy fuel for the purpose. Perhaps Mr. Cordwent would be able to tell them whether pulping roots would not do the same thing, without fuel? Some said that was a most advantageous plan, but others differed. He believed that, with the roots pulped and mixed with hay, they got the same result.

Mr. CORDWENT said, if they pulped their roots and mixed them with the chaff, the cattle would do well upon it. He had not tried steaming, but he did not believe it would answer.

NEWMARKET FARMERS' CLUB.

The second annual meeting of this club was held on Oct. 30, when the occupants of the broad open champaign country round the great Turf centre mustered in considerable numbers. There was this year a small exhibition of stock, the principal features being some of Lady Pigott's celebrated shorthorns, comprising the bulls Earl of Surrey and Lord of Aatlard, the cow Duchess, a bull calf, and five other splendid cows and heifers. Her Ladyship did not compete for prizes; in fact so far from doing so, she offered two premiums, one for shorthorn cows, and one for butter, which she personally distributed in the course of the afternoon. The shorthorn prize Lady Pigott handed to Mr. Frost, expressing a hope that she should have the pleasure of seeing many more of his animals in the show-yard in future. The cattle prize was carried off by Mr. Benyou.

and her ladyship said she hoped that better butter would be produced in the district, and that next year might witness a larger and superior show generally. Three hearty cheers were given for her ladyship, whose name has become a household word in agricultural circles throughout the length and breadth of the country. As regards the exhibition generally, it was about up to the average of a district show, but the horse stock showed the solid, heavy, enduring Suffolks in some force. The speaking at the dinner, at which the Duke of Rutland presided, was more germane than usual to the occasion, a remark which we probably should not have been justified in making, had not Mr. Torr, of Aylesby, and Mr. Booth come over from Lincolnshire to act as judges of stock. Mr. Torr asked why should Cambridgeshire and Suffolk be celebrated for horses alone? When the farmers of those two great counties saw a lady exhibiting stock so far above their own, they should follow her bright example. Mr. Torr added, that he thought such meetings tended to advance farmers in their profession. Farmers were rather likely to be smothered just now with chemistry, astrology, and even law and divinity—of course there was “loud laughter” here—and they were apt to forget that, after all, with science ought to be combined practical knowledge of farming. In Lincolnshire agriculture was now carried to a high pitch, and more produce was now sent out of it than from any other county in England. This was effected by a copious application of artificial manures, and the confidence which existed between landlord and tenant, labourer and farmer, for nothing was known of leases. There was one little matter which was very objectionable in Cambridgeshire, Suffolk, and even Lincolnshire—he alluded to long teams of horses with waggons which ought not to be in existence, except in Noah’s ark, and he pleaded guilty himself of this practice, which he wished to see obliterated. He was aware that it was no joke for a practical farmer to change his waggons when they were beautifully bedaubed with paint, and the horses were bedecked with high fringes, which carried the snow in winter and would not shade in summer; but it was rather odd in days of locomotives, railways, and lighter carriages generally, to see the farmers of the eastern counties indulging in great wide waggons with four horses, having more harness on them than one horse could carry, and one horse out of the four of no use at all. Another topic was “ventilated” during the evening, viz., the “ventilation” of cottages; and it must be remarked that the wandering tendency of the agricultural mind is one of its most curious idiosyncrasies. Start a conversation at an agricultural dinner on oilcake or nitrate of “sober,” as Mr. Jorrocks has it, and before many minutes are elapsed you will find yourself deep in farm-buildings, covenants, pulp-parchment, or the height of St. Paul’s cathedral—everyone having some idea which he thinks must see the light. The notions promulgated with regard to the ventilation question were the thrusting of a zinc pipe, three or four inches in diameter, through the ridge of the roof, or, if the chimney is sufficiently high, the boring three or four holes in the chimney draft; Mr. Torr advocated no ceilings at all, but open timbered roofs.

A SUBSTITUTE FOR HOPS.—At the meeting of the association last year he took the liberty to urge upon those present the importance of cultivating hops, as being next to barley, by far the most useful product of the soil. He was sorry, however, to find that the result of the hop-crop this year was not at all of a satisfactory nature, though they would have seen by the papers that the duty was £53,000, instead of even a still more contemptible sum.

Under these circumstances he had no doubt they would all be gratified to hear (he was now speaking as one of the brewing interest), an admirable substitute has been discovered for hops. It had been mentioned before, though he believed it had really never been used—he referred to strychnine. The only disadvantage attending its use was that it had been calculated it would kill off about fifteen per cent. of their customers annually. However, the London brewers had come to the conclusion that for this year they must put up with this misfortune—there was no help for it, perish their customers must.—MR. C. BUXTON, M.P., at Maidstone.

PARLINGTON TENANT-FARMERS' PLOUGHING MEETING.

On Friday, the 2nd of November, the annual ploughing meeting of the Parlington Tenants was held on the farm of Mr. Brady Nicholson, of Sturton Grange. Forty-one ploughs entered the field to compete for the various prizes. Great was the emulation of the candidates; and very successful was the ploughing, the whole of the work being most creditably performed.

The quantity allotted to each ploughman was two rods and twenty perches; and the time allowed for the completion of the work was five hours. The trial-field contained forty-five acres of seed land; and the scene was a most animated one. On the ground we noticed F. C. T. Gascoigne, Esq., the landlord of the estate, with numerous other spectators, who appeared delighted to see such good ploughing, and so many workmen engaged.

Amongst the competing ploughs were some made by the firms of Messrs. Hornsby, Howard, Ransome, Busby, Dale (of Burlington), and Vincent Dawson (of Lincoln).

In Class I., for ploughs without wheels, in which twenty foremen competed, the first prize was won by W. Reed, foreman to Mr. Dawson, of Aberford; and the second by John Shaw, foreman to Mr. Brady Nicholson, of Sturton Grange. The winning plough was an iron one made by Hornsby, of Grantham; the second of wood, by Vincent Dawson, of Lincoln.

In Class II., ploughs with wheels, for young men above eighteen and under twenty-two years of age, the first prize was taken by William Thompson, servant to Mr. Simpson, of Park House, with an iron wheel-plough of Ransome’s; and the second by John Adamson, servant to Mr. Dawson, of Aberford, with a plough made by Howard.

In Class III., for boys under eighteen years of age, the first prize was won by George Fryer, the smallest lad on the ground, servant to Mr. Brady Nicholson, with a plough made by Vincent Dawson, of Lincoln; and the second by John Poole, servant to Mr. Smart, of Woodhouse Grange, with a plough made by Dale, of Burlington.

After the ploughing was finished, the prizes were awarded, and the various candidates were addressed in a most able and effective speech by Mr. Fox, the talented agent of the estate. An adjournment then took place, to the house of Mr. B. Nicholson, where a substantial collation was partaken of. A discussion on various agricultural subjects ensued; and a general opinion was expressed that Messrs. Hornsby’s ploughs were the best for seed-land.

The judges who kindly officiated on the occasion were Mr. Wright, of Ogelthorpe, Tadcaster; Mr. Maskill, of Hornington; and Mr. Wilkinson, of Bramham; and the

decisions of these gentlemen were much approved. The arrangements for the ploughing were under the able management of the stewards—Messrs. Atkinson, Smart, Furniss, and Nicholson—and gave universal satisfaction. The

civil and orderly conduct of the workmen was much admired: indeed, since the establishment of this Meeting there has been a marked improvement in the ploughmen of the district.

AN ENGLISH NEWSPAPER.

BY JUDGE FRENCH.

[From the *New England Farmer*]

How much a single number of a well-conducted newspaper tells us of the condition of the country where it is published! I am led to this reflection by reading the *Mark Lane Express* and *Agricultural Journal*, a paper published weekly in London. How significant is every paragraph of the differences between Old England and New England! The number of Sept. 24, 1860, is before us. Let us look a moment at its contents. Here is a little table showing the quantities of corn imported into eleven ports in England and Scotland for the week ending Sept. 12th. We must bear in mind that "corn" in England does not mean Indian corn, but all kinds of grain. The amount for the week is 222,416 qrs., which multiplied by eight gives the number of bushels, 1,779,328! nearly two million bushels of grain brought into those ports in a single week, equal to about 324,000 bushels per day. This is truly surprising, and we should at once conclude that this must have been an extraordinary week. If, however, we turn to Caird's recent letters on *Prairie Farming*, we shall find at page 9 the following: "During the last year (1858) we have imported into this country at the rate of nearly one million quarters (eight million bushels) of grain each month. We have thus, in addition to our home crop, consumed *each day* the produce of ten thousand acres of foreign land." Now ten thousand acres of wheat, at 25 bushels per acre, would give 250,000 bushels, a little short of the daily quantity reported in the *Mark Lane Express* for the single week. Great Britain, then, it seems, consumes all her own grain, and requires a little farm of some three and a-half million acres, all in heavy grain, equal to 25 bushels of wheat per acre, to keep her population supplied with food!

No wonder the interests of agriculture attract attention in England. No wonder that her lords and ladies, as well as her agricultural population, express so deep and constant an interest in the crops, the weather, and the harvest; for a failure of the crops there brings distress and even famine, while with us no failure has ever been so general, that the want could not be supplied within our own borders, and our only complaint has been of a rise in the price of flour and meal.

FARM IMPLEMENTS.

But let us look further into our paper. Here is one of a series of articles upon "Farming without the Plough." This, to one who has seen English husbandry, means much more than others might suppose. The writer advocates not any new terra-cutter, like that recently patented out West, a sort of rotary digger to claw up the earth, as Talpa suggests, like the claw of a mole, but the use of a class of implements well known in England, but almost unknown here.

If we turn to the advertising columns, we find advertisements illustrated with cuts of scarifiers, and cultivators, heavy, powerful implements, with from seven to ten steel teeth, some eighteen inches long, curved forward,

borne on wheels two or three feet high, the structure of which at once indicates their adaptation to old, well-tilled fields.

I have seen a scarifier of this description drawn by five horses through wheat stubble after harvest, before any other process. The design was to clear the field entirely of all rubbish preparatory to the next crop, which would be turnips. The long, sharp, shining teeth forced a foot deep through the soil give a fine pulverization, at small expense; for the scarifier, although requiring a heavy team, works a breadth of several feet at once, and thus compensates for the power required to move it.

Upon many of our fields clear of stones and stumps, such an implement, instead of the shallow cultivator in use in New England, might profitably be substituted. We find also cuts and notices of drills of various kinds, for sowing wheat, turnips, and other seeds. Nearly all the grain in England is sown in rows or drills, with these machines, drawn by horses. Wheat is drilled from 6 to 10 inches apart, and a breadth of say 8 feet is covered at one operation. In the after cultivation, horse-hoes, made to exactly match the drills, are drawn between the rows, working the same number of rows. A man follows the implement, carefully watching and guiding one hoe, and all the rest of the set are governed by this one, and as the implement goes in the track of the drill, the rows of which are parallel, although not precisely straight, there is little injury to the crop. The turnip and mangold crops are hoed in the same way, four or five rows at a time, with great facility. Horse-hoeing upon wheat is only practised on light soils, but universally the wheat is horse-hoed or hoed and weeded by hand on all well-conducted farms. This skillful use of tools, and thorough cultivation and care, tell of a more perfect husbandry than is anywhere seen in America, at least in the Northern States.

MOCK AUCTIONS OF LIVE STOCK.

Further on we find several communications on the subject of auction sales of cattle, in which it is charged that many of the pretended sales of short-horns and other animals, so common among breeders in England, are mere shams, in which men of respectable position engage to get rid of their poor stock by advertising their well-known and high-bred animals to attract bidders, and procuring the best to be bid in for their own use. The *Mark Lane Express* has contained several articles recently on this subject. From what I know of English gentlemen and English farmers I should expect to find as much fairness and honour in their dealings as in those of any class in any country. Honesty is an English trait, and character is an Englishman's capital, and if such practices have prevailed there, public sentiment will soon drive them from existence.

MARKET FAIRS.

This paper contains regular reports of all the grain mar-

kets in the world, agricultural reports from the various counties of the condition and prospects of the crops, reports of the cattle, wool, and provision markets, with weekly averages of prices. Fairs are regularly held all over Great Britain in the principal towns, weekly, monthly, or at other intervals, at which farmers and others buy and sell all their farm products. I attended several of those fairs, and witnessed the manner of conducting their business, and was struck with the perfect reliance placed upon the seller's representation. Grain is usually sold by samples. The farmer is met by a buyer who accosts him with, "What have you to-day to sell?" or the like. The farmer replies, "So many quarters of white wheat, so many quarters of red wheat, so many of barley." "Have you samples?" The farmer takes from his capacious pocket several small bags of a half-pint each, opens them, and allows the buyer to examine, which he does carefully by feeling, tasting, and smelling. The price is named, and agreed on, and the buyer takes the sample and pays the price, and never sees his purchase till received perhaps in Liverpool or Manchester. I was assured that fraud was almost unknown in these sales, and

most of the grain sold in the country changed hands in this way. Can we not profit by this example? The farmer wants free trade and an open market, in order to protect himself. In this country an agent from the city slips round before harvest, and bargains privately for all the wheat, or wool, or apples, for all the butter, cheese, poultry, and everything else, at the farmer's door, and monopolizing the article adds a frightful commission, and giving the farmer the lowest prices, compels the consumer in the city to pay the highest prices. Thus both producer and consumer, by being kept apart, support a large class of middlemen who wax fat at their expense.

If any man doubts of these things, let him try the buying and selling price of any of these commodities, in Quincy Market, in Boston, any day, and he may learn. Market fairs we want and must have, regularly, in all our large towns.

Much more might we learn of the *Mark Lane Express*, had we time and space, but between text and commentary, our sheet is already filled, and we must await a future opportunity.

THE LATE LORD MANVERS.

STR,—I will leave to others the task of the genealogical details and the history of the early life of the late Earl Manvers, and I will content myself with a short account of his Lordship as one who "dwelt amongst his own people." Few noblemen have made so much of their opportunities of usefulness in the country as he, and at the risk of being deemed a flatterer, I will refer to his Lordship's country life, as showing what may be done where there is a will to do it.

The tenantry on the Thoresby and Holme Pierrepont estates can best tell the kind consideration they have always experienced at their landlord's hands. One remarkable instance occurred when the railways had removed the traffic from the Great North road, and although his Lordship was one of the last to avail himself of the improved means of transit, he did not overlook his tenant's loss as the occupier of one of the posting-houses on the line.

As a sailor, he was not to be expected to be a practical agriculturist, and, although he did not appreciate the merits of drainage of the clay lands so soon as some of his neighbours, yet when the system was proved to be so decidedly advantageous, no estate in the county had a more efficient staff in operation, and having the benefits of the experience of others, few estates have been drained more efficiently and economically. The improvement in the estates and in the condition of many of the tenants in the last twenty years, is a sufficient corroboration of these remarks.

The example set as a man of business in the county has, I fear, but few imitators. So long as he was able to attend to his duties, no one was more active in the discharge of them; his attendance as chairman of the board of guardians of the union, when first established, was constant, and his endeavour to secure the right man in the right place, though not always successful, yet had a great weight in the subsequent changes. His Lordship's attention to the charitable institutions in London are well known, but no one will ever know the benefits conferred so unobtrusively on the poor in his own neighbourhood, independent of the care that was taken in the education of the

families of all connected with the estate. I should be sorry to intrude unnecessarily upon the domestic life of his Lordship, and indeed it would seem to present no features to invite comment, but it was the quiet unostentatious hospitality which was its greatest charm, and the freedom from personal feeling in many great political questions enabled Lord Manvers to keep the balance in the county at the time when party spirit ran so high.

As a sportsman, Lord Manvers will long be remembered in the Rufford hunt. When able to take his place in the field no weather would prevent his being at the place of meeting, and Captain Williams could best tell the support given to the hunt whilst he was at the head of it. The game on the estate was not neglected, but I never heard of a tenant suffering from over-preservation.

His Lordship's veneration for the antiquity of Sherwood Forest is well known. When he received a part of it in exchange for part of Regent's Park, none of the old oaks were allowed to be destroyed, but they remain, forming the most beautiful scenery, and which is almost unique in this county.

By the death of Earl Manvers, we have lost a great and good man, and although succeeding generations may "do as well in their degree," yet as we have seen the benefits of his Lordship's mild sway of his authority for the last forty-four years, I hope we shall not be deemed invidious to his successors if we claim for the late Earl Manvers a high place in the estimation of all who knew him.

I am, Mr. Editor, your obedient servant,
SOUTH NOTTS.

With the most thoughtful attention to the circumstances the agricultural body are placed in from the very wet and unseasonable harvest, the worthy M.P. for North Hants (W. W. B. Beach, Esq.), has directed his agent to defer holding the audit for the receipt of the Michaelmas rents until April next, in order to give his tenantry an opportunity of making the best market for their produce. This liberal and well-timed measure needs no comment.

A STEP FURTHER IN STEAM PLOUGHING.

Amid the columnar chimneys and blazing furnaces of metal-works, of woollen, cotton, flax, and oil factories, which evolve the black smoke-cloud of Leeds, the iron-works of Messrs. Kitson and Hewitson contribute their share of grime and vapour; and in their immense shops, fitted with every wonder-working variety of steam-hammering, turning, boring, planing, shaping, slotting, and screwing machinery, build locomotive, marine, and other steam-engines on a scale of great magnitude. Hard by this establishment, and in partnership with this noted firm, Mr. Fowler has started his steam-plough manufactory; in which, by founding, smith's work, and engineering tools and mechanism, he constructs boilers, engines, winding gear, anchorages, ploughs, mould-boards, shares—in fact, every part of the apparatus, excepting the wire rope: already completing and despatching to order at the rate of one machine per week, while the additional machinery now being set up will enable him to turn out two entire sets in the same time. Having served an apprenticeship with various makers—at Ipswich, Newcastle, Stratford, Leeds—and mastered practical difficulties in trial-fields and on farms of all soils and situations, the steam-plough has at last set up in business on its own account, opened an independent factory, and fairly commenced a regular, though novel, branch of mechanical industry with what was only a few years ago an agricultural marvel and embryo ingenuity, inspected by the curious, and doubtfully criticised by the plodding farmer. Many a progressive transformation has the youthful machine undergone, and as often announced itself to be so much nearer to perfect manhood; till, finally, we have its form and capabilities so developed and matured, its education so advanced in every detail, and tested in all points by private and competitive examinations, that large growths and alterations are no longer possible, the steam-plough having now attained its fixed and ultimate form and character: so that the changes left for the future can only consist of the multitudinous minor adaptations of implement, necessitated by differences in soil and variable usages of cultivation. The genealogy, birth, and early doings of the invention we need not recapitulate, our present business being the pleasant one of chronicling its attainment of full age, and describing the successful realization of a principle of operation long projected and aimed at by the inventor.

Of the whole number of steam-ploughs up to this time sent out by Mr. Fowler, a large proportion have earned most satisfactory testimonials from their purchasers, and grand results, which have been published in the columns of this journal: many of the machines have worked so smoothly and uninterruptedly, that month after month passes without any communication respecting their management or repairs being received by Mr. Fowler from perplexed or dissatisfied adopters of steam-culture; while all the rest perform well, and

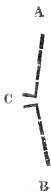
only in some hands, and in a few situations, have shown any tendency to excessive wear of rope or working parts. With all its great success in effecting tillage in the most excellent style, at a cost vastly below that of horse-labour, and accomplishing deeper and more valuable processes than animal power can in any way be made to execute, there is no doubt that the "wear and tear" account has formed the weak point in the machine. This item is not to be put at 15 or 20 per cent. upon the prime outlay by easy, uncertain estimates such as our judges allow in their reckoning of costs and charges: the wear in one kind of machine may be double that in another bought for the like sum of money, and only practical and lengthened experience can determine the actual expense due to wear and risk of breakage which may be incurred by peculiar mechanical construction and mode of working. As our readers well know, the problem of accomplishing the greatest amount of work with least manual labour for managing the machine, was gradually mastered; the plan of a stationary engine and windlass set mid-way down one side of the field, with the ropes either running round the four sides or cutting off the corners diagonally, having been necessarily abandoned for the shortest and simplest method of a moveable combined engine and windlass at one end of the furrow, and a travelling anchorage at the other. Then followed the principle of hauling an endless rope by means of grooved drums, instead of coiling separate ropes upon two barrels; by which one-third less length of rope is required, the grinding of the rope upon itself in the winding is avoided, while the smooth steady motion (from the rope working in evenly cut grooves instead of wrapping upon irregular corrugated coils of rope), both secures better ploughing and reduces the liability to breakage, which is generally proportionate to the amount of jerking and unsteadiness in any machine. The first steam-ploughs working with the grooved drums performed admirably; but it was found advisable to diminish if possible the number of bends round these drums; for, as the best way to break a piece of wire asunder is to bend it to and fro until the bruising of the fibre of the metal at last results in fracture, so the mere bending of wire rope round drums and pulleys, even when small diameters and stunt turns are avoided, tends considerably toward injuring its lasting qualities. It was also found that, as the grooves themselves began to wear unequally, and the drum axes to cut, and the periphery of each drum to revolve a trifle out of the true circle, the rope led in several turns round the two drums became alternately too slack and too tight, a state of things which tended to stretch the rope at intervals, and by these intermittent excessive strains to increase friction and considerably subtract from the effective power of the engine. Accordingly, Mr. Fowler simplified the machinery by hauling with only a single drum, round which the rope was passed by means of

two large sheaves, so as to make only two three quarter turns holding sufficiently tight in two V-shaped grooves. To draw off the slack rope paid out from the drum, and prevent any "kinking" between the drum and the small moveable guide-sheaves, it was necessary to hold up the rope some height above the ground by means of suspension-pulleys supported by elastic india-rubber springs. And this form of apparatus, attached to an engine made locomotive by toothed gearing connecting or disconnecting the crank-shaft and the travelling-wheels, is that hitherto supplied by Mr. Fowler to his customers. The results of their performance have been, as we said, very satisfactory; but an improvement has now been applied, which lessens the number of bends in the rope to the lowest possible number, and reduces the hauling mechanism to the unit of simplicity. A drum has been invented, applied, and proved by field-work of some extent, which holds the rope by only a single half-turn in its groove; so that now the endless rope passes directly on and off the drum, as it goes round the anchor-sheave, without the intervention of sheaves at both ends of the boiler, while the "jibs" or suspension-pulleys with their elastic springs are taken away. In passing on to the drum the rope of course bends, and also bends from its curved form in the act of straightening again as it leaves the drum, so that it is bent twice; besides which will occur two slight bends in passing the moveable guide-sheaves when the engine does not stand quite upright, or perpendicularly to the plane in which the ropes lead up to and away from it. In the previous arrangement the rope passing twice on and twice off the drum, and once on and off of two sheaves or riggers, is bent eight times, beside the bending which occurs in the guide-sheaves and pulleys of the "jibs," amounting to four bends more. Hence in the new machine there are only four bends of rope instead of twelve. The consequent saving of the wear of rope can be appreciated only by persons who are familiar from experience with the damage caused by the frequent bending of wire-rope, especially round small pulleys, and by the grinding of the rope against the flanges of the sheaves. In the previous machine, the rope, after passing one three-quarter turn round the drum, is led round two large sheaves (at each end of the boiler), before again passing round the drum. This is found a much better arrangement than the wrapping of the rope several times round two drums; but still an undue tension is occasioned by the unavoidably unequal though slight wearing away of the grooves and running bearings. All this is impossible with the new drum, less friction and greater effective draught power being gained, as well as wear saved.

