

is stretching the point to infer that such a power is the true cause of cutting the teeth while the foetus is *in utero*. This ground might probably be defended by some; but when we see the great differences there are in the times of gestation, it appears to me that here is sufficient to account for all the variations we observe.

The presence of four incisors at birth is, I believe, the rule; more or less being an exceptional number. At this time, also, the outline of the other teeth, as ready to cut the gum, is distinctly visible beneath the tissue. The third pair is usually through by the 12th or 14th day; but the corner or fourth pair seldom penetrates the gum until about the end of the third or beginning of the fourth week. By the time the calf is about a month old all the incisors will therefore be *in situ*.

The eight temporary incisors of the calf are in all respects, excepting size, the counterparts of the permanent by which they will be succeeded. The first or middle pair is the largest of the set, and the corner the smallest, a gradual decrease taking place from the one to the other. These teeth, by the end of the fourth week from the growth of the maxillary bone, are less crowded together than when first cut, although they are still observed to be partially overlapping each other. Not only are the incisors all up by this time, but the temporary molars are also in their place. It may be again necessary to state that they are 12 in number, three occupying each side of both jaws (upper and lower). The temporary molars have many peculiarities, the chief of which must be named, as these teeth likewise furnish important evidence of age during the early period of the animal's life. At birth none of the molars have cut the gum, and it is not until the calf is a month old that they are well developed. Like the incisors, they follow no special order of eruption, but more frequently than otherwise the first in position is the last to be cut. The first and second of the temporary molars in either jaw do not differ essentially in form from the permanent, by which they are succeeded. If we compare, however, the teeth of the upper jaw with those belonging to the lower, it will be found that the two anterior ones in the latter are much smaller than the corresponding molars of the former, still these points are of less practical importance than others which have to be named. The third in position of the temporary molars in the lower jaw varies considerably from all the others, as also from its permanent successor. It differs likewise as greatly from the fourth in situation, the first permanent which is put up, and with which it can scarcely be confounded even in a casual examination, if the following particulars are borne in mind. It is the last of all the temporary molars which, as a rule, is renewed, and consequently throughout it furnishes much assistance in determining a question of age. It occupies a space in the jaw equal or even greater than both the molars together which stand before it, in consequence of its increased width from front to back, which however would be more correctly called its long diameter. It is composed of three main parts or lobes of a semi-cylindrical form, having in the hollows between them, on the outer side, two smaller portions which also rise into asperities or cusps. The latter, when the tooth is somewhat worn down, add both to the strength of its body as well as to the irregularity of its grinding surface. Each of the three principal lobes likewise rises into cusps, an inner and an outer, of which the inner are always the highest.

These particulars suffice to distinguish the third temporary molar so well, that in examinations of the mouth it is quickly recognised. By merely bearing in mind that this tooth has three lobes, while both the fourth and fifth molars have but two, and that when it falls it is renewed by a tooth similar in size and form to them, we recognise immediately both the number and kind of molars which occupy the mouth. It may be added that the form of this tooth beautifully adapts it to its office, for in the act of mastication each of its projections intersect those of the corresponding molar of the upper jaw, and thus effectually grind down the food which is submitted to their action. The putting up of the temporary incisors and molars at about a month completes "first dentition," and as there are now a given number of teeth, so any addition to them will mark an important stage in the further process of teething. When this addition takes place, the temporary teeth, merely by their number, cannot avail in our inquiries, nor can they be said materially to do so up to that period by the slight wear they may have undergone. The general appearance of the young animal, for the first few months, suffices to form a fair estimate of its age. As the temporary incisors agree in number with the permanent, but the temporary molars are but a moiety of the whole of these teeth, so the addition is necessarily made to the latter. Inquirers into the age of the ox have assigned very different dates for the appearance of the first permanent molars. Most of our authorities concur in saying that these teeth are cut when the animal is about a year old. These statements, however, are far from being correct, as these teeth are put up when the calf is six months old.