Let us now try to explain the action of the new drum. It will be remembered that in the earliest arrangement of grooved drums (shown at Chester in 1858) the rope passed a number of half turns in round-bottomed grooves conformed to the shape of the rope. This was held from slipping solely by means of the bite or frictional contact of the rope with the surface of the grooves, arising from the pressure of the tight rope upon the drum. It is a law in mechanics that friction in-

creases in direct proportion to the pressure applied for forcing the surface together; so that with double the number of pounds pressure per lineal foot of rope, half the length of rope in contact with a groove (or, in other words, half the number of turns round the drums) would give an equal amount of hold against slipping. Now the weight or strain upon the rope, which causes the pressure, could not be increased without a complicated arrangement of pressing-wheels to squeeze the rope at many points down into the grooves; but the groove itself might be so formed as to nip the rope, instead of simply receiving it into a freely fitting space. Accordingly the grooves were made of a V form; the rope, too thick to reach the bottom, became supported by and jammed between the inclined sides: and, in fact, the groove was (mechanically speaking) a female wedge, just as a nut is said to be a female screw. Everybody is familiar with the great multiplication of pressure obtainable by the agency of the wedge; and according to the acuteness of the angle made by the sides of the groove, a natural downward or inward pressure of the rope, say of ten pound per lineal foot, will give in the V groove a pinch or grip equivalent to the hold obtained in a round groove by a pressure of twenty, fifty, or more pounds per foot. Mr. Fowler adopted this form of groove, as enabling him to save several turns of rope; for with the V-grooved drums hitherto manufactured two three-quarter turns (equal to one and a-half whole turns) give as much hold as the four half turns and two quarter turns (equal to two and a-half whole turns) of the former round-grooved drums. The drum being fourteen feet in circumference, the length of rope lying nipped in the V grooves (being two three-quarter turns) was twenty-one feet; and this was the limit to which it could be reduced. For though the sides of the groove may be made to hold against any amount of slip by lessening their inclination to each other until they are almost parallel, an acute angle is found to incur excessive friction and cutting of the rope against the sides of the groove in the act of entering and leaving; and, indeed, the rope may be so firmly jammed in the groove as to require considerable power to release it where it ought to be paid out freely. Therefore, to secure the many advantages of working with only one half turn round the drum, it was necessary to add to the nipping power of the groove without any wedge-like action; and the present improvement, long in contemplation, has been tried, and proved perfectly successful. All suggested complications of pressing-wheels, weighted or spring levers, &c., being cast aside, the working strain of the rope itself is still retained as the sole originator of the pressure in the groove; but it is magnified upon the principle of the compound or bent lever, instead of that of the friction-causing wedge. For this purpose the sides of the groove are made moveable in short segments; the pieces of the upper and lower side being opposite, and acting in pairs, and so hinged respectively above and below the groove that when the nipping faces are moved inwards towards the centre of the drum, they approach more closely to each other; and, on the contrary, when moved outwards they open

more widely apart. A very rough diagram will clearly elucidate the action. The pieces being hung on fixed hinges or centres at A and B, the rope entering at c tends to urge the two pieces toward the right, and bring their direction into a straight line, instead of its forming an obtuse angle. The effect is, that, as the rope, by the natural pressure of the strain upon it, forces the pair of "clipping pieces" inward, bringing their ends nearer together, it pinches itself between them; the amount of



this nip or side-pressure being proportionate to the pressure of the rope in an inward or centripetal direction. It will be at once perceived that any less or greater amount of hold may be obtained by setting the centres, or fulcra, A and B, nearer or further apart. The principle is precisely that seen in many copying, printing, and other presses; and is the same which will cause a very flat arch to thrust out its piers and fall down with only a very slight excess of weight upon its keystone.

The reader will perhaps suspect that this ingenious drum may be rather too complex, and liable to wear, but concerning this point we must speak in another article.

THE BOWHILL PLOUGHING MATCH.—THE BEDFORD VERSUS THE KENT PLOUGH.

Whatever the leading implement-makers may think, there would seem to be little likelihood of the prize system really going out of fashion. If people cannot command such trials through the agency of the Royal Agricultural Society, they will have them still by some other means. At the late Show at Canterbury, for instance, the ploughs were not in turn; and so the men of Kent straightway got up a ploughing-match on their own account. It is not necessary to dwell here on the lamentable failure that followed, or to seek any further to find with whom the fault lay. But the whole of the county would not be implicated; for the contest was, in actual fact, not open to the whole county. Only such farmers as adhered to, or such workmen as were conversant with, the old Kentish plough, were qualified to compete, and anything like a comparison was as a consequence carefully avoided. The same thing occurs annually at the local meetings, where the turn-rise implement has a class to itself, and the iron plough another for its own order only. However, the iron plough was at Canterbury altogether excluded, and the "native" left to illustrate what, under certain difficulties, it could or could not do. The result went more to prove a negative than anything else, and the men of Kent and the Kent ploughs were more laughed at than ever. In this dilemma one of their own neighbours offered his friends another chance. Mr. Robert Russell, of Farningham, having long since given in his adhesion to the iron ploughs, publicly challenged the wooden one; and Mr. Elvy, whose man is the recognized champion of the ancient order of merit, took up the glove. It would have been impossible to name two better men to represent the interests involved in the issue. Mr. Elvy has long been looked up to, as one of the best agriculturists of his county; and strangers who wish to see what hop cultivation is, are at once directed to Bowhill. The Russells are quite as well known as a fine six-foot family, who ride famously to hounds, are the best of shots, and most spirited of agriculturists. They in turn are equally respected; and if the adherents of the two principles had been called upon to choose their men, they could scarcely have made any other selection

than that determined on for the match of Thursday. The premises, moreover, were on either side alike fair and encouraging. It is a favourite argument in Kent, when any one takes to trying the iron plough, that either the man or the implement will be missing in the course of a year or two. But the experience of the Messrs. Russell furnishes a strong case to the contrary. As the challenger, Mr. Robert Russell, said, when we came back to dinner at Maidstone, "Howard's iron plough was the greatest improvement that had been introduced amongst agricultural implements of late years. He himself and his three brothers had now used them for more than twenty years, and a practical proof of the advantage of the system was afforded by the fact that they had grown more corn and turnips and mutton at a less expense than they had ever done before. His farm was always open to inspection, and he should be happy to see any one who liked to pay him a visit." Both sides, then, had something to go on; while they joined issue in this wise:—Mr. Russell was to send three teams to Bowhill with Howard's plough, and Mr. Elvey was to have out three of his own with the Kent turnrise. They were to do half an acre of land each; and then four judges, two appointed by each of the competitors, were to pronounce which was the better work. The ordeal was strictly confined to this. There was to be no test as to draught, nor time, nor cost, nor wear and tear, of man or horseflesh; the arbitrators were simply to walk over the land, and pronounce upon what they saw. With this understanding then we rose the hill from Warteringbury, a walk that, despite the deep going, was well repaid by the glorious view over what must be the garden of Kent, and that tempted one to dwell, and turn again and again in the ascent. This once achieved, and we are in the heart of the contest. Here the longing eyes of sworn friends and followers are going step for step with the four fine fat horses that take the wooden plough upon its well accustomed route; and there the critical gaze fastens on the three more "lisome" looking nags that have brought the iron to enter the soul of this consecrated ground. They strike deeper, too, than ever. Mr. Elvey goes to eight inches

instead of six as heretofore, and Mr. Russell plumbs quite as honest a measure. The work is worthy of the occasion; and whether completely turned or nicely laid, the warmest of partisans or direct opponents all alike admit of its excellence. John Ploughman, to be sure, who has a special holiday to see what is going on, will not have it. He is proverbially proud of his four-horse team, and would submit with as ill a grace to three or a pair, as the smart dragsman of "The Wonder," or the "Tally-ho" would in days of yore have consented to the loss of his leaders. His master, too, does not much fancy giving up the point, and talks about its being "all very well here, but come on to some land of mine, and then see what you could do with them." There is many an echo to this, while the excitement only increases as the judges are observed walking across the work. Mr. T. Abbott and Mr. J. H. Solomon, in the place of Mr. Punnett, are "the Kent men"; and Mr. Marmaduke Walker, of Addington, near Croyden, with Mr. Hipwell, from Cheam, in the same county, are retained on the other side. Of these Mr. Walker said "that never in the whole course of his life had he laboured under greater difficulties than on that occasion. The judges ran in pairs, two looking after the turnrise, and two after the iron ploughs; and each, no doubt, had a little prejudice in the matter, which they could not throw off all at once. For himself, he was an advocate of the round plough, because it was the cheapest; but it was arranged that no such considerations as that were to guide them; and after a great deal of trouble and pains they could come to no decided conclusion one way or the other." While Mr. Solomon "hoped he went to the match not prejudiced, but there were certain points in the old Kent plough which the advocates of that system could not forego. Much of the work of the iron plough he could not but highly commend, but the ugly beginning in each case could not be overlooked; and that, with the backs to the furrows, were the chief splitting points. Beyond this, he thought the work of the iron plough was done exceedingly well; and, in fact, both ploughs were so equal in this respect that it was impossible to come to a decision." The official *decision*, as announced at the dinner, was, consequently, none whatever:—"In viewing the ploughing between the turnrise and Howard's iron plough, the judges find the work so nearly equal in merit that they cannot agree satisfactorily to themselves in awarding the prize. They therefore recommend Mr. Elvey and Mr. Russell either to withdraw or select an umpire, as was proposed in the first instance." An umpire had, in fact, been agreed to by the judges originally appointed, but Mr. Fisher Hobbs wrote in answer to the application that it was impossible for him to be present; and no one else was named in his stead. On hearing the decree, Mr. Elvey at once proposed that he and Mr. Russell should admit the merit of each other's plough, and give a certain sum as an honorarium to the men. But Mr. Russell did not agree so readily to so inconclusive a conclusion. "He quite concurred in the remarks which had been made as to

the difficulty of coming to a decision, and he walked over the field several times before he could make up his own mind. He rather regretted that his first suggestion, that judges should be selected from gentlemen not connected with the county, had not been carried out, and then there would not have been that prejudice which naturally existed. He did not care for the appointment of an arbitrator, but would suggest that a return match should take place in the neighbourhood where he resided, and Mr. Elvey might select the field." Mr. Elvey, however, distinctly declined this offer, fair and reasonable as it sounds; and Mr. Russell had, as a consequence, no alternative but to leave the question, settled or unsettled, as it is.

But it was clearly for the Kent men to go on. As the case now stands, Mr. Russell has proved that he can plough as well with three horses as Mr. Elvey can with four. His teams were in no ways distressed, although we believe the general character of his farm-horses is by no means up to that high standard his opponents deem it so necessary to have. Then we imagine that no one, for a moment, will attempt to maintain that the Kentish plough is worked with anything like the same ease to the man as the Bedford one. And, further, as to the result: Mr. Russell and his brothers were all brought up to the use of the wooden plough, and it was only gradually that they came to discard it in favour of the iron one. Since they have done so, "they find they can grow more corn, turnips, and mutton." This is at a less expense, of course; because three horses eat less than four, and the harder a man's powers are taxed the sooner he will wear out. Still, in considering the question it must be remembered that the wheel-plough put to work at Bowhill was not just what may have been previously tried in Kent. Mr. Elvey said, at the dinner, before he knew what the judges had determined upon, "that even if beaten he should consider it to be no discredit; on the contrary, he should feel some satisfaction in having been beaten by a gentleman who had brought down here a plough worth looking at, not like the miserable Scotch implements which new-comers into this part of the country had sometimes brought with them, though the result generally was that in a few years either the owners were gone, or smothered in their own weeds." And Mr. Whitaker admitted that "we had been apt, perhaps, to despise the iron ploughs; which was probably owing to a parcel of little trumpery things having been brought into this county as iron ploughs, instead of the first-class implements they had seen that day." The iron ploughs had in fact been made especially for the match, from new castings and mouldings, and they only reached Farningham on the Friday before the trial, the order for them having been received on the Tuesday previous! It was allowed, moreover, that never had they been so effective, and on this the whole discussion still depends. Will a new-fashioned iron plough with three horses do your work as well as an old-fashioned wooden one with four? Experience now goes to say that it will.

A very good company of some hundred yeomen dined at "The Star," at Maidstone, in the evening, under the able presidency of Lord Holmesdale, a young nobleman who had the strong recommendations of good sense, a fluent address, some humour, and fine tact, to qualify him for the office. But his Lordship of course is a devotee; and if the Kent plough is destined to fall,

there will be many a mourner over the sacrifice. The reverend gentleman who returned thanks for "The Clergy" gave the authority of scripture for its use; and when the party broke up, and people went their ways for a quiet pipe, the landlord of the hotel offered to quote the Georgics of Virgil in maintenance of the same time-honoured invention.

ON THE CAUSE AND REMOVAL OF SOURNESS IN LAND.

Sour land is the most thankless and ungrateful of all soils cultivated. In seed-time it consumes no end of labour and manure, but returns little for it in harvest, often less than the seed! It will grow plenty of weeds and coarse herbage, as some of our sour and bent grasses, but corn and root crops it will not yield with profit. Some cold wet clays, when full of vegetable matter, take on such a degree of acidity when they are allowed to lie long in pasture or plantation undrained, that they, when broken up by plough or spade, send up a sour smell like that from the sour slops in a pigs' tank. Of late years drainage has done much to remove extreme cases of this kind. Still, however, sourness in degree continues to be experienced to a much larger extent than is generally imagined, from stagnant water both in the soil and sub-soil, while a corresponding loss is consequently sustained.

In Germany, where "sour crout" is much used among the rural population, they are familiar with the practice of souring cabbage. In Scotland, where "sowens" is much used, every girl by the time she gets to her "teens" knows how to sour the "sids" or siftings of oatmeal. In England every dairyman knows how to sour his grains and skimmed milk for his cows and pigs. But are we familiar with the practice of souring land? In both cases the principle of souring is similar; and with a view to illustrate the importance of steam culture, drainage, and aëration as means for avoiding the latter, let us examine very briefly both practices.

"**SOUR CROUT.**"—(We quote from Dr. Macaulay's Medical Dictionary.) "A preparation of cabbage, which has been found useful as a preservative from sea-scurvy, in long voyages. The soundest and most solid cabbages are selected, and cut very small. The cabbage thus minced is put into a barrel in layers, six inches deep, and over each layer is strewn a handful of salt and carraway seeds; it is then rammed down with a rammer, layer after layer, till the barrel is full, when a cover is put over it, and it is pressed down with a heavy weight. After standing some time in this state, it begins to ferment; and it is not till the fermentation has entirely subsided that the head is fitted to it, and then the barrel is shut up and preserved for use. No vinegar is employed in this preparation."

We give the above because one of the simplest recipes in our possession for the making of a barrel of sour crout for family use. In large concerns pits are made of hewn stone or brick capable of holding several tons

of the article, but in every case the principle of souring the cabbage is the same.

The second article ("oatmeal sids") is soured by steeping in water. This is generally done in a large stone vat or trough divided into two compartments, the one for the article undergoing the souring process, and the other for holding it after being soured and separated from the "sids" or husks. In this case the souring is effected simply by soaking in water, and as a portion of the sour water is put back on every occasion, the process of fermentation commences without delay. Great cleanliness is required, and not a little skill, to do the work properly, but details of this kind are unnecessary for our present purpose—the manner how vegetable matter is soured. Brewers' grains are soured in pits for milch cows in a manner similar to cabbage, while the food of pigs is soured by throwing in fresh slops, &c., into the sour tank. Beans, peas, barley, and oats are soured for horses by steeping in casks in water—the grain being generally mixed with chaff, but sometimes alone, ground into meal, bruised or whole.

In the above examples sourness is effected by the formation of lactic acid. Into the chemical changes that take place in this formation it will be unnecessary to go. Suffice it for our present purpose to say that, in the case of brewers' grains and minced cabbage, all that is necessary is a certain amount of ramming or consolidation, so as to exclude the atmosphere and produce the proper kind of fermentation, when lactic acid is the result. And in the other cases the atmosphere is excluded, and the same acidulous result effected by an extra quantity of water.

In the souring of land we will find, on examination, exactly similar means being used to those above. In this case we have to observe that sour land consists of two substances, or rather two classes of substances—the one mineral and the other vegetable, and that it is the latter that has undergone the process of fermentation that produces acidity or sourness. Mineral acids may be present, but these we are not considering at present. The sourness may not be purely that of lactic acid, as malic, oxalic, and other vegetable acids are also found, some of which may be naturally in the roots of some plants, as sorrel, &c., &c.; the former being produced by fermentation; the latter being the products, as it were, of this fermentative result.

Sourness in the case of land, it will thus be seen, is a more complicated affair than in the case of

sour crout sowens, and sour food for cattle; and the reason of this will readily be understood when it is observed that almost every root in the soil undergoes the process of souring by itself; and that as the land becomes sour, it produces a multiplicity of sour plants, so that the question of acidity must of necessity become a very diversified one, differing in different geological soils, and under different climatic and other circumstances, that always demand consideration.

The discussion of the souring principle, with its predisposing cause, being the object of this paper, a few examples by way of illustration will be perhaps the best mode of procedure.

1. Sour undrained clay land under aration is the first example we shall quote, one which came under the experience of the writer about 25 years ago. It was under a four-course shift, and open or naked fallow; and until very heavy doses of lime were applied, it was experienced impossible to prevent it from becoming so sour as to be unfit for profitable culture.

2. A field similar to the above was laid down to permanent pasture, undrained. All the good grasses soon disappeared, coarse sour herbage taking their place. Large doses of top-dressing, with fresh seeds, produced a temporary effect; but the coarse grasses remained permanent, while the others did not, and the land was actually worth less than when lying in its original state, prior to cultivation, or about the commencement of the present century, when it was first broken up.

3. A large extent of a nobleman's deer-park is a sour gault clay, producing a thick matted sward, principally of sour bent-grass. It had been drained about 3 feet in depth and 18 feet apart; had been top-dressed oftener than once since it was drained; but although it was drier, the quality of the pasture was very little improved, as the land was still sour, and the few good grasses it contained unhealthy.

4. Permanent meadow and pasture from time immemorial, soil a clayey loam, drained as above; had been very sour prior to drainage, and was recovering, but slowly; much effete vegetable matter in the soil; roots of the fine grasses in an unhealthy state, those of the bent grasses healthy; had received top-dressing of guano and other artificial manures, but not with a profitable result.

5. Permanent pasture, part of a nobleman's park, thickly studded with large trees, principally oak; soil a gravelly clay loam, very wet, and extremely sour; was drained in 1843, and trenched two spit deep, the coarse grassy spit being thrown to the bottom of the trench, and the cold wet sour subsoil thrown on the top. The moment the vegetable matter was exposed to the influences of the atmosphere it began to rot, and sourness, as a matter of course, to disappear. With bone-dust the land yielded a fine crop of swedes, and after receiving a heavy dose of lime, was laid down to permanent pasture, and produced a thick luxuriant sward of fine grass the first year.

6. A sandy soil under aration, undrained, with a subsoil always in a pool of stagnant water, which in winter sometimes rose to the surface at high tides, to which it

was subject, the land having been reclaimed from the sea at the estuary of a large river. It was extremely sour, and the produce accordingly of the coarsest quality.

7. A sandy loam under aration, at some distance from a large river, with its subsoil under water level, so that at every high flood the whole field was a lake. Generally, however, the water stood from one to two feet below the surface. Subsoil sour; produce unhealthy, coarse, and scanty, and disliked by cattle. When grazing they would shun the grass that grew upon it, whenever they had the privilege of another field.

8. A deep, black vegetable soil, in permanent meadow and pasture, on the banks of a navigable river, where the water was dammed back by locks, mill-dams, and the other out-of-date obstructions of this kind to arterial drainage. The subsoil, which is full of vegetable matter, is continually drowned in stagnant water, and, consequently, is sour. The produce is greatly deteriorated below what it otherwise, with proper drainage and aëration, would be; while the hay and pasture are liable to produce zymotic disease in the stock that consume them. A very large area of the meadow land of England belongs to this example, and also of Ireland.

9. A large area of country, before it was reclaimed by drainage, presented a very diversified surface, with an equally diversified quality of produce. Geologically and geographically, it was similar to the first example, being in the same county, and at a short distance only from it; but from being subject to stagnant water all the year round, and from part of the soil being clay, part a gravelly and sandy soil, part peaty loam, part livebog, part a rich alluvial soil, lying on sandstone, pouring forth at every crevice clear bubbling springs, it was otherwise different in a thousand respects—so much so, that anything like a detailed account of the various qualities of sour land exemplified is absolutely impossible. Horses, oxen, and sheep had the privilege of grazing promiscuously over the whole, and we shall only notice two characteristics in reference thereto, viz.: Where there was a plentiful supply of fresh spring water in the subsoil, and where this rose and flowed off in small meandering rivulets in Nature's own plan of surface draining, the herbage was fine and much relished by all kinds of stock. But where the water stagnated, keeping the land always wet, it was extremely sour; the herbage coarse, but in some places very plentiful, and so disliked by cattle that they would starve before they would eat it. Consequently, large quantities were annually cut, and carted to the homestead for litter.

The above nine examples, it will be seen, comprise two classes; from one to five inclusive belonging to one class, and the remaining four (six to nine) to another class. In the former the soil is not always wet; on the contrary, during dry summers, it suffers extremely from drought, being cut into fissures, and lying like broken brick-bats. In the latter, the roots of plants are always in stagnant sour water. It is absolutely necessary to pay the closest possible attention to these differences; for, unless this is done, we lose sight of the chemical changes that take place in the cultivation and

manuring of land; consequently, falling into all sorts of erroneous conclusions in the chemical investigation of the matter.

There are here, in the first-class, two extremes and a mean hygrometrical state of the soil that demand special consideration—the wet period, when sourness is effected; the opposite extreme, or dry period, when vegetable matter undergoes a sort of dry combustion, eremacausis in the soil; and the intervening period, when the soil is “between the wet and the dry,” and when a healthy decomposition of vegetable matter takes place, increasing the fertility of the growth of cultivated plants. In the two extremes, the soil is enriched for the growth of weeds; in the mean, it is enriched for the growth of corn, root crops, &c.

In the second class, the hygrometrical state of the soil is more uniform, the roots of plants and vegetable matter in the subsoil being always in water. In this case the process of souring is continually going on unless when arrested by the severe frost of winter, while at the same time marsh malaria or noxious gases are given off from the surface, highly injurious both to the health of cattle grazing, and to plants growing on such soils. The characteristic of such soil is that the sourness is brought from the bottom to the surface, or from the subsoil to the staple, by the continued capillary action and evaporation that is going on, thus reducing the temperature both of the soil and the atmosphere, and encouraging of things the reverse of a state favourable either to corn or cattle husbandry. In some cases the stagnant bottom water falls to a level sufficiently low to allow the surface to be rent into fissures by extreme drought in summer, when a much greater diversity of circumstances present themselves to notice; for the fissures will be found spewing up noxious malaris sufficiently strong to impress the olfactory organs with a sense of their presence; a stronger solution of sour water arises by capillary action, more injurious than ever to the health of cultivated plants; while the surface of the soil, and the plants above ground, suffer from mouldiness, or the endless variety of fungi to which unhealthy vegetation and land are subject.

Now, to obviate this unprofitable state of things in both these classes of soils, it will only be necessary to glance at the manner sourness in each case is effected, when the former will appear manifest.

In the first class sourness is effected in the same manner as is exemplified in the manufacture of “sour crout.” We consolidate our minced cabbages with a rammer to keep in the moisture, but out the air of the atmosphere, and lactic acid is formed at not a very high temperature. We trample and consolidate our clay soils with our horses’-feet, the feet acting like so many rammers to keep in the moisture and out the air of the atmosphere, and sourness is effected at not a very high temperature. If we do not ram our cabbage, but, on the contrary, leave the minced pieces open and free to the access of air, decomposition will take place, but the result now will not be lactic acid. In a similar manner, if we drain our clay soils properly, and turn them up to the action of the atmosphere, as in the fifth example, sourness will disappear, while healthy fertilizing decomposition will take its place. If we prevent the stagnation of water in the subsoil by proper drainage, and then “smash up” the staple to a proper depth by steam in autumn and spring, those two periods when sourness is the most liable to be effected owing to the temperature of the soil, then we not only obviate acidity, but the opposite extreme eremacausis, thus securing a continuous fertilizing influence throughout the greater portion of the year.

In the second class of examples the souring process is similar to that exemplified in the making of “sowens,” or in the souring of beans, &c., for stock. Drain off the sour water effectually at the bottom of the vat, stir up the mess, and let in a free ventilation of air, and the process of souring ceases. In a similar manner drain off effectually the stagnant water from the subsoil, and smash up the staple by steam, and a profitable result will be experienced.

It will thus be seen that in both classes of examples the *rationale* of making sour crout and sowens is not more manifest than its counterpart, the sweetening and fertilization of land.

X. Y. Z.

THE INTEREST OF THE FARMER WILL BE FOUND IN THE EDUCATION OF THE LABOURERS.

At the Winfrith Farmers’ Club, Mr. DARBY addressed those assembled on this important subject.

He said about a week ago he received a communication from Mr. Scott Burn, a practical farmer of Cheshire, and the editor of “The Year Book of Agricultural Facts.” That gentleman was about to introduce a subject to the attention of the London Central Farmers’ Club, on the general condition of the labouring classes throughout the kingdom, and he requested information of him (Mr. Darby) on the amount of wages, the state of the cottages, and, together with other questions, state of education in their part of the county of Dorset. Since he had received this letter it had

struck him very forcibly that in respect to the amount and quality of the education accorded to the labourers, their county was lamentably defective; and it was wholly owing to that opinion that when casting about in his mind that evening on what subject to address them he had hit on the present one. He was perfectly aware that some gentlemen of the old school professed to see a great evil in a superior education being given to the labouring classes. They stated that generally speaking the farm-labourers exemplified very undesirable characteristics at the present day, of disaffection to their employers, inattention to duties, and general laxity of behaviour, and this they attributed *in toto* to the

superior education which was accorded to them at the present day, compared with that which they once received; but he on the contrary was prepared to prove that if the present amount of instruction produced ill effects, it was owing to its being so very little, and that the remedy was not to be found in depriving them of it, but in giving them much more. There never was a more truthful adage than "a little knowledge is a dangerous thing." The slight smattering of instruction which the Sunday school and other institutions had hitherto given the labouring classes had not been productive of the good anticipated, because it was so scanty; and if ill effects had arisen from it, they too were to be attributed to the same cause. He would now briefly consider the arguments on which the objection to the better education of the labouring classes rested. In the first place it had been stated that education unfitted the mind for the performance of menial duties; but he confessed himself unable to see the force of this objection, inasmuch as many of the greatest and noblest characters which history had handed down to them, had exemplified a peculiar fondness for labour, and of that too which was connected with rural pursuits. There was the Roman patriot Cincinnatus, for instance, of whom it was recorded that when the senate of his country, being in despair of their affairs, and knowing of no other man who could save the state, sent in search of him, he was found holding the plough on his little farm of four acres which he was in the habit of cultivating entirely with his own hands. It was moreover recorded of him that after conquering the enemies of Rome and bringing back the state of public affairs to its pristine order, he returned contentedly to the cultivation of his little farm again. Then again there was in proof the conduct of the greatest man of the present age, the noble Garibaldi; he too was very fond of rural labours, and probably many of them had seen it recorded in the public papers that one of the correspondents to the daily press recently accompanied him on a visit to his farm, when, although at that period he had the entire salvation of Italy on his shoulders, he entered with great zest into the consideration of agricultural affairs with his labourers, and thereby displayed the great fondness which he had for all rural pursuits. He could allude to the poet Burns, and to many others, who while the mind was lit up with the fire of genius had performed cheerfully services which were positively menial. But he would pass on to the consideration of another objection, which was that education was calculated to make the labourer feel too independent, and to give him notions unfitted for his station; but here again he would remark that it was not those who were thoroughly imbued with knowledge who were found to be puffed up with their own importance; besides which, there were many other agencies at work in the social developments of the age, to which the lax principle of bad conduct of the labouring classes might with more show of reason be attributed. It had been also said that owing to being better informed than their forefathers the labourers of the present day grew discontented, and that the farmer's interest suffered materially by so many of them leaving their native neighbourhoods to

emigrate or otherwise to better their condition. Now he would not deny that the farmer in the present day sometimes suffered from want of hands, and it was certainly a fact that he was obliged to give higher wages, owing to scarcity in the labour market; but were they desirous of going back to the old state of things, when pauperism so generally prevailed, and on almost every day in the week some of the unemployed waited on them to beg for work? No! He was certain that even if they felt that their interests in this particular had been slightly damaged, their generosity would cause them to rejoice at the removal of so much misery and abject want from the class beneath them. But it was far better to be inconvenienced through a scarcity of hands occasionally, than to experience an increase of poor rates and pauperism. According to the poor law statistics, the amount actually expended in the relief of the poor had very much diminished during recent years; it was true that they had not derived the advantage in full, in the shape of a diminution in the rates, as they ought. But why was that? The money collected was now applied to other purposes, in the payment of officials, and in meeting the enormous expenditure of the county rates (Hear, hear.) He would now proceed to the consideration of the advantages which they were at present receiving and were likely to receive from the better education of the labourers, and he felt quite convinced that these far outweighed in amount and character any evils detrimental to their interest which could be traced to the spread of popular enlightenment and the increase of knowledge. Farming was a different matter now to what it was fifty, twenty, or even ten years ago, and much more intelligence and skill were required not only on the part of the farm occupier himself, but also on that of the labourers. In the management of their flocks and herds, now that they were become so valuable and so much capital was expended on them, it was highly necessary that those servants who had the care and superintendence of them should be possessed of a great deal of practical and even of scientific knowledge. Valuable animals were often lost owing to the stupidity and thoughtlessness of those who tended them. In this particular consequently they all benefited largely by the growing intelligence of the age. There was a still more important sphere however for the skilled workman on the farm, in the management of its machinery. Every year witnessed some new introduction of machinery in the performance of the most toilsome duties of the farm, and consequently every year brought with it a greater demand for skilled labour. He would maintain that even now its supply was very inadequate to the demand, and unless they all exerted themselves to their utmost in procuring the better education of the labouring classes, they would find themselves by-and-by unable to avail themselves of the noble inventions of the mechanic, for the reason that the men about them would not be skilful and intelligent enough to have the management of them. Did not the steam thrashing machine require considerable skill on the part of those who had the charge of it? and did they not hear occasionally of an awful explosion which was alone attributable to the want of

it? But should the steam plough ever come extensively into use among them, the demand for skilled labour would be much increased; in short he believed that the grand discoveries of the present age would go on increasing, until all toilsome and irksome duties were removed from the province of manual labour to be performed by machinery. The children of humanity would then be required to occupy their proper place, in having to guide and direct the agent employed, instead of having to do the whole work themselves. Their farm servants in future times would be required to make use of their brains instead of their hands, and he would ask them in conclusion was it not their manifest interest to assist this grand movement by every means in their power, by proclaiming the great necessity which existed for a better system of national education, and by doing all they could in a private capacity to promote instruction and spread enlightenment among their humbler neighbours.

Mr. LILLINGTON said he believed there was no one in that room who could object to the labourer receiving a good sound practical education such as would be of service to him in his sphere of life, but he thought it was very little use to educate the people while they had to reside in such wretched homes as at present, and he confessed that for one he should have been more interested if Mr. Darby had addressed them on the state of the cottages instead of the education question. He had had considerable experience both in rural districts and in towns as to different characteristics displayed by the labourers, but he had never found yet that he who was the best educated was the best man. The labouring classes knew right from wrong without receiving so much education, and he had always found that if they received more than a common share they wanted to live by their wits instead of by their hands. It was true that some were enabled to raise themselves above their sphere owing to education, but all could not do so, for where one skilled workman was required, a hundred at least were wanted for menial duties, and he believed it would be always so, for they were informed that man must live by the sweat of his brow. In some respects he believed that education had worked injury instead of benefit; for instance, there was a great difficulty at the present day to get good female servants for domestic affairs, which he thought was entirely to be attributed to the manner in which they were taught at the public schools; for these and other reasons, although he agreed with some of Mr. Darby's observations, he considered others of them were too fast. He for one would attribute the want of morality displayed by the labouring classes to the wretched cottages in which they resided, rather than to any want of education. These cottages were many of them absolutely unfit for human habitation. It was by no means an uncommon case for a man and his wife and four or five grown-up children to be obliged to shift with one sleeping apartment. Now he wanted to see this altered, and he was quite certain that the character of the labouring population would be raised in consequence could it be effected.

Mr. CAINS, of Spettisbury, said he had several men on his farm who boasted of a little education, but he had one who could neither read nor write, and yet that man was by far the most skilful, in fact he very much doubted if a more skilful workman could be found in the whole county. The great want was to make the men apply themselves to the knowledge which they already possessed. It was the non-existence of any desire for application that made bad labourers. He sincerely hoped that the educational efforts which were being so very generally made would be productive of good.

Mr. T. H. SAUNDERS fully coincided in the views taken by the two previous speakers. His father had resided during many years in that parish, and according to the experience which he had had on his father's farm, joined to that which he had had subsequently on his own, he should say that as a rule the best man was he who had received the least education. What was wanted was good cottage accommodation. It was essential that master and man should hold their relative positions; but should there be too much education, the time would come when if they required to bale the water out of the boat they would have to do it themselves.

Mr. READER, after complimenting Mr. Darby on the success which had attended his efforts to provoke a discussion, said that the subject was one that was forcing itself on the consideration of the farming community. He quite agreed with Mr. Darby, to a certain extent, that a sound practical education for the labourer was desirable: the only question was in what did it consist? He had no objection to a sound practical education, but as to instruction in the use of the globes and other things which were not taught to the middle classes of the past generation, he considered that nothing good could be anticipated from it.

Mr. RANDALL considered that they were all very much indebted to Mr. Darby for having introduced to them, without the slightest preparation, a subject which was of the highest importance in these times. He fully agreed with him in some of his remarks: in others he did not concur. Neither could he fully coincide with the observations of those gentlemen who had taken a different view of the question, inasmuch as they had endeavoured to substantiate the principle that the best labourers were those who were wholly uneducated. As far as his experience went he had never found this to be the case. He had always found that man to be the best servant whose education was sufficient to enable him to satisfy himself that his master was doing him justice. Such a one was always more contented than he who could never be certain whether he was being treated well or ill. He was prepared to admit however that no education would make all their servants good labourers. He likewise fully agreed with all that had been adverted by previous speakers on the folly of instructing them in the use of the globes, and in fancy work.

The CHAIRMAN rose with great pleasure to thank Mr. Darby for having come forward so promptly to prevent their being disappointed in a discussion. The subject was one which would be sure to be taken up sooner or later, although he thought it was a landlord's question rather than a

tenant occupiers'. Mr. Darby had said that according to the opinion of the old school of farmers the morals of the working class had degenerated. He did not think such was the case, but still he could not say that they had improved to the extent which might have been anticipated. Probably the education at present given was calculated in some degree to improve the morals of the poor; but when they were sent home to sleep with the whole family in the one solitary sleeping apartment, what became of the morality in which they had been trained in the school? If any man deserved a good home it was the agricultural labourer. He fully agreed with Mr. Randall as to the kind of education which the poor required. After the good plain tuition which had been described, the teaching should be adapted to the peculiar wants of the station which they would probably fill in after-life, but the education given at the present day was not founded on right principles.

Mr. DARBY considered that the main line of argument which he had endeavoured to establish had not been shaken by anything that had been advanced, inasmuch as none of the speakers had taken exception to the fact that the extensive introduction of machinery for different purposes of the farm in modern times caused a large and rapidly increasing demand for skilled labour. In reference to the comments which had been made on the character of the present instruction afforded, he quite agreed with them that it was in many respects unsuitable. It was too fastidious, and there was much of the fantastic about it; but that the children of the poor were too highly educated in any useful branch of learning he totally denied! No possible harm could arise from the reception of sound knowledge. It was not education that occasioned the undesirable characteristics in the lower orders of the present day, for the really educated would always be found to be the most humble and unpretentious. The renowned Sir Isaac Newton, when dying, described himself as having been enabled but to pick up a few pebbles on the beach, where an entire ocean of unexplored truth lay beyond him, and all who saw the farthest, and had learnt the most, would, like him, know their own littleness. Learning was not calculated to produce those imperfections in the conduct of the poor which were so manifest at the present day; but what did occasion them? It was the weak and silly feeling that labour entailed a degradation on the individual, a feeling which was but too common in English society, and was handed down to the poorer classes from those above them. There were many farmers for instance who would never soil their hands with any work, because their sense of their own dignity was above it, and they deemed it degrading; but such an example was not lost on the labourers, and did much to instil into their minds false notions of things. He quite agreed with what had been said as to the necessity of fixing the education of the children of the poor principally on the common rudiments of a sound English education; but when these had been mastered, he would allow them to proceed to something else; a knowledge of history was most desirable, and he for one would not object to have them instructed

in geography, and in the use of the globes (No, no). He would say yes, for such knowledge was of service and was of a different character to the fancy work of girls, which they had so generally and he would say rightly condemned. As it was probable that the labourers of the next generation would have the care and management of very intricate machinery entrusted to them, then it was obvious that the boys of the present should receive a really good education in order to befit them for their after duties in life. The principles of mechanics should be made known to them, and also the laws of matter and motion; in fact he for one was of opinion that they should be taught anything and everything that they had the capacity to attain. Every child in the kingdom should be allowed opportunity fully to develop his or her faculties, and the state was a very bad parent if it did not allow them this opportunity.

MR. READER—Who is to bear the expense?

MR. DARBY—The State of course. If but a tenth part of the amount now expended on the extensive armaments that were going on were applied to the education of the people, it would be amply sufficient, and all classes would derive the most salutary benefit from it. It appeared that some of them were of opinion that all the poor required was a little more religious education; but they had every facility for the attainment of that at present, having religious instructors of every sect on every side, and an abundance of sacred literature. It was comprehensive secular knowledge that was wanting; and until that was supplied in the public school the labouring classes would still evince a want of intelligence and skill, disaffection to the interests of their master and to the welfare of society in general, and that general ill-conduct and want of morality which had been so much deprecated.

The proceedings then terminated.

PLANTED BY NATURE.—Some seeds when ripe are provided with hooks made to catch hold of passing animals, which, after a time, get rid of them by rolling on the ground. Those seeds which are surrounded by a succulent pulp, and are swallowed by birds and quadrupeds, are generally favourably consigned to the earth. Most seeds pass un injured through the stomach and intestines of all animals, with the exception of gallinaceous fowls. Currant seeds, after having been eaten by man, can germinate. Foxes sow the seeds of the cranberry (*vaccinium*) after eating its red berries. Apple and pear trees are often found in ditches and under hedges, proceeding, it is said, from fruit which has been devoured by peasants. Farmers are often astonished when, after having, as they think, perfectly prepared their fields, and sown excellent corn, on reaping they find some places covered only with useless oats. In other cases, mammals and birds devour only a portion of seeds, while the rest fall and become productive. When the squirrel shakes the cone of the pine-tree to obtain the seeds, a great number fall to the ground and are lost to him. The inhabitants of Iceland call a particular sort of nut "rats' nut," from the circumstance that the rats gather them in great numbers, and hide them in the ground. But as the rats are very often killed by one or other of their numerous enemies, the nuts are left to germinate. Seeds falling into worm-holes are sure to germinate, as well as seeds which drop into the subterraneous passages made by the moles to ensnare worms and insects. The hog, by tearing up the earth as with a ploughshare, prepares it for the reception of seeds. The hedgehog passes his life in doing the same service.—*Dickens's All the Year Round.*

THE PRICE OF MONEY AND THE PRICE OF CORN.

We appear to be approaching another of those monetary crises, which from time to time have of late years occurred, and thrown the trade and commerce of the country into the convulsions of a panic, while altering for the moment the relative value of every commodity of native or foreign production. The cause of the present dilemma of the Bank of England is as follows: It appears that the French Government has been "out-running the constable," or, in plain parlance, spending its money too freely of late, so that its financial system has become greatly embarrassed, the specie having disappeared from the Bank of France. It has, therefore, become imperative to procure supplies of gold any where and at any rate; and in order to effect this, recourse has been had to an expedient practised so successfully in 1855. It is this: Agents are employed to purchase on the continent all the bills of exchange at short date upon London that they can procure. Other agents are also employed in London, to purchase similar bills at long dates; and both, as procured, are discounted at the Bank of England, or in Lombard-street, and the proceeds, *in bullion*, instantly transmitted to the Bank of France. We have said that the operation proved successful, but it was at a heavy cost; for in 1855 the Bank of France paid a premium on gold of £410,000 in a few months, being at the rate of 1½ per cent. on £27,360,000 sterling.

This operation, we understand, is now in course of being repeated by the French Government; and the consequence is, that the Bank of England finds its specie and bullion so rapidly disappearing, as to render it absolutely necessary to put a stop to it, *if possible*, by raising the rate of discount to six per cent. That this, or some other stringent measure is, necessary will appear by looking at the Bank account published on Saturday last. From this we learn there are upwards of forty-five millions of liabilities:—

Notes issued	£26,997,656
Public Deposits	5,804,822
Private Do.	12,603,792
	<hr/>
	45,406,270

Now these are subject to be called for at any moment, the Banking Department holding only £792,156 in specie to meet it. For although the Bank of Issue possesses upwards of twelve millions in bullion and specie, not one farthing of that sum can the Banking Department touch, unless by virtue of an act of Parliament, or an order in Council, and for the latter the prime minister must get a bill of indemnity when Parliament meets. This is one more—the third—illustration of the Currency Bill of 1844. The Banking Department of the Bank of England is at this moment insolvent, and if called upon would not be able to pay more than 4d. in the pound! And this state of things exists by virtue of an act of Parliament, which sepa-

rates the two departments of the Bank of England as effectually as if they belonged to two rival houses of business, living in different places, and having no connection whatever the one with the other.

Twice before have we seen the Bank of England compelled to go to the Prime Minister and beg for an infringement of the Act, in permission to avail itself of the specie in the Issue department. It becomes daily more probable that another similar application must be made in order to prevent a panic which would throw the whole trade and commerce of the country into confusion, causing the utter ruin of thousands. For, it is by no means likely that the advance in the rate of discount will deter the Bank of France from pursuing the plan it has adopted, until its want of specie is satisfied. Gold it must have, let the price be what it may; and the only effect of the rise will be to harass and check the commerce and trade of this country, and throw every department of industry into a paroxysm of distress.

The corn market is one of the first to feel the effect of this measure. We are told that orders for corn from the United States were made up on Thursday; but on learning the proceedings of the Bank, the letters were reopened and a large reduction made in the offers, both in regard to price and quantity. The stagnation, too, on the market of Friday was wholly owing to the same cause; and we may anticipate a still greater impression on the trade for the present, it being certain that a large quantity of foreign wheat must be thrown upon the market for sale, as the bills on consignments become due. This will also check, if not wholly prevent, further importations, which under present circumstances would be a heavy calamity; for there is increasing reason for believing that a serious deficiency exists in the produce of wheat of the late harvest, arising not only from the smallness of the acreage yield, and the great quantity destroyed by the weather, or from not having properly ripened, but still more from the enormous deficiency in the produce of flour from a given quantity of wheat. Thus, on Monday last, we were told by a miller, that finding his mixed wheats yielded no profit, and being doubtful whether it arose from the inferiority of his English or the high price of his foreign wheat, he put it to the test by grinding 20 quarters of a *general run* of home-grown corn by itself. To his dismay and astonishment, instead of obtaining, as he ought to have done from good wheat 28 sacks, of flour from the 20 quarters, he had only 22 sacks! In another instance, a miller purchased a parcel of wheat which was delivered *by weight* at 63lbs. per nominal bushel. We saw this wheat at the time it was purchased, and the buyer considered it rather above par in quality, for the season, and supposed that it would have weighed about 59 or 60lbs.

the measured bushel. Upon testing it, however, he obtained only about 26 stone per quarter instead of 38, which wheat of 63lbs. per bushel ought to produce. Other cases of a similar kind have been stated to us, tending to prove that in the produce of *human food* there will be a much greater deficiency than the public generally are at all aware of, and which will show itself more and more as the season advances.