The next important stage in dentition is the cutting of the fifth molar in situation, the second permanent. This takes place at 15 months; but as in the interim well-marked changes have come on in the temporary incisors, so it is necessary to direct attention in the first instance to these. From six to nine or ten months, the edges of the incisors, which at the former date were rather blunted, have been gradually giving way to attrition; this perhaps would be scarcely recognised in an ordinary

examination. After the latter period, however, it becomes more and more apparent, and when the animal is a year old, the four centrally-placed teeth, in particular, will be worn rather flat on their crowns. These teeth also are now beginning to show spaces between their fangs. These changes are regulated partly by the system of management the young animal has received, and the kind of food on which it has been kept, and partly by the natural width of the lower jaw. If the food has been coarse and the jaw a wide one, the incisors will be more flat and the distance between them greater than otherwise it would have been.

From one year we pass to 15 months, when, as before stated, the fifth molar tooth is put up. This tooth does not essentially differ in its shape or dimensions from the fourth. Its cutting, however, at 15 months, at a time that the incisors do not offer any satisfactory evidence of the precise age of the animal, is a point of some utility to an investigator of age. The regularity in the periods of the appearance of the permanent molars is pretty uniform. The fourth, as we have seen, is cut at six months, and the fifth at 15, the sixth follows at two years—an interval of nine months elapsing between each. This gradation is easily remembered. Like the fourth molar, this tooth also acquires its full height in the jaw about three months from the time of its cutting. Attention must now be directed to the state of the incisor teeth at 18 months. It was shown that at a year old the four middle-placed incisors, in particular, gave indications of wear, by the loss of their sharp edges and increasing flatness of their crowns. By 18 months this flatness has considerably increased; it is not now, however, confined to the teeth placed in the centre of the mouth, but has extended to all. The jaw of the animal has also grown wider, thus increasing the spaces between the teeth, so as to leave not merely their fangs apart, but likewise their crowns. To compensate, in part, for their diminished length the teeth have likewise risen in their sockets; and as some of them are soon to be renewed by the permanent incisors, the process of absorption has commenced in their fangs. These various causes, more or less modified in different animals, give to the mouth an appearance which is quickly recognised. To these indications of age have to be added a diminished whiteness of the teeth, the part of their crowns which is exposed being that which is covered by a thin layer of enamel: the existence also of yellowish lines on their wearing surfaces, which indicate the outline of the once open pulp cavities; and the discoloured state of their fangs, from the action of the food and secretions of the mouth upon the crusta.

(To be continued.)

NOTES ON EXPERIMENTS IN THE GARDEN OF THE ROYAL AGRICULTURAL COLLEGE.

BY PROFESSOR JAMES BUCKMAN.—No. VI.

It remains, in completing these notes, to make a few observations on the Grasses which I have had in cultivation, as although these are few (only 23 forms) yet as they belong to a tribe of plants of such great use to the agriculturist, every individual is capable of furnishing matter of interest to him; for those that do not possess value for their feeding properties will be found to be indicators of peculiar and unexpected facts regarding the nature of the soil in which they grow spontaneously, whilst the cultivated ones are no less indicative of natural barrenness and fertility than of good or bad husbandry.

My list of Grasses comprehends the following.*

1. *Anthoxanthum odoratum*; Sweet Vernal.
2. *Alopecurus pratensis*; Meadow Fox-tail.
3. *Phleum pratense*; Timothy Grass.
4. *Hordeum pratense*; Meadow Barley.
5. " *murale*; Wall Barley.
6. *Avena fatua*; Wild Oat.
7. *Arrhenatherum avenaceum*; Oat-like Grass.
8. " *var. bulbosum*; Knotted Couch.
9. *Holcus lanatus*; Soft Grass.
10. *Dactylis glomerata*; Cock-foot.
11. *Poa pratensis*; Smooth-stalked Meadow Grass.
12. " *trivialis*; Rough-stalked Grass.
13. " *nemorialis*; Wood-stalked Grass.
14. *Festuca pratensis*; Meadow Fescue.
15. " *elatior*; Tall Fescue.
16. " *loliacea*; Upright Fescue.
17. " *duriuscula*; Hard Fescue.
18. " *ovina*; Sheep's Fescue.
19. " *rubra*; Red Fescue.
20. *Bromus erectus*; Upright Brome Grass.
21. *Lolium perenne*; Perennial Rye Grass.
22. " *italicum*; Italian Rye Grass.
23. *Triticum caninum*; Fibrous-rooted Couch Grass.