It therefore becomes daily more evident that unless a large importation takes place, we shall have much higher prices as the new year advances. The demand for foreign corn this season will be more general and to a greater extent than ever was known. And, as the ports of the Baltic will, in all probability, be closed by the frost in a very few weeks, the stoppage of the supply from America, which we greatly fear will be the result of the letters sent out this week, will inflict serious injury upon the country at large, as well as on those of our merchants interested in the American commerce.

An important question arises, however, out of this statement that we should much like to see solved. It is very plain that under the present Bank Act, which compels that establishment to keep the two departments as distinct and separate as if they belonged to two different parties who had no interests in common, the Bank has but the choice of two resources on an emergency like the present. The one would be to raise the rate of discount so high as to annihilate commerce—or to beg for a temporary abrogation of the Act of Parliament in order to be allowed to make use of the specie in the Issue Department to meet the liabilities of the Banking Department. Or both these measures must be resorted to, in order to stem the torrent of bullion that is setting in on the Continent. There is no fear that the Bank of England will fail, because it *must* be supported by the Government; and, if such an emergency were to occur, the latter must resort to the expedients of 1825, or even those of 1797, if things come to the worst. We say, we have no fear of the Bank's stability, but we do fear the consequences of the reiterated recurrence of these panics or semi-panics, by which the trade and commerce of the country are so frequently thrown into confusion. They are injurious to the prosperity of the country at large, to the mercantile interests in particular, and to the general morals of the people in their trading transactions. Of the latter effect, we have had illustrations enough of late years, in which houses, *once* of the first standing in mercantile affairs have been detected in transactions at which they would once have shuddered, but that the pressure of the moment has tempted them to risk.

Some of our best financiers are of the opinion that the Bank Act of 1844 is at the foundation of the evil, by preventing the two departments of the Bank of England from acting in concert in a case of emergency; leaving all the liability upon the shoulders of one, whilst all the means of meeting them remain with the other. We trust that this state of things, which has within twelve or thirteen years caused two panics, and

seems now likely to produce a third, will induce some competent member of the House to bring forward a measure of a remedial kind. Such a step we are certain would meet the approbation of the commercial classes, although it might not suit the views of those who fatten and enrich themselves upon the distresses of the country.

THE TRANSFER OF LAND.—There was one subject with which they were all interested, while at the same time it abutted upon the duties of a member of Parliament, without trenching upon politics—namely, the sale of land. It appeared to him that these associations would be acting strictly within their province if they took this matter in hand, and endeavoured to obtain an amendment to the law as it now existed. Most, if not all present, probably knew by experience what an immense amount of money was obliged to be expended, what a dreary waste of time was necessitated, in order to convey a piece of land from A to B. If Smith wanted to sell Jones a house, a ship, or £20,000 in stock, the transaction could be effected in a few minutes; but the purchase of half an acre of meadow land was an arduous, expensive, tedious enterprise, not to be undertaken without much forethought and consideration. In one of the papers of the Juridical Society he recently saw it stated that the sale of a piece of land, even under the simplest circumstances, took 600 times as long as the disposal of a like amount of stock, while the expense was, of course, largely increased. The effect of this was not only to render the sale of land a very slow and costly operation, but to prevent its changing hands at all except in large masses, so that in England more than in any other country the acquisition of land was a luxury confined to the capitalist class. He believed that was a serious grievance, and that any measure which made the sale of land easy and cheap would enhance the well-being of England. It was an evil to every class in the community, and especially to the landowners themselves, for it had been shown that if landed property could be transferred with greater facility its increased value in the market would be equivalent to three years' more purchase. Nothing could more plainly show the injurious operation of the existing system than the fact that consols realized about as many years' purchase as land. It was a consummation devoutly to be wished that a field or a building plot should be disposed of as easily as a house or a horse. Although he was a Liberal, he must do the Conservative Government the justice to say that during the time they held office a measure was introduced which, had it been passed, would have made a long stride in the right direction. The proposition of Sir Hugh Cairns was a very clear and simple one. Two judges were to be appointed to investigate on application the title of owners to landed property, and if this was made out to their satisfaction certificates to that effect would be given; and thereafter the owners would be able to dispose of their property without incurring any sort of expense. In order to prevent complications in the course of years it was proposed to establish a register of titles, in which the name and address of all those who had any lien upon the land would be entered. By this means, an intending purchaser might easily ascertain the liabilities upon any particular property, and the process would be as short and simple as its nature admitted of.—*Mr. C. Buxton, M.P., at the Maidstone Meeting.*

THE RESULT OF THE HARVEST IN FRANCE.

We have from time to time given an abstracted account of the state of the harvest in France, which has been quite as late and as protracted as in England. The report given last week was what may be called the winding up in that country; for although in some of the mountainous districts there is still some corn in the fields, the bulk of the crops are housed. In the more southern departments, indeed, they have been thrashed out; so that a fair estimate may now be made of the general result, by collating the various reports together.

At the beginning of August the weather in the centre of France, where the harvest was then in progress, was so constantly wet and unfavourable for the maturing of the crops, that great apprehensions began to be entertained. Towards the end of that month, the continuance of the rain became so alarming as to induce the Emperor Napoleon to issue a decree for the suspension of the law of the sliding scale. This was to the following effect:

NAPOLEON, by the Grace of God and the will of the nation, Emperor of the French, to all present and to come, health:

Relative to the article 34 of the Law of 11th Oct., 1814:

On the report of our Minister, Secretary of State for the Department of Agriculture, Commerce, and Public Works,

Have decreed, and do decree as follows:

Article 1.—Grain and flour imported whether by land or by French ships, or those of foreign countries, and without distinction of production or flag, shall be subject only to the minimum of duties determined by the law of the 15th April, 1832, until the 3rd Sept., 1861.

Art. 2.—Up to the same period the ships of all flags which arrive in the ports of the empire with cargoes of grain or flour shall be exempt from tonnage dues.

Art. 3.—The provisions of the preceding articles shall be applicable to all French or foreign vessels whose clearance-papers state that the cargoes of grain or flour shall have been completed and the departure effected from a foreign port whatsoever before the 30th Sept., 1861.

Art. 4.—Our Ministers and Secretaries of State in the Departments of Agriculture, Commerce, and Public Works and in the Department of Finance, are charged, each in what concerns him, with the execution of the present decree.

Given at the Palace of St. Cloud Aug. 22, 1860, by
THE EMPEROR.

To the Minister Secretary of State, &c., &c.

E. ROUHER.

This measure is a sufficient indication of the apprehensions entertained by the authorities in France at that early period of the harvest. A month later, the editor of the *Journal d'Agriculture Pratique* (M. Barral) speaks of the weather in the centre and north of France as having in some measure moderated, so that the wheat had chiefly been carted; and that by using the *moyettes*, which have been described in this journal, the grain had sustained less injury than might have been expected. The oats were then still in the field. Reports from the different districts in the same number of the Journal, and which were transferred at the time

to our own, gave the same rather favourable view of the case. But on the 5th of Oct. the editor writes: "The weather has continued cold and rainy, and quite unfavourable either for completing the maturity of the crop, or for housing them, or for the preparation of the land for the autumnal sowing." He then quotes from a letter he had received: "The oats are still in the field, and God knows when we shall be able to house them"... "Never was the farmer so badly off, even in 1816. I ask myself, 'When and how am I to sow the wheat that is to succeed the beet-root?'" This latter crop, it appears, is very poor, the roots being small and deficient in saccharine, owing to the want of sunshine; whilst the ground was so saturated with moisture that some of the farmers, who had also sugar-works, and had begun to rasp the roots for manufacturing, were compelled to stop owing to the impossibility of carting the roots from the fields.

In last week's number is the abstract report of the termination of the harvest, which is far from satisfactory. It is generally assumed that had the weather after July been favourable, the wheat crop would have been a full average one, with probably something beyond it. But owing to the ungenial and wet season which has prevailed, until the last fortnight, the grain has not been properly matured, and is consequently inferior in quality, being shrivelled and deficient in weight. This corresponds with the state of the crops in this country; and as the grain becomes drier, it will become more and more apparent.

On the 13th October, the Editor of the *Journal d'Agriculture Pratique* reports from Besançon as follows: "I write this chronicle far from Paris" (235 miles to the south-east of that city). "The great subject of anxiety with the farmers is the continuance of weather at once very rainy and very cold. We have had snow falling constantly for more than one day, and covering the summits of the Jura; succeeded by a deluge of rain, which no longer finding the soil spongy enough to absorb it, has caused the overflow of a great number of streams. The after-grass crops are drowned; the oats remain spread over the fields; and even, in some parts of the Haute-Marne, all the wheats are not housed. In the north many sugar manufacturers, who had begun to work, were compelled to stop their rasps, presses, and furnaces, so difficult was it to cart the beet-roots"... "We find in the meteorological report, and in that of the harvest, many details confirmatory of those we have stated. This has given rise to serious apprehensions, especially in regard to the wheat sowing. Many can neither plough nor sow; and others who have sown, find their wheat deluged with water, or destroyed by insects, by a thousand earth animals, and especially by slugs, which swarm

in consequence of the moisture." "It is, above all, for the harvest of next year, from the fearful weather which has prevailed since the month of May, with very short intervals only, that the most anxiety is felt. As to the late crop of cereals, this is nearly all housed without very serious injury, because the farmer has availed himself of every interval of cessation from rain, and has generally had recourse, with great foresight, to *moyettes* and other means for the preservation of the grain. In certain parts of the country they have even had crops of a remarkable abundance, as the following letter from M. Schattemann proves." This letter, which is given at length in the Journal, is from one of those enterprising agriculturists, of whom there are a few in France; and it states that his early rye yielded 35 hectolitres per hectare (or 34½ bushels per acre), weighing 70 kilogrammes per hectolitre (or 56lbs. per bushel); wheat yielding 4,535 litres per hectare, weighing 74 kilogrammes per hectare (or nearly 43 bushels per acre, weighing about 60lbs. per bushel), &c., &c. Several other returns, from the same cultivator, are nearly to the same effect, but he admits that they are exceptional; and M. Barral also adds that however this may be, the state of the weather, and consequently of the grain, will prevent it from being useable or saleable on the market, which is the cause of the advance in price.

It would appear, from the above statements, that the occasional contradictions which prevail in England respecting the harvest have their counterpart in France; that whilst in some favoured districts of that country the crops of wheat and other grain have been secured in tolerable condition, and with good results as to the yield, in others the consequences of the unseasonable weather have been fatal alike to all crops whatsoever. These will certainly tell heavily on the gross produce of the harvest, and alone fully justify the Government in suspending the operations of the sliding scale. We see, from the state of the new wheat in our own markets, and the enormous weekly

sale of foreign wheat at Mark Lane and other depôts of foreign grain, what must have been the consequences and the price, if the free admission of grain at the minimum duty had not been conceded by the French Government. Whatever may have been the yield of the wheat and other grain of the late harvest, so much of it has been spoiled by the rain, that the amount available for human food will be reduced much below an average.

There is one peculiarity in the French harvest which we know nothing of *practically* to the same extent here—it is that the climate at the two extremes of that country is so different, that the crops in the south are usually secured, and often thrashed, before the farmers in the north have thought of beginning. And, further, as was the case this season, the south may be suffering from continued drought and heat, whilst the north is equally the subject of wet and cold. This will, in a great measure, account for the conflicting reports given, and must be taken into account in forming an estimate of the general results.

Upon the whole, it is probable that we shall have France competing with us in the great grain markets of the continent and America, at least throughout the winter season, if not until next harvest. On the average, France is an importing country; and although the French merchants will always export whenever their operations will afford a profit, it is frequently at the risk of being compelled afterwards to purchase foreign corn at higher rates. This, however, is an affair of their own, and we have only to look at the general question of what will be the effect of the state of the grain trade in France on the supply of food for ourselves? The necessity for an *immediate* importation of dry foreign wheat is imminent for both countries, and it will, we fear, be difficult for either to supply themselves fast enough, if the winter prove severe. There is some reason for apprehension thus early, the frost having already set in at the ports of the Baltic.

THE GRAIN AND PROVISION TRADE OF NEW ORLEANS.

From some cause or other New Orleans has not received much attention either in the United States or England, although it exported rather more than the half of last season's cotton crop, together with a million barrels of flour and large quantities of other produce. Not a single steam ship arrives from Liverpool or leaves for that port, but sailing ships with valuable cargoes on their bottoms sometimes prolong the voyage to sixty and even seventy days; in fact, a considerable portion of the export trade of New Orleans is done in an indirect and roundabout way—cotton, wheat, and flour being sent coastwise to New York and other Atlantic ports, and afterwards re-shipped to England. Attempts have been made repeatedly to put an end to this irregular and unprofitable state of things, and recently the prospectus of a steam-ship company was issued in Liverpool to provide for the facilities that are required. The subject acquires additional importance this season, in consequence

of the deficient harvest, and from the circumstance of the large supplies received for several months past from the United States being about to cease. New Orleans is so situated, that when the grain movement on the American lakes ceases, which it usually does on the 14th of the present month, the movement may be continued by way of that port. Scarcely a more important question than this could be raised at present, as a cessation of the American supply of grain would unquestionably exercise an important influence on prices in Mark-lane. Had the proposed steamships been running between New Orleans and Liverpool instead of merely being proposed, the large pent-up Western supplies would have found their way down the Mississippi throughout the winter; but it will scarcely answer the purpose of Western shippers first to incur the risk of shipment to New Orleans and then the risk of shipment to New York and Liverpool. Of course, at no time are Western shippers

required to take the risk of shipment to Liverpool, nor even to New York; but when so many breaks take place *in transitu*, and still more particularly when so much time is occupied, the price offered to the producer is necessarily too small for much business being done.

The great peculiarity and recommendation of the Mississippi and New Orleans route for Western produce *in transitu* to England therefore is, that the navigation of the Mississippi is always open, while the navigation of the lakes and New York canals remains closed from the middle of November to the middle of April or the early part of May. When to that fact is added the other, that the bulk of the produce of the Western States is raised on land in the neighbourhood of the Mississippi, it seems surprising that any other outlet should have been chosen for the carrying-on of Western trade. In fact, the expense usually incurred in carrying grain from the Mississippi to Chicago would pay the transportation down the Mississippi to New Orleans, while the expense usually incurred in carrying grain from Chicago to New York would pay the transportation from New Orleans to Liverpool. But in New York there are all the facilities requisite for engaging in Western trade, while in New Orleans there may be said to be few or none. New York has extensive warehouses at the Atlantic Dock, Brooklyn, into which the Erie Canal boats may discharge; and if the weather is warm, and the grain inclined to heating, the machinery which discharges the canal boats and puts the grain on board of sailing vessels can be used to shift the contents of one grain-bin to another every day if necessary, and at a trifling cost. These facilities New Orleans does not have, and their absence is an effectual bar to the movement of grain in large quantities down the Mississippi in the summer. In the winter no such facilities are required, and the advantage of open water possessed then by New Orleans remains only to be improved; and to whatever extent the Mississippi may be used on European account, an active trade, chiefly in Indian corn, will be carried on, all the winter, to supply the deficiency of the Southern corn crop—a circumstance corroborative of the practicability of the route.

It may be added, that the Mississippi, in the winter season, is not open higher up than Cairo, the southern extremity of the State of Illinois, and the southern terminus of the Illinois Central Railway. At Cairo there are, it is scarcely necessary to say, railway connections with Missouri, Iowa, Minnesota, Wisconsin, and Illinois; and at Cairo the produce of all these States may be received. New Orleans has also been connected recently by railway with Cairo and the North West.

The neglect hitherto shown to the New Orleans grain and provision trade is at once apparent in the returns. In 1847, the year of the Irish famine, the grain exports from New Orleans to the United Kingdom were—

Flour.....	671,335 barrels.
Wheat	818,770 bushels.
Corn	5,186,330 bushels.

For the years ending 1st of September, 1859 and 1860, the grain receipts were—

	1859.	1860.
Flour	1,084,978	965,863 barrels.
Wheat.....	29,583	13,116 sacks.
Corn	759,438	1,722,039 bushels.

Considering that the yield in the West has been unusually large this season, the receipts might have been expected to exceed the exports fourteen years ago. The flour is chiefly from St. Louis, some distance higher up than Cairo, where

a great deal of flour is milled; the quantity of the present season being likely to exceed 2,000,000 barrels.

The other descriptions of grain and flour received this year and last at New Orleans were—

	1859.	1860.
Corn-meal.....	72	538 barrels.
Corn, in ear ..	5,000	36,098 bushels.
Oats	219,736	659,550 sacks.

The receipts of beef and pork for the years ending 1st of September, 1859 and 1860, were—

	1859.	1860.
PORK—		
Tirces	266,580	216,523
Boxes	175	71
Hogsheads ..	2,828	45,015
Bulk lbs.	1,969,550	3,803,500
BACON—		
Hogsheads ..	35,491	1,874
Boxes	3,815	5,987
Bulk lbs.	10,900	39,000
LARD—		
Barrels	78,564	65,784
Kegs	63,594	90,699
BEEF—		
Barrels	50,671	35,318
Tirces	3,883	9,616
Dried lbs.	27,700	93,726

In dairy produce the receipts, to the same date, were—

	1859.	1860.
BUTTER—Kegs ...	25,113	38,345
CHEESE—Boxes....	60,533	35,596

Such are the statistics of the year; but since the 1st of September the movement has been on a much larger scale than even in the year of the Irish famine. It is not by any means improbable that, when the Illinois Central Railway and the connecting line of Mississippi steamers have satisfied the Southern State demand for Indian corn, attention will at once be given to the English market. Should they do so, there is practically no limit to the winter movement of grain and other produce down the Mississippi from Cairo to New Orleans; and should there be a short supply of tonnage at New Orleans for Liverpool, the excess could be taken, as it usually is, to New York for shipment to Liverpool or London.

Two errors are to be guarded against: first, it is not inferred that the shipments of grain from the United States will cease on the 14th of the present month—November; the supply from which these shipments are made will only stop until next June, and whatever grain may be on hand in New York and other Atlantic ports will still be available for export. The second error to be guarded against is that of supposing the railways to be available for the transportation of grain from Chicago when the winter sets in. The distance is too great, and the expense of railway transportation too high for grain traffic; and unless the Western grain movement can be temporarily turned into the Mississippi, there will be no further shipments from the West until next summer.

MORE HEREFORDS FOR SYDNEY.—Last week, in the "Edith Byrne," some beautiful specimens of this breed were sent to that colony by Mr. Corner, where they are destined to form the basis of his herd of Herefords. The cargo consisted of the young bull Garibaldi, bred by Mr. Price, of Pembrige, and purchased at his annual sale in October for 150 gs. This promising young animal was by Goldfinder the 2nd (959), of Chester and Barnstable celebrity, his dam by Maguet (823), and grandam by the well-known Sir David (349). The heifers selected were animals in fair store condition, three of them purchased at Noke Court sale, and likely to do credit to the far-famed herd of Mr. Turner. Mr. Corner also purchased two from Mr. T. Rea, of Westonsbury, by the well-known bull Sir Benjamin (1387). His best heifer is a daughter of Delight, own sister to Diadem, the winner of a first prize at Canterbury. Delight herself was purchased at the Monaughey sale by Mr. Duckham, and added to his choice herd of Herefords.

AMERICAN CHEESE AND BUTTER.

There can be little doubt that before many years are over, the dairy produce of the United States and Canada will be received in enormous quantities in the English markets. Taken as a whole, no country presents greater facilities for dairy farming, and no country has so large a proportion of its population engaged in agriculture. As a consequence, no country should have a larger surplus of dairy products for exportation, and if hitherto the surplus has been trifling, it must be owing to transient causes. There must be difficulties which are inseparable from what may be termed the infancy of the newer States, and when overcome, these States, which practically give no attention to dairy farming will do so, and add their contribution to the supply of cheese and butter. Two prominent difficulties may be named. First it is desirable to get as much land as possible into cultivation, and the settlers' means being limited, the one object necessarily engages his attention. He does with as few stock as possible, and what milk his cows yield (should he have any) is consumed in his family or sent to the nearest town or village. The second difficulty arises from the prevailing ignorance among American settlers, as to the way in which cheese and butter should be made. Much as the agricultural shows have done in the way of example, and in disseminating information, it is scarcely credible how much remains undone. The struggling class of farmers, who are by far the most numerous, and to whom farming is a new occupation, take little or no interest in the shows, and the little cheese and butter which they make is so inferior as to be only saleable at a price that barely yields a profit. Under these difficulties the newer States, no matter what their facilities may be for dairy farming, have hitherto produced less cheese and butter than they have consumed. Instead of contributing to the general stock, they have diminished it, and Michigan, Illinois, Minnesota, and Iowa have bought freely of the dairy produce of Ohio, New Jersey, New York, and Pennsylvania. The indifferent and deficient cheese and butter of Canada have been sent into the United States, or exported to the United Kingdom, while Canadian warts have been supplied from the abundance and prime qualities of New York.

This practice, necessary though it may have been, and still to some extent may be, has proved injurious to an enterprising and numerous class of farmers. Western and Canadian cheese and butter once said to be inferior and all but worthless, the bad name has adhered to them, and really good lots have, as a rule, gone with the really bad, commanding no better price. No inducement may be said, therefore, to have existed for improved dairy farming, and a custom in the Canadian butter trade will serve as an illustration of how the matter stands. Canadian butter, it is scarcely necessary to say, is made in the summer season, the farmer providing himself with a supply of firkins, into which he places the butter as it is made, spreading a little salt between the different makings. As soon as a few firkins have been filled, they are sent to the dry goods shop, or some other shop, at which the farmer supplies his domestic wants, and the net weight is passed to the credit of the account, at generally the munificent price of sixpence a pound. At this price the shopkeeper can scarcely lose; and should butter become scarce he has the chance of realizing a good profit. Nothing is, however, to be made by the selling of a firkin or two,

and lot after lot is accumulated in the shopkeeper's cellar, until, probably, a few hundred firkins are in hand. This, be it observed, is done during the summer, when the temperature is high, and when the least exposure reduces the butter to an all but fluid state; and unless salt has been used too freely the butter when it comes to be looked at in the winter, in a frozen state, is sour or rancid. Thus improved dairy farming has been repressed by a mere custom in the trade, which originated when the quality of the butter was bad, and when the quantity produced was small. The maker of good butter was placed upon the same level as the maker of bad butter, and butter that was really good was spoiled by neglect, when it left the farmer's hands, and before it was placed upon the market.

It is satisfactory to observe, that this untoward state of things is being changed, and that American dairy produce is in a fair way of getting rid of the bad name that has been so long attached to it. Within the past few years a class of men possessed of ample means, and to whom the making of cheese and butter is familiar, have found their way to Canada and the United States. These men, availing themselves of the facilities that now exist for sending what they have to market, have declined the services of the drapers and grocers and others, and sent their cheese and butter to New York, and Boston, and elsewhere direct by railway. Need the result be told? Well prepared Western and Canadian butter now commands the highest market price; and dairy farming has received in the course of the present season an extension which is scarcely credible. Milk has ceased to be bestowed upon the hogs, or to be wasted in the household; and milch cows are everywhere in great request. In short, dairy farming, which hitherto has been neglected on the American continent, is at length found to be highly profitable, and is being prosecuted in a way that will be felt before long in England. No better proof of this can be afforded than by a comparison of the statements of exports from the United States and Canada.

EXPORTS OF BUTTER FROM THE UNITED STATES TO GREAT BRITAIN AND IRELAND.

1858.		1859.	
	Tons.		Tons.
September.....	10	September.....	10
October.....	71	October.....	10
November.....	—	November.....	1
December.....	—	December.....	1
1859.		1860.	
January.....	—	January.....	23
February.....	—	February.....	125
March.....	23	March.....	278
April.....	30	April.....	125
May.....	—	May.....	222
June.....	88	June.....	495
July.....	76	July.....	437
August.....	7	August.....	414
From Sept. 1, 1858, to Sept. 1, 1859., 307		From Sept. 1, 1859, to Sept. 1, 1860. 2,141	

EXPORTS OF CHEESE FROM THE UNITED STATES TO GREAT BRITAIN AND IRELAND.

1858.		1859.	
	Tons.		Tons.
September.....	296	September.....	722
October.....	555	October.....	729
November.....	257	November.....	650
December.....	287	December.....	684

1859.		1860.	
January.....	137	January.....	364
February.....	49	February.....	408
March.....	292	March.....	448
April.....	127	April.....	466
May.....	56	May.....	301
June.....	60	June.....	905
July.....	179	July.....	991
August.....	324	Augnat.....	884

From Sept. 1, 1858, to Sept. 1, 1859.. 2,599
 From Sept. 1, 1859, to Sept. 1, 1860.. 7,542

BUTTER EXPORTS BY SEA FROM MONTREAL.

To October, 1860.	To October, 1859.	To October, 1858.
22,328 firkins.	7,871 firkins.	4,534 firkins.

The exports from Montreal do not represent the aggregate Canadian exports, but only a small portion. They represent

the increase of the year, however, as fully as the aggregate will do when fully ascertained.

Such an increase in the dairy produce of one year may be said to be without example. Nor is there any doubt as to the ratio of increase being maintained in future years. The Canadian farmer may turn unlimited herds of cows into the bush to feed in summer; and the Western farmer has even more scope and less trouble upon the prairies. Cheese and butter can be produced in America without limit, and at a less cost to the farmer than in any other country; and now that the production is being taken in hand in a spirited way, the supply will be enormously increased. Nearly 7,000 tons more dairy produce have been received this year than last; and there is every reason to believe that the quantity to be received next year will at least be doubled.

THE MONTREAL GRAIN TRADE.

Montreal is the commercial capital of Canada, and possesses great natural facilities for trade. So great are the facilities, that it has long been considered practicable to divert the whole European carrying trade of Canada and the Western States past New York to the St. Lawrence and Montreal. The St. Lawrence recommendations are—a shorter distance and cheaper form of transport, the navigation to New York being, for three-hundred-and-fifty miles, by the Erie canal. One of the St. Lawrence obstacles is—insufficient lockage on the Welland canal, between Lake Ontario and Lake Erie, and an inadequate depth of water for sea-going vessels on the St. Clair flats, between Lake Erie and Lake Huron. Another difficulty, and it is the greatest, is the hold which New York has of the Western and Upper Canadian trade. From its earliest beginnings that trade has been transacted in New York, and facilities of every kind have been created for it, while by the St. Lawrence route there may be said to be no facilities at all, if shipments were to be made direct to and from Europe. So serious a disadvantage is not compensated by the shorter distance of the St. Lawrence and the cheaper form of transport; and as nothing is being done to provide facilities, the natural advantages of Montreal are not likely to be soon turned to account. But, even were Montreal to do as well for buyer and seller as New York, it is not possible that a comparatively small provincial town could ever hope to compete successfully with that city. And the hopelessness of the case has no doubt prevented anything from being done. One scheme has been brought forward after another, survey after survey has been made, and books and pamphlets written; but, as will be shown presently, the grain trade of Montreal this year—this year of great Western abundance—is much the same as it was in 1857. The only difference in the trade is, that the Montreal dealers, being unable to divert Western trade their own way, have gone westward in considerable numbers, and taken part in the sending of grain to New York. In fact, the largest western grain operators, sending grain to New York, are from Montreal—a circumstance anything but favourable to the course of trade being hereafter changed.

The Montreal corn market is not therefore well supplied with Western and Upper Canadian flour and wheat and corn. Nor is it, for the best of reasons, well supplied with Lower Canadian cereal products. Lower Canada does not produce an excess of cereals, but depends to a considerable extent on the up-lake supplies at Montreal for subsistence throughout the year. This is not more owing to the severity of the winter

and the lateness of the spring than to the poverty of the soil and the heavily-timbered character of the province. Nowhere has the emigrant more to contend with in the clearing of the land; and some of the lower counties cannot raise wheat at all. A light crop of light oats is what is usually produced, and the farmer sends his oats to market and receives flour for household use in exchange. Such a system of farming in that great tract of country, of which Montreal is the business-centre, does not admit of great activity and of large quantities, even of oats, being sent to market; and, but for the supplies received from Upper Canada and the West, the Montreal grain trade would scarcely call for notice.

And it is to be observed with regard to the up-lake supplies at Montreal that the absence of those trade facilities which are provided at New York make Montreal at all times a disadvantageous market for the buyer. What has been received at Montreal has been purchased at the up-lake ports and paid for, while what has been received at New York is in almost all cases the property of the up-lake shippers in the hands of receivers. This difference, in a falling or advancing market, leads to the Montreal holders insisting on high prices, while the New York receivers move at once with every turn that the market takes. The comparatively small supplies at one place and the large supplies at the other are not without influence in this matter, as the Montreal dealers may hold without inconvenience, while, as a general rule, the New York receivers must sell out every day. Montreal, in fact, does one kind of business only; orders for flour or wheat or corn are received from England without limit as to price, and such a business suits all parties. It suits the shippers, as it always secures a profit; and it suits a class of buyers to whom probably it would be inconvenient to buy elsewhere; but the fact remains that the Montreal grain trade in a European point of view is of less importance than is usually supposed. The Montreal shippers are mere dealers at second hand.

The following are the grain receipts at Montreal for the past four years, to the 4th October, 1860, the 6th October, 1859, the 9th October, 1858, and the 10th October, 1857:

	1860.	1859.
Flour.....brls.	395,747	374,744
Wheat....bush.	1,787,909	381,837
Corn....."	138,211	74,424
Barley....."	21,661	10,153
Oats....."	32,036	31,481
Peas....."	385,592	27,711

	1858.	1857.
Flour.....brls.	512,081	433,371
Wheat.....bush.	1,391,004	1,205,738
Corn....."	42,433	231,677
Barley....."	10,313	11,745
Oats....."	109,367	5,975
Peas....."	84,474	7,052

The exports by sea to the same dates have been as follows:—

	1860.	1859.
Flour.....brls.	168,878	58,305
Wheat..bushs.	840,881	5,811
Corn....."	24,387	3,915
Barley...."	90	—
Oats....."	198,315	—
Peas....."	619,972	85,230

	1858.	1857.
Flour.....brls.	169,616	166,424
Wheat..bushs.	660,939	559,614
Corn....."	14,967	29,631
Barley...."	300	4
Oats....."	32,160	30
Peas....."	165,137	116,163

The difference between the receipts and the exports by sea is accounted for by the shipments by the Grand Trunk Railway, and the shipments by Lake Champlain. These shipments will not be published until the close of the year, but, together with the exports by sea, they cannot possibly exceed the aggregate receipts. The first three items in the receipts—the flour, wheat, and corn—represent the imported produce of Upper Canada and the Western States; and the last three items—the barley, oats, and peas—represent the produce of Lower Canada, which finds its way to Montreal. Between the receipts of the present year and the receipts of 1858 and 1857 there is, it will be perceived, not that increase which is so marked a feature in the shipments at New York, and other Atlantic ports. During the month of September the increase of shipments at New York to England has been no less than 4,000,000 bushels, and the increase on the year ending 1st October is 13,000,000 bushels.

FROM THE LOOK OUT.

There appears to exist a great deal of misapprehension with respect to the supplies of wheat to be expected from America. The English farmer need not fear that the excessive supplies from thence will so throw down the price of wheat in the home markets that it will no longer be grown at a profit. There are, if we look at that country, certain influences visibly at work which will prevent the supply being increased beyond its present limit, taking the average of the last five years. Indeed, as time rolls on, we may rather expect less than more wheat from America. The average price at New York is from 35s. to 40s. per qr., the cost of exporting to England, embracing all attendant expense, is about 10s. to 12s. per qr.; and therefore, if our prices do not rise above 45s. to 50s. per qr., no afflictive inundation will arrive from that quarter.

Let us consider the matter a little. The course pursued by emigrants and others tends somewhat to mislead us concerning the fertility of America. Land that has never known a plough is let at a low rent, it is cropped without mercy, and left to recover its fertility as best it may, while other districts are being flogged in the same way. Thus it is the best land in its best state, which is being made to produce these large harvests we hear of. But such a practice cannot last for ever. Population is increasing wonderfully. In many parts of the United States, we are told by Mr. Russell, that it has increased so much as to render a regular system of farming—rotation of crops, manuring, and all the home means of stimulation—quite necessary, and that under this system

the power of the best-farmed lands does not appear by any means surprising. A statement of the average produce per acre published by the American Agricultural Society, compared with the average produce in England, will warrant this observation.

	New York.	England.
Wheat., bushels per acre	14	30 to 32
Barley .. "	16	32
Oats .. "	26	40

These lands, let it be remembered, around New York are some of the very best in the Union for the growth of corn. In Ohio, generally supposed to be even better, the figures are the same.

Now, if the yield upon the fresh-broken-up, or virgin soils was very prodigious, it stands to reason that men farming such lands as those of New York and Ohio in the ordinary way would suffer and fall in the unequal contest long before such an influence would be felt by the English farmers. Even without facts, then, we might at once conclude, as they do not so suffer, that these returns from the virgin soils are not excessive. But facts have reached us. "In Michigan," we are told, "the average produce of wheat is not more than 10½ bushels per acre! deducting seed indeed it is less than 9!" Fifteen to sixteen bushels per acre is the utmost produce of these new States,

We may therefore modify very considerably our idea of the rich soil of America, and of the vast increasing supplies we are to receive from thence. The supply of Indian corn will certainly be equal to any demand, because the land seems specially suited to bear it; but with regard to wheat the case is quite otherwise. In the course of 25 years, says one of our economists, the population of the Union will most probably amount to or exceed sixty millions. In view of this increase, and the prodigious demand for corn which it infers, in view also of the future effects of the present abusive treatment of land, the English farmer may cease to fear, and the English consumer may cease to hope. That America may always prove useful to us, as she does this year, is a fact we may all rejoice to feel; but, hereafter, we cannot but think she will be more useful to us in affording our poor a cheap substitute for wheat when that grain is dear, than she will by sending to us any large quantities of wheat itself.

What is true of the *United States*, is true, though in somewhat different degree, of *Canada*.

We stand in annual need of some three to four million quarters of wheat above what we grow upon the soil of Britain. Indeed, to make up for what we ourselves export, we need more than this—generally above five millions. It becomes, then, a great matter of interest to discover from whence this supply comes, and whether it is likely to fall short or to increase as years go on. In the year 1858, we received from

	Quarters.
Russia (North)	160,496
" (South)	451,930
Sweden	10,126
Denmark and Duchies.....	301,463
Prussia	629,000
Hanse Towns	203,041
Other parts of Germany	82,710
France	1,283,465
Spain	5,364
Italian States	43,279
Wallachia and Moldavia.....	133,574
Turkey and Syria	74,928
Egypt	464,652
British North America	161,609
United States and California..	1,098,871
Other countries	99,921

Total..... 5,343,469
The supplies from the North of *Russia* are not likely

to increase, and there are many hindrances to receipts from the South, in the nature of the want of roads, and the vile state of those which do exist, and to obstruction of the river Dnieper, before it reaches Odessa, as to raise the average market price at the port to 34s. 6d. per qr.; which, with the expense of water-transit of 14s. or 15s. per qr., will not allow of its being sent here unless our need for it is considerable.

As to *Sweden*, it is out of the question to expect much wheat. They grow about one peck per head to the population, and are not likely to do much more. *Denmark* affords a better supply, but, until a better system of roads is contrived, the cost of transit to the coast is too great to induce the farmer to sow more wheat.

The *Weiser* and the *Elbe* convey to *Hamburg*, from the towns upon their banks, considerable store of wheat; but the expenses are too great to allow of any large importation from thence unless our prices are very tempting.

Prussia and *Holland* are too fully populated to lead us to expect receipts from thence larger than at present.

France has a soil and climate equal to anything, but it is poorly farmed. Wheat is the staple grain of the people; but so badly are they fed, that thirty-five millions only consume as much as our twenty-nine. We can only look for a supply from France when Government shall have become firmer, confidence greater, and when capital, like a fertilizing river, shall flow over and enrich the country. Importations from that quarter have been very much greater between 1848 and 1858 than they ever were before; but it will require more than a decade to overcome the effect of centuries of misrule.

Around *Danzig* lies *Pomerania*—a splendid wheat-country. Poland possesses a proverbially fine soil: but what is a fine soil with no roads, no means of communication? What inducement has the farmer, in that productive district, seven hundred miles south-east of *Danzig*, to grow more than he wants? His difficulty is expressed in the fact, that the difference between the market-price in *Galicia* and *Danzig*, the same day, is 25s. per qr.

Spain, too, is in the same state—once the granary of the Romans, and now her cultivated lands yielding a bare $1\frac{1}{2}$ or 2 per cent. to impoverished owners! The roads are wretched, or entirely wanting; the country is infested with robbers; there is no hope, no encouragement, no protection for the cultivator, who scratches the ground with his miserable implements, and in a seed-bed so prepared sows sufficient corn to ensure the supply of his own wants. No speedy change is to be looked for there.

The *Italian States* are equal to production far beyond her own wants, but only when Italy shall have become a free Italy, settled down to the pursuits of industry under a firm and enlightened government, and when every labourer is assured that he will reap the fruits of his own toil, will she find herself in a position to send us much corn.

Hungary again we hardly can estimate what she might not send us, were she once to free her neck from the *Hapsburg* yoke. Now the richest portions of her domain grow not grain sufficient to supply even the cultivators of the soil, and one-fourth of the best land lies waste.

Turkey and *Syria* naturally afford an immense return for seed sown, but so arbitrary and cruel is the government, so much neglected are all modes of cultivation, that there is no reason to expect her to send us more than we receive, though she could send us ten times the quantity with the greatest ease.

Reviewing these European and Transatlantic sources,

then, we may come to the conclusion that so long as things continue as they do in France and Spain, in Turkey and Germany, so long as people remain apathetic in the matter of good government, improved roads, and railways, no sensible increase in the amount of wheat to be received in England may be expected.

This conclusion then involves a serious question. Our own population is increasing rapidly at the rate of something like 1,200 per day (the difference of births over deaths), supposing that supplies from abroad cannot naturally be augmented, are our own farmers prepared to feed them? There are those who are talking very lamentably about the exhausted state of our wheat lands, and who would have us believe doleful things of the future; while, on the other hand, there are some who advise a strenuous appeal to the subsoil, with the comforting assurance that the fund of wealth there accumulated will answer any demand we please to urge. It is said, and I believe said quite truly, that no need exists to go to the waste poor lands, but that a staple deepened inch by inch and year by year (like Mr. Smith's five-inch staple upon a yellow clay, was during a course of fifteen years turned into a dark rich staple 18 inches deep), will supply all we want, and render us even quite independent of foreign supply altogether.

It is stated that the soil of Great Britain furnished in 1846 food sufficient for the comfortable subsistence of at least five millions of inhabitants more than in 1820. Yet this great addition was scarcely in any measure brought about by the employment of waste land, but simply by improved methods of cultivating the land already under the plough. What has been done can be done again. That immense national gain, it is true, accomplished by drainage, by an encouragement of root culture, and sheep-feeding, and by cleanly farming, &c. Our hands need not be stayed in this direction; our lands are not all thoroughly drained; our land is not scrupulously clean; and there are some farms in the kingdom which sufficiently prove how much more might be produced upon the land, were it all brought by the judicious expenditure of capital to their pitch of perfection. We require somewhere about eight bushels more per acre to render us independent of foreign supply. A vigorous prosecution of such improvements, together with the novel descent downwards, to help us to accomplish which Smith and Fowler have arrived in the very nick of time, will accomplish all. The fears which haunt some, of the dangers of dependence upon another country for corn, may be toned down, and the alarm evinced by others lest there should be no porridge to stop the cries of any of the 1,200 little brats born into the world every day, may be entirely quelled. F. R. S.

THE YIELD IN WEIGHT.

SM.—The agriculturist who could shut his eyes and be indifferent to the advantages conferred upon himself and his labours by a most beneficent and all-wise Providence within the last five weeks, would be ungrateful indeed.

The weather has been marvellously fine: First, for preparing and sowing the land for another harvest; secondly, in giving improved condition to the new wheat, rendering it more suited to the fastidious taste of the millers, who have been rather unexpectedly spoiled by a plenteous supply of fine dry foreign; and thirdly, by calming down men's minds as to the productiveness of the recent harvest. Some will aver that it has no parallel for badness since the memorable year 1816. Others consider it as resulting much beyond previous fears and anticipations, and that, after all, we have secured a tolerably fair crop. Now, taking two such antagon-

stic notions, it may be that the truth as to the comparative quantity will be found at a point between the two extremes. The conductors of the public press have abundantly ventilated the question of the harvest, in the discharge of their daily and weekly duties for the benefit of the general public. From their writings, from private sources, and from long practical farming knowledge, I am able to make up the following tabular statement as regards such of the Midland Counties as I am well acquainted with. Observe that I have taken the mean proportional quantities, both as regards number of bushels per acre, and weight per imperial bushel.

	Imp. Bush. per acre:	Weight. per imp bush.
Banbury	38	60
Ricester, Oxford ..	24	60
Northampton ..	34	58
Herefordshire ..	28	58
Haversham, Kent	36	57
Norwich	34	60
Ipswich	25	29
Boston, Lincoln ..	26	56
Beccles, Suffolk ..	22	60
S. Lincolnshire ..	34	58
E. Lincoln, Sea- ford, & the Fens	16	56
Newark	30	58½
Bedford	40	56
Grantham	32	60
Maldon, Essex ..	24	58
Brighton	32	58
Reigate	32	58
Rochester	28	61
Cambridge	30	58
Suffolk	36	59
Oxford	44	59½
Bideford	15	64
Blandford, Dorch.	20	58
Devizes, Wilts ..	23	57
Gloucester	42	59
Worcester	54	59
Southampton ..	24	56
Somersetshire ..	35	59
Middlesboro', Yk.	33	60
Northern Counts.	28	60
Kettering	30	59
Stratford-on-Avon	38	58
	997	1877
Average	30½	58¾

Touching this comparison of the different districts, it cannot fail to occur to a reasonable mind, that, as regards quantity per acre, we are this year not much behind a fair average of seasons. But the point of moment is the reduced weight per bushel, and the consequent amount of food-producing power, which will have to be tested at the mill. Now, to arrive at the solution of this grave question—for certainly it is one worthy of serious attention, and of calculation—suppose we take the average weight of an imperial bushel of wheat this year, say 58lbs., and compare it with the average of any seven years, say 61 to 62lbs. We shall then find a deficiency of about 6½ per cent. upon our estimated growth in the United Kingdom, taken as 20,000,000 quarters, or a deficit of 1,350,000 quarters. I have no prejudice whatever in favour of these deductions; and any one who is disposed to think differently can make his calculations to his own satisfaction, by considering that 333,000 quarters of wheat and flour represent every pound per imperial bushel, or one and two-thirds per cent.

If the above should be the only momentous deficiency in the wheat crop of 1860 we have not much to be uncomfortable about. Time will dry and mellow the grain, making it serviceable for man's use; for it must be borne in mind, that though comparatively poor in quality, all has been gathered sound, without blight, mildew, rust, or any other disease incident to the crop.

Now, the aid given by free foreign imports from all quarters during the months of August, September, and October, amounts, according to the Board of Trade returns, to 2,670,000 quarters of wheat and flour, being within 895,000 quarters of half what we imported in 1853—6,235,860 quar-

ters, which was our highest import in one year—and more than half of the quantity received during the other years of large foreign importations of wheat and flour, 1851, '56, and '58. But besides this, what do we witness now? I take the last *Mark-Lane Express*, and I find that in nearly all the reports of agricultural markets, English *old* wheat is prominently quoted as brought for sale and sold.

There can be no fear, then, of our being put upon "short commons" for the "staff of life;" and as for speculation, beyond that of fair importation, which will be promoted by every needful assistance, no judicious and public banker would lend a helping hand in the present state of the discount market.

As regards the other crops of cereals and roots, they deserve merely a passing notice, as being neither very bad nor very good. Turnips and mangel wurzel and potatoes have improved in size and weight through the late favourable dry weather.

The receipts of grain and flour since Tuesday form only a very small portion of the supplies known to be on the passage, and still detained by opposing winds. It may not be out of the business course to mention that, previously this year, there have been received at this port 1,017,150 quarters of wheat, 898,734 sacks of flour (the American and Canadian barrels being rendered into sacks of 280lbs.), and 231,767 quarters of Indian corn. The majority of the wheat has come in within the last three or four months, and has found buyers from the ships' side, the fact of storing being quite an exceptional event.

ROBERT PROCTER.

Corn-Exchange, Liverpool, Nov. 23.

THE AMERICAN GRAIN MARKET.