These examples were originally drilled in plots of 2½ yards square; the drilling being adopted, to facilitate weeding. Since their original planting, many of them have stooled out, and now cover the beds as a matted turf; some others have made a turf by seeding, whilst others still grow in distinct and separate bunches—"hassocks."

Now, allowing the examples to seed exhausts the individuals thus left, the consequence of which is that many of the old plants die out yearly, and a narrow observation of this tendency to die after seeding would show us in a clear light the evils of getting late into the hay field, for though by this we may increase present bulk, it is at an after expense or loss.

* It will be observed that this list does not contain any examples of what are usually called artificial Grasses, but only include plants belonging to the natural order Gramineæ, to which remarks upon Grasses should, at least in scientific journals, be confined. It is, however, curious to find how the term Grass, which was in old time used generically for any green herb, should still be misapplied; thus we have Scurvy Grass, Grass of Parnassus, Rib Grass, and the like. As regards the latter, one of my pupils informed me that he was much ridiculed by a Cheshire farmer, to whom he showed a collection of the British pasture Grasses, for not having included the Rib-grass (*Plantago media*).

There is always a great difficulty experienced in keeping patches of separate Grasses pure from admixture of other kinds, as the original crop has a tendency gradually to diminish with seeding,* and one or two individuals of another species will then make rapid advances; in their turn being expelled by others, and thus as new circumstances and conditions arise there is constantly going on a change of crop. Now on carrying these observations into the field, the same facts will be observed; judicious management of meadows for a few years will cause not only an increase in quantity of produce, but there will be a large increase in the proportions of good feeding Grasses as compared with those of a low standard in this respect; and, indeed, what are termed sour Grasses, will be almost, if not entirely, eradicated. How immediately is the *Aira cespitosa*, Turfy Hair Grass, or Hassock Grass, killed by draining; and on poor uplands the tufts of *Brachypodium pinnatum*, and *sylvaticum*, *Avena pratensis*, and the like hard Grasses, give place to the advance of better kinds by a single dressing of bone-dust and guano, or what is perhaps more valuable, folding sheep upon a small space of such land at a time, feeding them with hay, corn, and Turnips.

Indeed, such exact indicators are Grasses of all the circumstances connected with the nature of soil and its treatment, that I feel convinced that a more careful study of their habits would afford the most valuable lessons the farmer could learn, whilst the land-agent and valuer would find the evidence this tribe of plants is capable of yielding, an unerring testimony in many of the matters upon which he has to adjudicate.

Another circumstance in the cultivation of Grasses in the separate form and small patches is the impossibility of rolling or treading it firmly, without which no pasture can continue good. In truth, though we talk of natural meadow, yet there is no meadow that would continue as such without its proper cultivative processes. It is these that keep the Grasses matted together, and hay-making and depasturing are both important in maintaining its condition; in proof of this I may quote some recent observations in the United States. Here the native Grasses are scattered in tufts and patches, much like other herbaceous plants, while all the pasture has been made from the cultivation of British Grasses. In my own researches into this tribe in America, I made out as many as 30 species of introduced British Grasses entering into the pasture, especially of the States of New York, Pennsylvania, and Ohio.

1. The two first species of Grasses on our list were recommended by a writer in the *Gardener's Chronicle* some three years since, for separate culture as an early feed; as regards the *Anthoxanthum odoratum*, my experiments show that though early the herbage is too scanty to be of much use, and besides, though it is a most valuable Grass to mix with others, from the flavour which it imparts, yet, by itself, it is too bitter to be greatly relished by cattle in continued use. Its culms soon die, and although of perennial habit, it throws up but a very slight second herbage.