A fortnight will still elapse before the annual statement of the Western grain movement will be published, but a close estimate can be made of the receipts at New York and Montreal and other parts, for the two first weeks of November, with which the season closes. To the 15th of October the receipts of all kinds of grain by the Erie Canal, at New York, were 30,600,000 bushels, and to the 31st of October, 37,600,000 bushels; and supposing the canal remained open until the 15th of November, while the receipts continued on the same liberal scale, the aggregate movement for the season by the Erie Canal would be 44,000,000 bushels. Estimated in the same way the receipts at all the other points, including Montreal, reach 22,000,000 bushels, which gives an aggregate for the whole lake region, for the present season, of 66,000,000 bushels. This is very much short of what was anticipated a month or two ago, and not greatly in excess of the movement of 1856, which was 58,000,000 bushels. The movement by sea from the United States and Canada to the United Kingdom, for the twelve months ending 1st of September, was 13,300,000 bushels, against 2,920,000 bushels to the same date in 1859. Since September 1st, and up to November 1st of the present season, the movement by sea from the ports of the United States and Canada to the United Kingdom has been nearly equal to the movement of the twelve months ending September 1st, being in excess of 11,000,000 bushels against a merely nominal quantity in the same two months of last year.

The great supplies of the American continent are, therefore, only now beginning to come forward. Up to September 1st, what was received was the remainder of the crop of 1859, and the 11,000,000 bushels since shipped to this country is the first instalment of the crop of the present year. The supply at this rate of five-and-a-half million bushels a month would bring into competition with the English crop from America alone, the enormous quantity of 66,000,000 bushels—very singularly the precise quantity moved on the lakes—from the 1st of September, 1860, to the 1st of September, 1861; and at six shillings a bushel would involve an American expenditure for grain of £19,800,000.

Of course, if America has this large quantity of grain to spare—and it is very much below the estimates formed some months ago—there is nothing to prevent its being received, and millions would rejoice at the abundance which assuredly would prevail if it was all received at once; but it is

important to observe, that the supply must necessarily be spread over a somewhat lengthened period. The present liberal shipments from New York and other ports cannot be maintained beyond next month, because these ports of shipment are cut off by the winter from the Western sources of supply. Early in November the weather sets in stormy on the lakes, and usually before the end of the month the lakes and canals are frozen over, and until the spring thaw in the early or latter part of April, there is no resumption of the Western grain movement. Practically, therefore, the exports from America will be limited to the 66,000,000 bushels moved this season on the lakes, and up to November 1st 24,200,000 bushels of that quantity had been shipped to the United Kingdom. Of the balance, a portion only will be received by us, as the lower British provinces draw the bulk of their grain supplies from New York and Boston, and in Newfoundland there is at the present time a famine. Cuba and the West India Islands also draw grain supplies from the Atlantic ports; and it therefore seems that not until after the 1st of June, when supplies begin again to reach New York, will we receive more than 10,000,000 or at most 11,000,000 bushels, in addition to 29,300,000 bushels which have been shipped already. When June comes there will be all the uncertainty of the American crop then in bloom, and further shipments will be made sparingly, until at least the new American harvest shall have been secured.

Two circumstances may, however, destroy this very probable assumption. The one is the possibility of large quantities of flour being manufactured in the United States and Canada; and the other is the possibility of large quantities of grain being moved down the Mississippi to New Orleans and shipped to Liverpool. In fact, either of these new and probable circumstances coming into operation might involve the immediate movement of enormous quantities. With respect to the first, the difficulty of getting tonnage to convey grain from the producing ports of Chicago, Milwaukee, and Lake Michigan generally to the openings of the Erie Canal, accounts for the comparatively small lake movement that has taken place, and has no doubt offered an inducement to the manufacture of flour in large quantities.

The Western production of flour, it is scarcely necessary to say, is large, reaching in ordinary years to 8,000,000 barrels, one half of which is sent eastward on the lakes and railways, and is estimated in bushels of grain. Probably if it were thought desirable the production in such a season as the present could be doubled by working more hours, and as flour admits of railway transportation even from St. Louis to New York, it is within the limits of probability that when the supply of grain fails in New York, large shipments of barrel flour will begin. It is only right to add, that although the stock of flour is large at several points—at Toronto, Buffalo, and Oswego—there is so far no reason to expect shipments on an unusually large scale.

The second circumstance, namely, the possibility of supplies of grain by the Mississippi throughout the winter, is deserving of attentive consideration. The practicability of that route has just been established by the successful attempt made by the directors of the Illinois Central Railway to supply the deficiency of Indian corn in the more Southern States of the American Union. For such a trade the Illinois Central Railway is well adapted, draining as it at all times may do the whole State of Illinois to its southern extremity at Cairo, from which point the Mississippi is open throughout the winter to New Orleans. Obviously, when Indian corn can be carried from Cairo to New Orleans wheat and flour may be also carried, and at New Orleans—the great cotton shipping port—freight is to be had in more or less abundance to Liverpool. But for the present the wants of the Southern States are sufficient to give full employment to the whole available tonnage of the Mississippi river. There is another obstacle. Should political agitation for a breaking up of the American Union be carried on, nowhere will the excitement be greater than in the cotton-growing districts of the Mississippi, and it might be unsafe to open up a new trade. Still, political excitement may soon cool down, and the Indian corn wants of the Southern States may be more easily supplied than is just now supposed, and then nothing would really stand in the

way of a grain movement down the Mississippi during the present winter equal in volume to the usual movement down the lakes. During the summer season neither grain nor flour can be safely carried down the Mississippi in consequence of the excessive heat, but in winter there is really no obstacle of any kind.

Finally, it is deserving of passing notice that the shipments from America to Continental ports is very small. For the 12 months ending 1st September, the following were the shipments from Canada and the United States: Flour, 49,200 barrels; wheat, 178,000 bushels; corn, 19,300 bushels.

For the two months ending 1st November, the shipments have only been: Flour, 10,000 barrels; wheat, 964,400 bushels; corn, 50,000 bushels.

France is, therefore, neither buying nor receiving grain from America at the present time.

KINGSTON CATTLE FAIR.

As might have been expected, the Kingston Cattle Fair of November 13 was less attractive than the fairs of previous seasons. The dealers have been losing money, or, at best, realizing bare profits, at the earlier fairs held in different parts of the country; and, as a consequence, there has been no inducement to bring stock from the more distant districts. Scotch, Welsh, Irish, and North-country faces, long familiar to the frequenters of cattle fairs, were conspicuous by their absence; and the cattle offered were from Middlesex and Buckinghamshire and the near counties, with the remnants of a few Welsh and Irish herds, which had been driven from county to county and from one fair to another, in the vain hope of being sold. The graziers, for reasons of their own, did not show themselves in great numbers. These reasons were, the scarcity and high price of oats and hay, and the questionable margin left between the price asked for store beasts and the price paid for fat cattle, should oats and hay require to be purchased. Nor were those present in a buying mood; and most of them, after spending an hour or two in the fields, found their way back to the station without making a single purchase. In fact, the scarcity and high price of keep appeared, for once, to have made all the graziers sellers instead of buyers; and the supply of barn-feeding cows and calves was disproportioned to the supply of the larger and more fleshy cattle. Very seldom, at any fair, have so many old cows been brought together; and the difficulty—or rather, impossibility—of effecting sales, at prices more than usually low, furnishes the most convincing proof that feeding, during the coming winter, will be carried on less extensively than usual, and that the price of fat cattle promises to be more than ordinarily high. The unpropitious haymaking season, and not the farmer, is of course to blame. Sheep and pigs, and farm-work horses, from the same cause that brought the old cows to market, were most abundant; and low prices failed equally in their case to attract purchasers. Not nearly a half of the cattle offered changed hands in the regular way, to graziers; and when the fair was over, there was little disposition on the part of dealers to make investments in each other's herds, unless at a considerable reduction from current prices. The major portion of what remained unsold left the fair-field for Kent.

THE WELSH FIELD.—The North Wales cattle barely numbered 700 head, of which a good half were calves. The cattle were, upon the whole, in fair condition, although some of the calves bore unmistakable traces of long-continued driving. In the morning, some hours were spent without the appearance of a single buyer; and throughout the day transactions took place at long intervals, and were in all cases of almost a retail character. There were no buyers of fifties, nor, unless in one or two cases, of twenties; and tens were considered large purchases. Never had buyers so much of their own way before; and after their low bids were taken, there was no difficulty in getting one concession more—that, namely, of drawing out what beasts were wanted, in those cases in which drawing did not precede the purchase. It was, in fact, dangerous for graziers making bids of any kind,

unless they really wanted cattle, as, after a little Welsh chatter, and some higgie-haggling, the bids were taken, and caps and sticks tossed into the air with tremendous shouts. Some small lots of calves, in fair condition, offered for in an off-hand way, without the least intention of buying, were in this way sold at what was called the "even money" of £4. In those cases where the calves were wanted, sales took place at better prices; and one prime lot of drawn calves brought £7. The average of the field was not, however, more than £5. Two-year-old heifers and steers were in rather more favour than the calves, and brought all kinds of prices, the more conscionable buyers not caring, as they expressed it, to "take the beasts for nothing." The top price for prime drawn heifers was £8 10s. to £9, and some small mixed lots were taken as low as £6, the average of the field being £7. Steers brought much the same prices. The South Wales cattle numbered rather over 800 head; and what has been said of North Wales cattle applies equally to them. Towards the middle of the day, both the North and South Wales fields looked as if well cleared; but not more than 200 head had been then sold, the cattle being merely less at large. At the close of the fair, a large half remained unsold; and the Kent farmers, if they have plenty of good hay, may yet fill their cattle-yards on easy terms.

THE SHORTHORNS.—The show of Shorthorns was really good, and calves included, there were about 700 head. Of the Johnstone Shorthorns there were 150 on the field; one half of the number being heifers in-calf, and the other barn-feeding heifers. By the middle of the day 100 of the number had been sold, and on the second day only a few remained: the calf heifers bringing 14l. to 18l., and the feeding heifers 8l. to 12l. There were no Johnstone cows offered. From Buckinghamshire there were two or three prime herds of Shorthorns, in which a fair amount of business was transacted, but at irregular prices, equally good two-year-olds being sold at 9l. and 10l. Three-year-olds not differing appreciably brought 14l., 14l. 10s., and 15l. A few prime drawn well-conditioned cattle brought 16l. Calves were freely offered at 6l., but attracted little or no notice, and at the close a good half of all sorts remained unsold.

THE DEVONS AND HEREFORDS.—The Devons numbered 500 head, and the Herefords 300 head, and both were in prime condition. The demand for both was, however, discouraging and dull, and the transactions could scarcely have been remunerative. The top prices realized for prime drawn Hereford two-year-olds was 13l., prime three-year-olds 16l., and calves 10l. Most of the transactions were below these prices, and some two-year-olds were parted with as low as 8l. 10s. and 9l., and some three-year olds as low as 13l. and 10l. 10s. Devons were scarcely so much in favour as the Herefords, and must be quoted a shade lower and a little more inactive. But the Devons were unusually fine cattle, and unless in the exceptional state of things now existing, would have been cleared without difficulty. The clearance of the Devons and Herefords was less than of the Shorthorns, and upon the whole considerably less satisfactory to the sellers.

GENERAL STOCK.—Under the head of general stock may be included the few Highland Scots offered, the few Irish and Continental, and the barn cows. The total number of these as near as can be was 800 head, and the demand was very dull. Scarcely a single buyer found his way into that part of the fair-field occupied by this stock, and a large three-fourths were at the close driven out unsold. For really useful Irish three-year-old heifers not more than 7l. was bid, and some sales were made at slightly better prices. Old barn cows were offered freely at 5l. and 6l., and some young barn cows as low as 6l. without attracting a single purchaser. Highland Scots and Dutch were also quite neglected, the few offered not presenting any choice.

MILK COWS.—The number of milk cows large for the season, and prices may be quoted 2l. less than the London prices ten days since. Of good cows perhaps not twenty changed hands, and the inferior were driven home unsold. Really prime dairy cows could be had for 20l., and good useful animals as low as 10l. and 15l.

SHEEP.—The supply of sheep was more than usually large, the collector making 500 pens, and six pens being rated to 100 sheep, the number offered was no less than

8,000 odd. Lower prices led only to a very limited demand, and it is perhaps within the mark to say that not 1,000 sheep changed hands in the regular way. What sales were made were at irregular prices, wethers ranging from 25s. to 35s., and lambs 15s. to 25s.

SWINE.—The supply of young swine was also large, and the transactions limited, at fair prices.

HORSES.—In horses there was little or no business done, and quotations are merely nominal. An unusual number of farm horses were offered, but driven home again, there being no demand. Cart-horses also stood all day without being trotted out, and there was little or no excitement with colts. Horses of all kinds were in fact never a greater drug, and if the truth were told not a hundred of the great number offered found purchasers. The prices asked for cart-horses ranged from 35l. to 45l., cart colts 28l. to 35l., and nags 40l. to 45l. Farm horses were offered at all prices, from 10l. to 25l. and upwards. Welsh colts brought 10l. to 12l., and ponies 6l. to 8l.

DUTY ON HOPS.

An account of the duty on hops of the growth of the year 1860:

Collections.	Duty at 1½d. per Pound.		
	£	s.	d.
Barnstaple	0	7	9
Canterbury	16,397	2	7½
Esex	39	9	1½
Gloucester	2	5	0
Hants	2,104	14	10½
Hereford	3,162	4	7½
Isle of Wight	1,145	4	9
Lincoln	24	10	0
Lynn	0	5	0
Oxford	0	11	9
Reading	0	10	3
Rochester	22,667	14	4½
Sheffield	2	12	3
Stourbridge	1,402	6	7½
Suffolk	40	2	1½
Surrey	30	4	6
Sussex	21,488	0	6
Wales (middle)	14	16	3
Worcester	1,240	0	0
	£69,763	2	4½

Old duty, at 1d. and 3-5ths of a farthing per pound.. .. . 53,485 1 13½

Inland Revenue Office, W. M. Moxon, Chief Accountant.
Nov. 6th, 1860.

BATH AND WEST OF ENGLAND AGRICULTURAL SOCIETY.—A meeting of the Local Committee was held at the Town Hall, Truro, on Monday, Nov. 19; Mr. P. P. Smith, Vice-president, in the chair. There was a numerous attendance of members; and, by invitation from the secretary, Mr. Whitley, several leading agriculturists in Truro, on account of the Five Weeks Cattle Fair, attended the meeting. The two chief subjects brought forward were—Local Prizes, and the preparation of a paper on Cornish Agriculture. After much discussion, the meeting concurred in opinion that, considering the demands which would be made on the funds of the Local Committee, and that it would be undesirable to attach a small exhibition to the great and all-important one for the year; the better course was to postpone the subject of local prizes for three months. With regard to the proposed essay on Cornish Agriculture, the secretary reported that he had conferred with Mr. Goodwin, the editor of the Bath and West of England Society's Journal, and had also communicated with the gentlemen who had been suggested as suitable persons to undertake the authorship of the essay; but all had declined the duty. It was therefore resolved, at the solicitation of the committee, that the secretary, Mr. Whitley, be requested to prepare such a paper, and that the matter be left in his hands. The following gentlemen were

added to the Local Committee: Mr. Davis, Mr. Peter Davis, Mr. James Tremain, Mr. W. Trethewy, and Mr. John Michell. Several members of the council of the Bath and West of England Society have recently visited Truro, for the purpose of aiding the Local Committee in making necessary arrangements for the exhibition.

THE HORSE SHOW AT THE NORTH LONSDALE SOCIETY.

TO THE EDITOR OF THE FARMER'S MAGAZINE.

SIR,—In your Magazine for October last, I observe a short summary of the North Lonsdale Agricultural Society's meeting, held at Ulverstone in August last, in which particular mention is made of a very neat bay mare belonging to Mr. Drewry, land steward to the Duke of Devonshire, as having received the honours of the Hunter's Challenge Cup.

The judges, as you correctly observe, were Messrs. Bartholomew and Cotterill, who, notwithstanding the limited ideas of jumping at first displayed by the mare "Fanny," decided that she was entitled to the cup, and awarded it accordingly.

There were four or five horses, all mares, who competed for the honour of winning the cup: Among them was one the property of Henry Smith Esq., of Bankfield, near Ulverstone, which took all the hurdles in first-rate style. She was ridden by Mr. Wm. Kendal of Harbarrow; a gentleman whose height is more than 6 feet 2 inches, and rode over 14 stone.

In consequence of the dissatisfaction expressed at the judges' award, a match was got up between Mr. Smith's mare, and that of Mr. Drewry, to ride over three miles of Low Furness country; Mr. Smith's mare to be ridden by Mr. Kendal of Harbarrow, and Mr. Drewry's mare to be ridden by Mr. Milne, late of Cartmel, who is perhaps the best amateur rider that ever crossed a saddle, and to carry 12 stone.

The match came off on Wednesday last, the 21st inst., in a pour-down of rain, the ground soaked with water, and the grass land as slippery as ice. There were 22 jumps in all: the result was, that Mr. Smith's mare "The Queen," carrying 14 stone, won easily, and landed between the winning posts with plenty of wind, and full of running: time, 15 minutes.

"The Queen" is a very powerful chesnut mare by Midlothian, out of a thorough-bred mare by Velocipede. She was bred by John Cranke Esq., of Ulverstone. "Fanny" is out of a half-bred mare by Contract. It is in justice to the breeder of "The Queen," that I beg your insertion of this letter.

I remain, Sir, yours obediently,
Nov. 26, 1860. AGRICOLA.

[It should be perhaps added, that the loser had a very severe fall early in the race, and never again got up to the other.]—ED.

MICHAELMAS CORN AVERAGES.

SIR,—I avail myself of the return of the close of the farmer's year, to send you a statement of the weekly average prices of wheat, barley, and oats for 53 weeks, ending Sept. 29, 1860, making the general average for the year—

	s.	d.	
For wheat...	49	9	per imperial qr.
For barley....	35	6	ditto.
For oats	23	11	ditto.

During the whole of the year, up to the month of September, the average price of wheat has gradually advanced. The lowest price was on Oct. 7, 1859 (42s. 1d.), and the highest on the 21st of September, 1860 (62s. 11d.), being a difference of 20s. 10d. per imperial qr., or an increase of very nearly 50 per cent.

In the absence of statistical returns bearing on the question, it is difficult to form an opinion as to the probable range of prices up to the harvest of next year. It is to be hoped that the large supplies we shall obtain from America may tend to steady the prices in this country.

I remain, Sir, your obedient servant,
CHARLES M. WILlich,
Actuary, University Life Assurance Society.
25, Suffolk-street, Pall-mall, Nov. 9.

WEEKLY AVERAGE PRICES OF WHEAT, BARLEY, AND OATS, IN ENGLAND AND WALES FOR 53 WEEKS, ENDING THE 29TH SEP., 1860.

Per London Gazette.	Wheat.		Barley.		Oats.	
	s.	d.	s.	d.	s.	d.
1859,						
Oct. 7, ...	42	1 7/49	35	9 4/53	20	10 0/01
14,	42	5 9/42	35	8 2/13	21	7 1/28
21,	42	6 2/04	35	10 3/90	21	3 6/36
28,	42	10 2/85	35	5 5/45	21	2 0/38
Nov. 4,	42	1 6/55	35	6 3/03	20	11 2/42
11,	42	9 5/81	35	9 7/34	22	1 5/09
18,	42	10 6/83	35	11 6/39	21	5 0/58
25,	43	1 5/95	35	11 5/03	21	11 3/12
Dec. 2,	44	1 5/28	36	1 7/12	22	6 7/96
9,	44	8 1/65	36	5 9/75	21	9 5/48
16,	43	11 6/14	35	10 0/99	21	5 0/00
23,	43	8 3/46	35	1 9/25	21	9 0/98
30,	43	6 7/87	34	9 1/36	21	1 9/10
1860.						
Jan. 6,	44	2 6/90	34	8 4/28	21	5 3/49
13,	44	2 9/90	34	5 7/18	21	5 7/56
20,	43	11 8/43	34	7 7/31	21	5 2/28
27,	43	11 0/72	34	4 0/16	21	1 2/47
Feb. 3,	43	10 3/34	34	7 4/31	21	5 8/64
10,	43	8 7/09	34	10 3/65	21	0 4/99
17,	43	6 5/10	34	11 3/87	21	11 0/38
24,	43	11 4/43	34	11 1/06	21	11 0/93
March 2,	44	5 3/01	35	7 9/97	22	7 3/07
9,	44	9 7/70	36	6 12/7	22	11 3/09
16,	45	0 1/89	36	3 6/13	22	9 3/18
23,	45	2 3/58	36	5 6/93	23	1 9/96
30,	45	6 1/76	36	11 3/39	23	4 5/79
April 6,	46	5 1/02	37	2 8/85	24	1 5/71
13,	47	9 6/94	36	4 9/77	27	7 7/55
20,	49	1 2/25	37	2 5/88	24	2 4/80
27,	49	6 7/22	37	8 8/60	24	2 3/63
May 4,	51	2 8/27	37	11 2/26	24	5 1/69
11,	52	6 3/88	37	5 3/61	25	5 0/50
18,	52	6 7/41	37	7 7/90	25	10 0/74
25,	52	1 0/35	36	6 4/88	25	3 6/78
June 1,	52	6 1/61	36	2 1/50	26	6 8/95
8,	53	4 6/25	35	10 4/60	26	8 3/05
15,	54	2 3/12	35	0 6/06	27	8 7/65
22,	54	11 0/04	35	3 4/76	26	11 1/61
29,	57	0 6/02	34	7 1/24	27	5 2/48
July 6,	58	5 1/25	32	10 9/12	25	5 4/46
13,	57	9 7/86	34	0 9/60	26	5 1/64
20,	57	7 0/29	33	5 8/95	25	8 1/30
27,	56	6 1/68	32	5 5/87	26	4 1/60
August 3,	57	0 3/72	33	1 4/34	26	4 7/88
10,	58	7 3/18	33	0 3/20	26	6 2/33
17,	59	6 7/24	34	0 0/99	26	1 2/04
24,	59	6 6/68	32	10 2/56	28	2 9/70
31,	60	1 4/79	34	9 5/57	27	1 9/29
Sept. 7,	60	11 5/55	33	3 5/57	25	5 5/57
14,	62	10 0/00	35	2 0/00	27	2 0/00
21,	62	11 8/12	37	10 4/70	27	0 9/05
28,	58	3 8/34	38	5 4/01	25	9 8/02
Oct. 5,	56	11 5/80	39	3 9/36	25	3 1/97
Average....	49	9 5/36	35	6 4/99	23	11 8/29

CALENDAR OF AGRICULTURE.

Plough stubbles and leys for fallows and Lent crops during fresh weather. Repair old fences and make new ones. Continue the cutting of drains so long as the weather permits. Mend roads and cast 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 laying: plant all kinds of forest trees, especially ash and oak. Keep plantation fences in good repair, to prevent any trespassing—a very sure mark of slovenly management. Raise turnips, and store the bulbs in dry fresh weather; give the tops to the young cattle in the yards, and to the store sheep in the fields.

Early lamb will be dropped during this month in some places. Feed the ewes amply, and provide good shelter.

During frosty weather, thrash very frequently, and litter the yard very often. Collect earths to the compost heaps, and carry lime for mixing with the earths. Cart stones to the places of use for drianing. Carry ruel, timber, and faggots.

This being the first month of the winter, the proper arrangements must be made for a systematic management in every department of the winter

operations. The live stock require the most 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 horses, cows, pigs, and poultry; give it fresh, and allow no sourness to happen. 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 current-going order to conduct the urinary liquid 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: glass will soon be called into use for this purpose in farm buildings.

The crops of grain, the animals, and all movable articles, being the property of the farmer, should be insured at his expense, and the buildings at the expense of the proprietor. These purposes are now most economically done in the office for farmers, Norfolk-street, Strand. The farmers and proprietors who neglect the yearly insurance are most culpable, and commit a great injustice, not only to themselves, but against the public at large.

CALENDAR OF GARDENING.

KITCHEN GARDEN.

Protect artichoke beds with three inches of semi-decayed leaves strewed over the surface, or, if the land be stiff and clayey, with as much coal and wood ashes.

Earth-up celery finally very high in ridge. Continue to excite asparagus and sea-kale. Trench and deeply manure ground intended for new plantations, and for onions. Ridge ground of vacant places; but for all these operations choose the driest weather, otherwise the temperament of the land will sustain injury.

FRUIT DEPARTMENT.

Look over the fruit stores, and remove decaying apples and pears. A dry cool air and a covering of dry straw are the best preservers. Pears may be kept warmer than apples. The brown pears are still among the best.

FLOWER GARDEN.

If snows falls rake it off the evergreens before the sun shines. Remove litter of all kinds, and also from lawns and gravel; protect the glasses of pits and greenhouses by mats, or screens, or rollers; give air, but little water. Straw mats, skilfully made, and with bands and strong pack-thread or large cord, afford the best of all protections to frames and low pits.

The operations at this season of the year are wholly contingent, and the labour will be futile on lands bound by frosts or swamped by drenching rains. The privileges enjoyed by farmers are very easily applied—labour is at command. The proper seasons must be watched. Vegetables of the first order are easily procured, and fruits of the common kinds require not very much attention. Fertility and neatness may at all times be done; improvements must progress.

SUBSTITUTE FOR POTATOES.—Peas-meal: A teacup full, with a little cream or milk, tied up in a cloth and thoroughly boiled, or else boiled in a little stock, and then opened out and served instead of mashed potatoes; or peas-meal and water done plain, with a little salt and a piece of cold butter put in, when opened out. For the poor: Peas-meal, or split-peas, boiled with a little skim-milk and salt, and any bones of meat boiled with them, makes a very nutritious dish; also, dripping, mixed with the meal, tied up in a cloth and well boiled, is good, nourishing, and wholesome. The above were much used in the neighbourhood of Glasgow, some years since, on a failure of the potato crop.

The Annual Show at Tredegar, one yearly increasing in influence, is fixed for Tuesday and Wednesday, the 18th and 19th of December. Lord Tredegar himself gives no less than twelve silver cups, and a number of other gentlemen offer cups and pieces of plate.

AGRICULTURAL REPORTS.

GENERAL AGRICULTURAL REPORT FOR
NOVEMBER.

An enormous influx of foreign produce has been followed by considerable heaviness in the demand for wheat, and a decline of from 8s. to 8s. per qr. in its value. In London, as well as throughout the provincial districts, millers have operated with extreme caution, and the transactions, both for immediate use and for holding forward, have been on a very limited scale. In addition to unusually large arrivals of grain and flour from the continent, as well as from the United States, the home growers have found the trade suddenly checked by a rapid upward movement in the value of money in the discount market. Both the Banks of England and France, in order to arrest the outflow of bullion, have found it necessary to raise their *minimum* rates—the former to six, the latter to four-and-a-half per cent. No doubt that higher quotations for accommodation have greatly interfered with the usual operations in the trade; but we believe that another feature in it has not been without its influence as regards price, viz., the unusually small quantities of English wheat of the new crop which have, as yet, passed into consumption. It may be that our views as regards the actual quantity of wheat grown this year, admitting that its quality is very inferior, may not be in unison with many other writers on the subject; nevertheless, we still contend that the light lands have produced more wheat this year than in 1859, though, upon heavy soils, there is, no doubt, a deficiency. If, then, we assume that nearly an average quantity has been produced, we arrive at the conclusion that our farmers hold full average stocks for the time of year. This appears to be the view taken by not a few of the leading millers, and upon it they have certainly operated during the greater portion of the month. In many quarters opinions have from time to time been hazarded to the effect that wheat would rise to 100s. per qr. before the end of the year: the result, so far, at least, shows the fallacy of such a statement, and, as far as we can understand the general bearings of the trade, prices are likely to go much lower than they now are. What, in point of fact, is likely to produce a rally in them? At present our warehouses are full of produce; the supplies on passage to England are very large; and, with, perhaps, the exception of France, the stocks in growers' hands abroad are still extensive for the time of year. The future range in the value of money will, no doubt, have much influence upon prices, because many of the largest buyers, perhaps the whole of them, will be under the impression that corn bills will be wholly refused by the bankers, and that, consequently, forced sales of produce will be the result. Considering that confidence has become somewhat re-assured in France, now that an exchange of two millions of silver is about to be made for gold, in order to place the Bank of France on a firmer basis, we may conclude that money, which is still very abundant in the general discount market in London, has seen its highest range. The Bank of England, hitherto, has not failed to accommodate the commercial body, but, of course, at a price; and it is a great fallacy to assume that the joint-stock and private bankers will refuse to discount corn bills, if accepted and endorsed by eminent houses. No doubt the rise in discount will greatly interfere with the profits of not a few of the importing houses, as well as the shippers themselves; but at the same time we do not apprehend any decided crash either from forced sales of wheat, or the inability of the owners to obtain reasonable accommodation; nevertheless, it seems evident that wheat has seen its highest point, and that great caution will be exercised by the dealers generally in effecting purchases beyond immediate wants.

There is one feature which demands special notice as bearing upon the future range in the value of wheat, viz., the potato crop. Hitherto our markets have been well supplied with potatoes in excellent condition; sales have progressed slowly, but at comparatively high rates, viz., from 80s. to 150s. per ton. From all quarters our accounts, with some few exceptions, agree in stating that the crop has turned out much better than was at one time anticipated; whilst as regards Scotland, it is admitted that it is an enormous one in quantity, and very fine in quality. From most of the ports, very large shipments have been made, and the prices realized are very remunerative. An abundant potato crop, therefore, must have some influence upon the value of the better kinds of food in this country.

Much surprise has been expressed at the sudden decline in the value of barley. During the month it has amounted to about 4s. per qr. The fall has not been confined to grinding and distilling qualities, but it has extended to the best malting parcels also. There is an immense quantity of stained barley on hand; but we must bear in mind that the aggregate yield this year is a full average one; that Scotland is now furnishing us with large supplies in good saleable condition; and, further, that our importations from abroad have continued in excess of the demand. But not only have wheat and barley given way in price, since we find that oats, beans, and peas have ruled in favour of buyers; whilst inferior flour has been offering on lower terms. We now find ourselves in this position—abundant supplies of all kind of produce, a heavy trade, and a high range in the value of money. Who, then, can feel surprised that caution should have become general?

On the whole, the wool trade has continued in a satisfactory state. The demand by private contract has been by no means active, yet prices generally have been well supported. The public sales of 40,000 bales colonial are progressing steadily, and fine Sydney and Port Phillip wools have realized an advance of 1d. to 1½d. per lb. Cape parcels, however, which form nearly a moiety of the supply, have declined 1d. per lb. The general quality of the wools offered at the present series is by no means fine. The stocks held by our leading manufacturers are comparatively small, and complaints are general of the low value of manufactured goods.

The hop trade has turned out a complete failure, as must be evident from the small amount of duty returned. At one period the very best hops were worth £28; now, however, the extreme price is £22 per cwt. Other kinds have given way, and the trade has become heavy, notwithstanding that statements have been submitted to the public showing that there is an actual deficiency in the supply of hops in Europe, compared with the consumption, of over 200,000 bales. We believe that there is still a very large stock of yearlings on hand, and that supplies of foreign hops will continue to reach us during the winter.

In nearly all parts of the United Kingdom considerable progress has been made in out-door farm labours, with the land in fine condition for the reception of the winter wheats. The quantity of winter food on hand, though large, is very deficient in quality; so that prices are likely to show an extreme range for some time hence. In London meadow hay has sold at from £2 10s. to £5 12s., clover ditto £3 10s. to £5 15s., and straw £1 10s. to £1 18s. per load. The best has sold steadily at our quotations; but inferior kinds have met a dull inquiry.

In Scotland large quantities of grain have been thrashed out, and the yield, generally, has proved satisfactory. Rather large shipments have been made in the south; nevertheless, the trade has become heavy at drooping currencies. The Scotch markets have been fairly supplied with produce, in which the transactions have continued on a limited scale at reduced quotations. The grain movement towards England has not increased.

REVIEW OF THE CATTLE TRADE DURING THE PAST MONTH.

The supplies of fat stock on offer in the Metropolitan Market, since we last wrote, have been tolerably good as to number, but, for the most part, very deficient in quality. For prime beasts and sheep, therefore, the demand has ruled steady, at full quotations, but all other kinds have moved off slowly at drooping currencies. We regret to state that the foot-rot has attacked the sheep in various districts, and that consequently immense numbers have been disposed of at very low prices: we are not surprised at this circumstance, considering the extreme wetness of the past season; but without great care on the part of the flockmasters, it is apprehended that the disease will rapidly increase, more especially as complaints are general of the want of good sound food. The quantity of hay and turnips grown this year is certainly large, but at least two-thirds are very much beneath average quality.

It is to be much regretted that we should still continue to receive such large supplies of English stock in a half-fat state. This deficiency, however, is being made good by large arrivals from Ireland; and we may safely assume that the receipts of beasts from Scotland during the remainder of the year will be on a very extensive scale, and of prime quality, since we learn that the numbers now on hand are certainly in excess of the corresponding period in 1859.

The importations of stock from the Continent have been on a liberal scale, and, for the most part, in fair condition. Some of the Dutch sheep have sold at high quotations, since they still continue to carry a large quantity of internal fat. Most accounts state that there is no want of stock in Holland for export purposes; they inform us, however, that prices continue to rule high. The shipping season from Denmark is now closing, so that we must now anticipate decreased importations from that quarter.

The following returns show the imports of foreign stock into London during the month:—

	HEAD.			
Beasts	6,961
Sheep	22,723
Lambs	129
Calves	1,604
Pigs	828
Total	33,245

IMPORTS AT CORRESPONDING PERIODS.

November.	Beasts.	Sheep.	Calves.	Pigs.
1859.....	5,927	21,907	997	159
1858.....	4,787	13,258	1,174	156
1857.....	4,409	12,339	2,687	136
1856.....	6,102	16,380	1,152	309
1855.....	7,367	17,094	1,127	454
1854.....	7,120	16,604	1,108	369

The total supplies from all sources exhibited in the Great Metropolitan Market have been as under:

	HEAD.			
Beasts	25,400
Cows	500
Sheep	103,600
Calves	2,112
Pigs	2,990

COMPARISON OF SUPPLIES.

Nov.	Beasts.	Cows.	Sheep.	Calves.	Pigs.
1859.....	26,492	522	120,840	1,299	2,800
1858.....	24,856	534	114,643	1,437	2,970
1857.....	25,383	505	103,120	3,002	3,037
1856.....	25,444	515	105,750	2,096	3,415
1855.....	24,711	457	97,460	1,585	3,535
1854.....	23,442	512	121,031	1,848	2,726

Included in the supplies for the month are 12,140 shorthorns and crosses from Lincolnshire, Leicestershire, and Northamptonshire; 3,800 various breeds from other parts of England; 76 Scots and crosses from Scotland; and 1,652 oxen and heifers from Ireland.

Beef has sold at from 2s. 6d. to 5s., mutton 3s. 4d. to 5s. 4d., veal 3s. 6d. to 4s. 8d., and pork 4s. to 5s. 2d. per 8lbs., o sink the offal.

COMPARISON OF PRICES.

	Nov., 1856.			Nov., 1857.		
	a. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Beef, from	2	8 to 4	10	3	0 to 4	10
Mutton	3	2 to 5	2	3	0 to 5	4
Veal	3	8 to 5	4	3	10 to 5	4
Pork	3	6 to 5	4	4	0 to 5	2
Nov., 1858.						
	s. d.	a. d.	s. d.	a. d.	s. d.	a. d.
Beef, from	2	8 to 4	10	3	0 to 5	0
Mutton	2	8 to 5	0	3	2 to 5	2
Veal	3	4 to 5	0	4	0 to 5	4
Pork	2	10 to 4	2	3	6 to 5	0

With the exception of veal having sold at reduced rates, it would appear from the above figures that very little change has taken place in the quotations, when compared with the corresponding month in 1859.

Very large supplies of Scotch and country-killed meat have been on offer in Newgate and Leadenhall. Trade generally has been in a most inactive state, at low currencies: beef has sold at from 2s. 8d. to 4s. 2d., mutton 3s. 4d. to 4s. 4d., veal 3s. 6d. to 4s. 4d., pork 3s. 6d. to 5s. 4d. per 8lbs. by the carcass.

EAST GLOUCESTERSHIRE.

The fine and only really good harvest weather during the first nine days of this month, enabled the Vale farmers to finish the beans, and also the Cotteswold agriculturist to complete the barley and oats, a good deal of which was not done earlier. And, although we would willingly look at the brightest side, truth compels us to express our misgivings at the result of the harvest now ended, as well as to intimate our gloomy forebodings at the very trying time before us in getting through the forthcoming winter with the stock, more particularly as regards the hill farmer. On the drained and well cultivated land of the Vale, where the severity of last winter did not too much destroy the plant, there seems to be a good yield, even perhaps above an average; but on the cold, undrained lands of this district complaints are made of the yield both as regards quantity and quality. Beans, which appeared so promising, owing to the lateness of the season, are injured in quality, and will be found most likely to be short of the yield they at one part of the season gave promise. Fruit is abundant, though the quality of liquor it yields is worse than for several years. Potatoes (as their present price, from 20s. to 24s. per sack of 2½ cwt, bespeaks) are generally a failure. Turning to the Cotteswold part of the district, our report is much more unfavourable. The wheat crop, both as regards quantity and quality, is the worst these hills have produced for many years. On a good deal of the thin exposed fields half an average crop is a high estimate to put it at, and the quality, if possible, is worse than the yield. Barley may yield an average crop, though very few of the samples are fit for malting. Oats probably will be the most yielding crop, and relatively of better quality than wheat or barley. Roots of all descriptions are remarkably bad, particularly the mangels and swedes. The common turnips have improved considerably within the last six weeks, though not nearly enough to make the root crop as a whole equal to former years. So small are the bulbs that several of the good farmers have abandoned cutting for the sheep, and have recourse to the old method of allowing them to gnaw their food. This latter seems a very significant fact, for on being put on to roots the animals are below in condition the state they are generally in, and smaller in number than usual; so that these considerations being taken into account, together with the smallness of the root crop, makes the conclusion inevitable, that the quantity of mutton and beef made this winter will be insignificant compared with former seasons, and therefore this mode of reasoning makes it almost certain that prices for meat must, during the spring months, be very high. The young wheat on the hills is looking well, though in the lowlands a large proportion has to be planted under the disadvantages of the land, owing to the wetness of the season, being only partially cleared, and the continued rains make it almost impossible to plant. The report would be incomplete did we not notice what promises to be a new era in the cultivation

of the soil in this district, viz. the formation of a Steam-plough Company. A few months since, a body of county gentlemen, who with a singleness of mind and a disinterestedness of motive which is a leading characteristic of their lives, appreciating the system of steam-cultivation adopted by Mr. Fowler, established a company to carry out this system. The company so formed have made several sets of tackle-working. One set we hear, at Longford, Uckington, and Brockworth, having ploughed about 100 acres at a depth of from 7 to 11 inches, at a cost of 15s. per acre, without scarcely any hindrance or breakage. The cost of horse-ploughing these most adhesive lands would, at the lowest, be 21s. per acre, so that there is a money saving of 6s. per acre, besides the advantage, which is nearly as much, of working this clay land without the treading of cattle. The greatest drawback to its usefulness seems to be the small enclosures and crooked hedgerows. However, when the importance of steam-cultivation is duly appreciated, no doubt this evil will be remedied in a great measure, and thus seal the doom of many a really lousy old pollard tree that has for many a long year destroyed its bushels of corn annually.—November 21.

NORTH NORTHUMBERLAND.

During the many years that we have closely attended to the duties of rural economy, and noted the alternate seasons of our northern climes, we have no data comparable with the protraction of the late (or rather present) harvest. While thankful gratitude to Divine Providence is felt by the fortunate, who have secured the fruits of the field weeks (aye, and months ago), we regret to say, considerable patches of grain remain in the field; up to Monday last (when we had severe frost) a full moiety of the bean and pea crop was outstanding, part uncut; and on cold clay subsoils, wheat, barley, and oats exposed in the sheaf. A part was saved on Monday in frozen middling condition. Tuesday a thaw, followed by an immense fall of rain; strong breeze from S.E., which continues up to the hour we write; field labour entirely suspended, all being flooded. To avoid extremes, we shall confine our notes to a medium cultivated farm situated near the centre of the district from which we write. Commenced reaping oats Aug. 24th; continued with the usual farm labourers to cut down all ripe pieces until Sept. 1st; started horse-reaper, and made good work until 4 p.m.; rain fell and put a full stop to the work. Alternate sunshine, wind, and rain until 18th, when the first sheaf of winter wheat was cut; weather fine for a few days; showers fell at intervals to the end of the month, which closed with a perfect deluge. Oats and barley all in stack and safe. October 1st, foggy and close atmosphere. Wheat all exposed, and very wet. 2nd, foggy, with rolling clouds; cleared up at sunset, with squalls. 3rd, a hurricane of wind from due west, which by 10 a.m. had barely left a sheaf standing; about a third of spring wheat uncut. 4th, 5th, and 6th, withering drying wind, and all wheat cut before the wind safe in stack; last of late wheat-carrying safe on the 12th. Beans and other grain all under thatch on the 20th, which finally finished a tedious harvest. Hands were plentiful, yet as all corn was taken "risky" and half ripe, work proceeded in a heartless sluggish way, trying to while away time, and save work for another day; there has not been a warm sheaf in the stack; yet it required no telescope to see steam in not a few rick-yards. As it is, straw was under the best management put together dry for keeping, while the grain, which never fully matured, was carried to the stack soft and raw. Hence we see samples and bulk exposed in the market, of weight very various, Wheat 50 to 63½ lbs., barley 48 to 58 lbs., oats 35 to 44 lbs. per imperial bushel. Beans and peas have not been exposed for sale from the new crop; the yield is also very various on all dry or well-drained land; the crops have lifted bulky in sheaf, and except from the early stiff-straw wheats the yield is very meagre. Oats and barley, where not large, yield fully to expectation; taken altogether, quantity and weight will fall considerably short of the ordinary crop. Turnips have improved, and will lift a fair average crop; there are always exceptions—only one we shall note: a crop upwards of 120 acres, nearly half swedes, we had the pleasure of walking over a few days ago, were really immense; we venture to say Mr. Mechi himself could not en-

joy a better treat than to put his foot on the soil and see a real crop of swedes, grown without steam, pipes, or dissolved horses and pigs. Mangolds all but a failure. Kohl-rabi much run to head, and very small. Potatoes lifted sound, and taken in all a good crop: part we see not lifted.—P.S. During the last three days the fall of rain has been immense. Wind since 9 a.m. from E.N.E., bitter cold, fall a little abated, and mercury rising. Not a foot can be set on the naturally driest soil without slumping to midleg. Cattle and sheep must be fed, and where roots are not in store, woe to the occupant. Early-sown wheat brairds well; large breadths unseeded.—Nov. 23.

AGRICULTURAL INTELLIGENCE, FAIRS, &c.

ABERGAVERNAY FAIR.—There was a very good attendance of store cattle, which sold much more readily than had been expected, at prices something in advance of those recently realized. In the horse fair little business was done. Strong store pigs commanded a high price.

ALYTH MARKET.—Cattle and sheep were in good supply. Animals fit for the butcher kept their value; those sold brought from 9s. to 9s. 6d. per stone. Grass-beasts were stiff in sale, and were depressed somewhat in price. Good crossed sheep realised about £1 10s.; blackfaced wethers averaged £1 4s.

ANDOVER.—A larger quantity of lean beasts, cows, heifers, and calves than have been brought to this fair for several years past—of Scotch and Welsh breeds more than half; shorthorns, Herefords, and Devons a considerable quantity, the remainder of various breeds, ages, and size. Many unsold at Kingston had been driven to this fair. The demand was not very brisk, yet a good number found buyers, there being some purchasers out of the lower part of Hants, from Wilts, Berks, and other counties at the following prices: Best three-year-old large beasts made from £13 to £14 each, Scotch from £11 to £12, Welsh from £9 to £10; smaller two-year-old beasts from £7 to £8, nine to twelve months' old from £3 to £5. Cows, best shorthorns, down calving, £18 to £19, with a calf £19 to £20, barren £14 to £15 each; heifers from £14 to £15 each; bull-calves from 20s. to 25s., cow do. from 30s. to 35s. each. Fat beasts were soon taken, at from 12s. to 12s. 6d. per score. Some of the droves, not being disposed of, were taken back to await Guildford fair on the 22nd instant. Best Down tegs made from 36s. to 40s., Down ewes from 38s. to 42s., and larger do. from 42s. to 46s. each. Fat sheep from 4s. 4d. to 5s. per stone, or from 7d. to 7½d. per lb. Horses: A large quantity of nags (riding and driving), cart (large and small), cobs, ponies, colts, and fillies for sale, of various breeds, ages, and sizes. There appeared a fair demand for best horses (warranted), whether light or heavy kinds. Prices varied from £10 up to £40 for nags, and from £25 to £35 for cart kinds. Welsh and other ponies from £6 up to £15 each.

BATTLE FAIR.—A short supply of good stock. Trade heavy throughout. Inferior stock could not be disposed of.

FARNHAM FAIR was anything but well attended. There was about the average number of stock penned, but the quality of the lean stock particularly was very inferior, and no boast can be made of the fat stock. There was an unusual number of horses, such as they were. Few (if any) changed hands.

GARSTANG FAIR.—A moderate show of cattle, and anything likely for beef or good-bred young stock was readily disposed of at better prices than has been realized at the neighbouring fairs. Only an indifferent show of horses, the majority of which were aged and geldings. Very little business was done in either, and those sold were at low prices, fodder, no doubt, being the main object, which is by no means plentiful, and only of inferior quality.

GLOUCESTER MONTHLY MARKET.—The supply of stock was very large, but of an inferior quality, both as regards Cattle and Sheep. Trade was dull, and lower rates were submitted to; some quantity left the market. Trade was heavy at the following quotations: Beef from 6d. to 7d., Mutton from 6½d. to 7½d. per lb.; Pigs from 10s. 6d. to 11s. per score.

HALTWHISTLE FAIR.—Good Galloway cattle for win-

tering purposes sold well, at prices varying from £7 7s. to £9 5s., stirks from £4 15s. to £6 10s., shorthorns for wintering from £7 10s. to £10 10s. Stirks rather a slow sale. Good milk cows, near calving or newly calved, sold readily at good prices. There were 17 cartloads of pigs in the market. Small ones were a very dull sale. Good-sized pigs, fit for the pork market, sold at high prices.

HAYWARD'S HEATH FAIR.—Pigs from the sow, at eight weeks old, were offered at 2s. per week, but are selling now at from 1s. 6d. to 1s. 9d. per week. There was a good show of "shuts" that sold slowly. The show of stock was better than in previous years, and the description of lean stock shown was superior in comparison, but business was slow. There was a fair display in horses, and some capital cart colts were offered along with some prime nags and useful cart horses, and a considerable number of exchanges took place.

HORSHAM FAIR.—The supply of beasts was very limited, and the buyers were also less in number than usual, although business was said to be tolerably brisk, and lean beasts made quite as much, and perhaps a little more than was expected, owing to the shortness of feed generally. The root crops in the neighbourhood are very inferior generally, and much below the average.

LAUNCESTON FAIR.—(From our own Correspondent.)—The supply of beasts was in some classes very good, but the usual number of prime fat cows and good oxen could not be found, the principal supply being steers from two to three years old. We have attended this fair for forty years, and never saw such a quantity of young cattle offered for sale here before. For some time past there has been a great depression in the sale of bullocks and sheep, but at this fair the cloud passed away, the demand being good with a brisk sale at a shade better prices. Before noon upwards of 1,300 beasts were sold at fair prices. The supply of sheep was great, but the majority were of inferior quality; a few lots were good, which sold readily at 6½d. per lb. Taking the fair as a whole, it may very fairly be termed a satisfactory one.

LINCOLN FORTNIGHTLY MARKET.—A good supply of sheep and numerous buyers. Average qualities made 7d., and wethers 7½d. per lb. Beasts were a small show, and the price was from 7s. to 8s. per stone.

MALTON FAIR.—Steers of middling quality, for farm-yard purposes and early feeding, were nearly all sold, but sellers had to make concessions to buyers. The business in the fat market was brisk. Beasts well up were good to sell, at a slight advance, varying with quality, from 3d. to 6d. per stone. Sheep, ready for slaughtering, were especially in demand; a report that the "rot" had made its appearance among the flocks tending to raise prices ½d. to 1d. per lb. It is said that even on lands well drained indications of the rot are observed. Pigs plentiful, and very firm. Horses very scarce, and for good carriage and ride animals very high prices were obtained. Yearlings and foals very weak in prices.

MUIR OF ORD MARKET.—There was a good show of Highland cattle, which were mostly sold singly for Christmas use. Other breeds and crosses were fairly represented. The following are a few of the sales of cattle: Mr. Barrie, Stonehaven, bought a lot of two-year-old crosses at £2 10s.; Mr. Cameron, Ness Park, sold a lot of cross stots at £4 10s.; Mr. Jeans, Roaeisle, bought a lot of cross Highland stots at £3 10s.; Mr. Mackenzie, Balvardie, bought a lot of six-quarter-olds (crosses) at £4 10s., and two fat cross cows for £11; Mr.

Smith, Scotsburn, bought a lot of Highland crosses at £3 19s.; Mr. Fraser, Krenoglac, sold a fine Highland cow at £10.; Mr. Fraser, Cradlehall, sold seven three-year-old crosses at £11; and a lot of six-quarter-olds at £7. There was but a poor show of sheep on Thursday, which, however, sold at high prices. Blackfaced sold at from 14s. to 25s., and Cheviots at from 35s. to 45s. each. Good work horses sold at from £20 to £30; two-year-olds from £12 to £14; roadsters from £20 to £25; Highland ponies from £5 to £11. A large number of pigs were shown, which brought various prices, according to weight, the general price given being 4½d. to 5d. per lb. sinking offal.

NEWTON-STEWART HORSE FAIR.—The amount of business transacted was very considerable. Prices ranged, for good useful draught animals, from £30 to £35 each; secondary, £20 to £25, and third-class animals, £15 to £20 each; inferior were selling at any price, price from £5 upwards. The principal inquiry was for the best description. The highest figure obtained was for a very fine horse, the property of Mr. McMaster, Stillock, near Port-William, which realized £45, and was bought by Mr. Wilson. For roadsters the prices ranged between £10 and £25.

PENRITH FORTNIGHTLY MARKET.—We had a much smaller show of cattle and sheep than usual. Buyers were more plentiful, consequently there was a better demand, and prices advanced at least a halfpenny per lb. for mutton; ewes 6d., hogs 7d. Beef was also better to sell, from 7s. to 7s. 6d. per stone.

RUABON FAIR.—Cattle and sheep were sold at prices considerably less than what they have been of late. Fat pigs and porkers obtained good prices, whilst sucklings were sold at extraordinarily low rates. Horses, of which the show was poor, sold at average prices.

SHREWSBURY FORTNIGHT MARKET.—There was but a scanty supply of beef, prime qualities fetching full 6½d. per lb., inferior ditto 5½d. to 6d. Cows and calves scarce and in good demand, and useful store cattle improved in value. There was a short supply of sheep of all sorts, best fat wethers fetching 7½d. to 8d. per lb. Calves, 6½d. to 7d. Pork pigs were worth 6d. to 6½d., and bacon ditto 6d. to 6½d. per lb.; moderate supply. Store pigs about the same as last fair.

TRURO FAIR.—The number of sheep on offer was 11,000, and the whole were disposed of at about 6d. to 6½d. per lb. There was a fair supply of jobbers' bullocks, but few really fat animals. Prices ranged from £2 16s. to £3 per cwt. The supply of store cattle was large, and they sold at from £2 to £2 2s. per cwt.

WELSHPOOL FAIR.—Beef and mutton sold from 6d. to 7d. per lb. There was not so good a demand for horses. Pigs were lower on Thursday. Bacon pigs were selling from 5d. to 5½d.

WIRKSWORTH FAIR.—The stock of beasts was unusually large, but somewhat inferior in quality; and the sales effected were numerous, at slightly advanced prices. Of pigs a good supply, of sheep a scanty one; but both maintained high prices.

YEOVIL FAIR was a very poor one; but there being a scarcity of all descriptions of stock, prices were on the advance. The show of stock was, however, the "roughest" seen for some long period, the horses especially. The trade in beef was slack, at from 9s. to 10s. a score. A good many rough old cows were sold for contract at low prices.

REVIEW OF THE CORN TRADE DURING THE PAST MONTH.

The past month, though of but ill-repute, in the present extraordinary year has excelled its predecessors, and by its early fineness has helped on the completion of this long-delayed and indifferent harvest. The straggling pieces of white corn, both in the North and South, as well as the beans and peas, have at last been gathered, and it is a matter for thankfulness that, whatever be the state of the

gatherings, the actual amount of cereals destroyed this season has been small. The seeding time has also been more favourable than expected, though a considerable breadth of land has yet to be planted. The early-sown pieces are looking well; but the general foulness of the land will make tillage very expensive, and the cold clays are very unpromising. It is being regretted, however, that the new

wheat, where it was practicable, was not sent earlier to market, as the month has closed with a heavy depreciation in prices, say about 8s. per qr., as well as a greater difficulty of sale. This is not to be so much attributed to the quantity brought to market, as the preference given by the millers to the foreign samples, which have lately been so freely imported, in consequence of the greater quantity and superior quality of the flour procurable from this source. The fears, therefore, entertained by some respecting the character of the flour made from the new English wheat, have been realized, and it would appear that the first samples exhibited realized more than their relative value, as fine old English and foreign qualities have scarcely given way 1s. to 2s. per qr., and new foreign only 3s. to 4s. per qr. Notwithstanding the liberal imports, the average growth, therefore, of 1860, in this country, has sunk to a level with second and third rate foreign, and the lower sorts have no fixed value with millers, and may, perhaps, be more profitably employed as cattle food, if not placed on the kiln.

The crop of spring corn also is much of the same character, there being very little fine, and the entire yield of beans is damp, and requires to be dried. So evident, indeed, has this become, that several new samples have thus come to market, and found a ready sale, while the undried parcels have either been left unsold or forced off at ruinously low rates. As to the future, we expect much more than all the corn grown here will be wanted; but till foreign supplies diminish, or the condition of the English samples improve, there is no prospect of amended prices. The tightness of money has, doubtless, had much to do with the present depression, and therefore may eventually, by restricting imports, bring on a reaction in the market; and as consumption is proceeding at an enormous rate, millers may be forced upon a more liberal use of the English crop. This is an easy probability, but as the last accounts of our markets will, doubtless, shake those abroad, fresh orders at lower rates may yet keep up supplies for a time, but not the extraordinary rate lately experienced. Last October in wheat and flour they were equal to 1,047,988 qrs. wheat; but for the first fortnight of the month into the principal ports of the kingdom, they were only 307,048 qrs. So there is already a considerable decrease, and expectations of Messrs. Sturge, of Birmingham, are likely to come very short.

The late decline will but ill suit the present range of foreign prices, as will be seen by the annexed advices from the several shipping ports and towns. At Paris, the best quality wheat was worth 58s. per qr. The price of the best red at Nantes was 53s. per qr. Choice 62 lb. wheat at Louvain brought 61s. per qr. Native wheat at Antwerp 63s. per qr. Wheat in Holland, for ordinary new to the finest old, ranged from 58s. to 74s. Mecklenburg wheat at Hambro' 60 lbs. per bushel, 58s. per qr. The top price in Konigsberg was about 63s.; at Mayence, 58s.; at Cologne, 57s. Good wheat at Stockholm 52s.; 61 lbs. Pomeranian at Stettin was quoted 56s. per qr.; red Stettin, 55s. Wheat prices at Odessa 43s. to 48s. New wheat at Galatz 34s., but quality was indifferent.

White native wheat at Leghorn was 61s., red 54s.; white at Santander, about 60s. per qr.

Prices at New York varied according to quality, Chicago spring 41s. per 480 lbs.; red States, 44s. per qr.; white Canada, 50s.; Kentucky, 52s. At Baltimore, white wheat was worth 55s. per 480 lbs.; but freight from America were 10s. to 12s. per qr. more.

The first Monday in London opened on a good foreign and moderate English supply of wheat. During the morning, there was a fair supply of Essex wheat, but the show of samples from Kent was short. The condition on the whole was somewhat improved, but there was much inferior from Kent. Good dry parcels went off pretty freely, but not so those that were damp or of low quality. There were a good many buyers from the country for foreign, who evidently expected that the liberal arrivals would cause some giving-way on the part of holders, but in this they were disappointed, and so business was limited. Cargoes off the coast were, however, rather in favour of buyers. The country markets during the week were mostly of a uniform character, the new wheat being complained of as difficult to sell, and in some cases cheaper, as at Boston and Birmingham, from 1s. to 2s. per qr., but all fine old parcels maintained former values. The Tuesday's market at Liverpool was retail and dull, and that of Friday only thin and rather in favour of buyers. In Scotland, as well as Ireland, the wheat trade was also heavy.

The second Monday had very heavy foreign supplies, with about half from Danzig and Konigsberg, but the English arrivals kept on the same moderate scale. The show of Kentish samples this morning was the best, that from Essex being small. The heavy arrival, however, from abroad, with great variety of good samples, made the English supply a matter of indifference, and only a few picked samples obtained the previous currency; other sorts, more especially at the Kentish stands, being sold at 2s. per qr. reduction. The foreign trade was very slack, and inferior Russian decidedly 1s. per qr. lower; wheat, also arrived on the coast, was only saleable at 1s. per qr. more money. This week, more especially towards the close of it, was heavier than for some time previous; in the country Birmingham was lower for the best qualities 1s. to 2s. per qr.; Lincoln, Leicester, York, and Nottingham also giving way 2s. to 3s. per qr. in price generally. Liverpool on Tuesday was down 2d. per cental, and Friday further reduced wheat 1d. to 2d. per 100 lbs.

The third Monday, though less heavily supplied from abroad, still had a liberal show of samples, that from the near counties being also rather improved in quantity and condition. This, under the lightness of money, was the heaviest Monday of the three, fair runs of English being in vain offered at 2s. per qr. reduction, and nothing inferior being saleable unless at very much lower rates. Fine old foreign being scarce and held high, was not quoted lower; but if there had been any forcing, its value must have given way. New parcels, damp and out of condition, though offered at a like abatement with the English runs, met with but few buyers. All cargoes off the coast experienced

the same depression, being down fully 2s. per qr. Throughout the country this week, there was a general dulness and decline in new wheat, of about 2s. per qr., but some markets kept up the value of picked parcels, and old was very little altered. Liverpool in the course of the week only gave way 1d. to 2d. per cental on fine qualities, but there was a decline of 3d. to 4d. per cental on inferior.

The fourth Monday had much the heaviest foreign supply of the month, and rather more English. During the morning about the usual quantity was sent up from Kent and Essex, which, as the previous week's was not disposed of, made a large show. This happening at a time when foreign was so abundant produced quite a stagnation in trade. Only a few picked samples of English could be sold at 2s. to 3s. per qr. less money, and fair runs were offered in vain at 5s. to 6s. per qr. reduction, the bulk remaining on hand. Fine old foreign nearly maintained its former value, but Low Russian and new were 2s. to 3s. cheaper, and little done. The arrivals into London for the four weeks noted were 19,893 qrs. English wheat and 174,682 qrs. foreign, against 37,018 qrs. English, 42,874 qrs. foreign in November 1859. The arrivals throughout the kingdom during the month of October were 845,129 qrs. wheat, 811,439 cwts. flour.

The flour trade has been excessively heavy as respects country sorts all through the month, but only declined about 2s. on the last fortnight. Norfolks commenced at 42s., and closed nominally at 40s. For the best American barrels there has been more demand, but at lower rates; very extra qualities were worth in retail 34s. per barrel, but 30s. was a more current price. French and Spanish were a slow sale, also at easier rates. But town millers have not varied their highest quotation, which has remained 57s. all through the month. The imports into London for the four weeks were 59,429 sacks English, 16,045 sacks, 25,539 barrels foreign, against 85,319 sacks English, 309 sacks, 4,286 barrels foreign in 1859.

Barley, which for want both of native and foreign supplies had risen to an exceptional price on the appearance of the new crop, has been continually declining, and so uncertain is its present value that it is difficult to state the exact reduction. Malting sorts have, however, certainly given way fully 2s. to 3s., and the medium damp qualities of new fully 5s., and old foreign grinding quite 3s. per qr. Fine new malting is still scarce, but there have been good arrivals of second-rate from Scotland, which still command good prices, say 40s. to 42s., but inferior parcels still seem likely to go down in price, especially when foreign supplies become plentiful. The price of chevalier 52lbs. barley at Hambro' has been 46s. per qr. f. o. b. The arrivals in London for the four weeks were 23,071 qrs. British, 41,494 qrs. foreign, against 28,442 qrs. British, 42,440 qrs. foreign last year.

The malt trade has been slow all through the month, and eventually gave way 2s. per qr.

With the exception of the second week, the imports of oats this month have been moderate; but as a considerable quantity of new then made their appearance, and these have been followed by continuous arrivals of home growth, as well as

more foreign, the trade in new oats has been of a very dragging character, and lower from 2s. to 3s. per qr. Old sweet Russian corn, on the contrary, advanced 6d. on the first Monday, and this advance since being only gradually lost. No difference has taken place in the value of good old corn in the course of the month, and as this is becoming more scarce and more valuable, from the great superiority of much of the new, it is very likely that its price will be maintained. Some of the new foreign has been kilndried, and such quality from Sweden, weighing 41lbs. per bushel, has brought 26s. per qr., and white fine 39 to 40lbs. old Russian has been held at 26s. to 27s. The imports into London for the four weeks have been in English sorts 21,656 qrs., Scotch 1,908 qrs., Irish 11,588 qrs., foreign 147,364 qrs.—against 10,153 qrs. English, 5,139 qrs. Scotch, 5,245 qrs. Irish, 79,005 qrs. foreign in 1859.

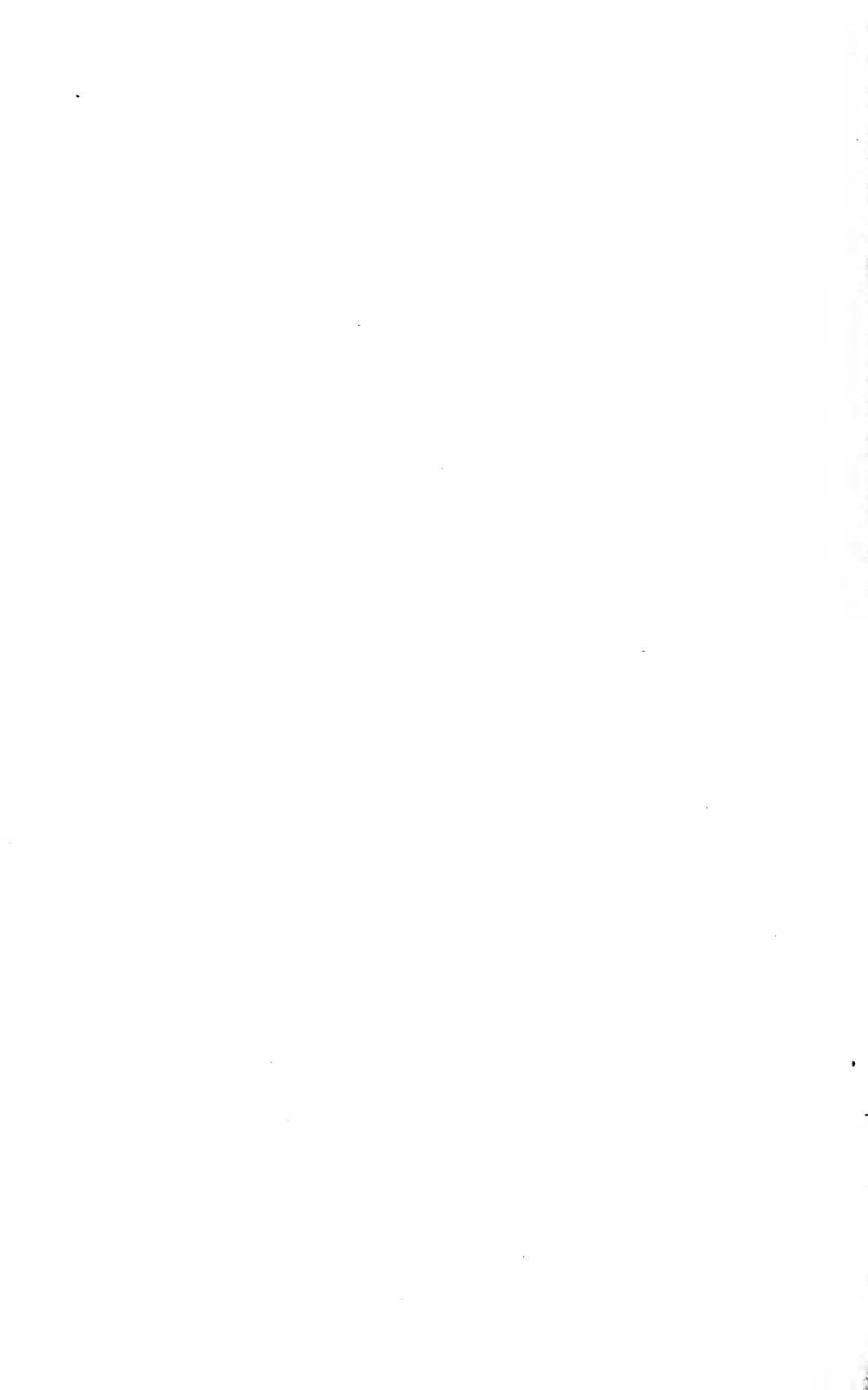
In beans the highest prices appear to have been past, in consequence of the new coming to market and better foreign supplies. At the beginning of the month, so scarce were fine old English small that a picked lot actually realized 60s. per qr; but new damp parcels of Mazagan have since sold at 27s., though fair kilndried have brought 37s. per qr. Without kilndrying scarcely any of the new crop are fit for use, and therefore there must be a continuous demand for good old foreign and Egyptian, at fair rates, for some time. The imports into London for four weeks were 2,969 qrs. English, 9,014 qrs. foreign—against 5,712 qrs. English, 2,627 qrs. foreign in 1859.

The new crop of peas has only come sparingly to hand, and that in bad order, throwing the demand upon the limited stocks of foreign, which have consequently been relatively dear; though, as more of home growth have appeared, damp parcels, both boilers and hog feed, have sold on easier terms. Should large contracts appear, and the winter prove sharp, fine foreign white will be our only dependence, and though now dear may consequently advance. Some low quality of new Hambro' have sold at 40s., but for good boilers 50s. to 52s. is demanded. Scarcely any foreign hog peas are imported, and our own grey are worth 38s. to 42s., and maples 42s. to 46s. per qr. The imports into London during the four weeks have been 2,356 qrs. English and 9,705 qrs. foreign—against 5,424 qrs. English and 1,457 qrs. foreign in 1859.

Though the exports of linseed have been falling off, still the imports have not kept pace with the consumptive demand, and country seed has therefore risen 2s. per qr. more, and cakes 10s. per ton, with a very active inquiry. As no accounts from abroad are favourable as respects linseed, there is every prospect of a still further advance.

The seed trade generally, the season not being on, has been dull, the state of the money market being against speculation. It is, however, more confirmed that the clover crop here, as well as in France and Germany, must be deficient and of poor quality. So prices, with the approach of the season, are likely to improve. The new canaryseed is not fine; 66s. to 68s. has been asked for the best, but it is neglected, and a preference given to fine old. Other seeds much as in last month.





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