2. The *Alopecurus pratensis* might be profitably employed as a self Grass, especially in rich lowlands. In such a situation, at the foot of Silbury Hill, Wilts, during a visit in the first week in May, 1849, an unusually cold spring, I walked through a field of this Grass which was being folded off by sheep, and a more luxuriant crop, or better herbage, I never remember. It also does well where irrigation can be adopted, but it does not succeed well on the uplands. My garden specimen, however, yields an average crop, which endures cutting admirably, and throws up a tolerable second culmiferous and leafy growth.

3. *Phleum pratense*, Timothy Grass, is not employed in England as a self crop, yet my experiments show that it is admirably adapted for the purpose; indeed, better in this country than in America, where it is the most commonly used self Grass crop. With us the herbage is not so rank and coarse as in America, where it often grows as much as 5 feet high, with flower spikes 4 inches in length. In the States of New York and Pennsylvania I saw hundreds of acres of the best cleared land occupied solely with this Grass, of which, indeed, the great bulk of the Grass-hay of the country is made. Here so strong does it grow as, at a slight distance, to be capable of being mistaken for a grain crop, a circumstance which will doubtless explain how it is that the American reaping machine should be capable of cutting Grass in its own country, while experiments with this implement on British hay-fields have been signal failures. The Timothy is a Grass which yields a great deal of nutritious produce; it is eminently perennial, bears cutting tolerably well, but on account of the lateness of its ripening cannot be expected to produce an abundant aftermath. One great advantage it possesses is its capability of resisting drought, which is doubtless a great cause of its employment in the States, where the summer is intensely hot, and with often whole months almost without rain. On this account it may be worth trying on some of our dry uplands, or on light sandy soils, where, even in England, in a dry season, we often observe Grass vegetation as scant as in the warmer parts of America.

4 & 5. *Hordeum pratense* and *murale* are both examples of Grasses which cannot be esteemed for hay, on account of the long awns which are attached to the flowers. The awns of most Grasses, but especially of the Barleys, being themselves armed with a double row of minute spines, which causes them to stick on the tongue and in

* My specimens being grown in order to show them to the students in all their phases, are obliged to seed.

the throat, and produce great irritation. Otherwise these Grasses would be highly valuable, as they rank high in nutritive properties; the first, however, does not yield a great abundance of leaves; the *H. murale*, on the contrary, though late in flowering, grows a great quantity of leaves, and that, too, very early. From my experiments of last year I am inclined to give this a higher position as a pasture Grass than I at one time thought it deserved. Its proper habitat is in sandy places, where it grows hard stiff culms, but it can be cultivated on clays, where it increases in abundance, and is not so coarse.

Home Correspondence.

Skilled and Moral Labour.—Having observed some articles in the *Agricultural Gazette* recently, bearing on the want of skilled labour, I am led to call your attention, and that of your readers who may be rack-renting farmers, to the want of moral labour, which is no small grievance. In a general sense this is mainly a question of education, but as the annual hiring fairs are near at hand, I desire to point out, from among many loose habits of farmers, a most impolitic practice of hiring their farm servants without any inquiry into their characters. Character is the main capital of household servants. With all careful and experienced housekeepers it is the subject of strict enquiry and scrutiny; and in such houses the honesty, sobriety, and general behaviour of servants is very remarkable, amid the temptations always before them. Such has been my experience of household servants. Now, as respects farm servants and labourers, my observation has led me to form a very different opinion; and that, generally speaking, there is little dependence on their honesty, their industry, sobriety, or decent conduct, though I have known many worthy exceptions. Yet this is the class from which our household servants are supplied. I believe this difference arises solely from the circumstance that, in the one case, character is an essential qualification, and is not in the other. The household servant learns by experience that character is a valuable property, and always available; whereas, in the other case, mere physical power, accompanied by some experience in the particular service required, is deemed all-sufficient. I recollect having once written to a large farmer to inquire the character of a man who offered his services to me as a shepherd. I got no answer to my letter, which I thought uncivil, and on complaining of this to a neighbour, the master was excused, on the ground that farmers did not require, nor were expected to give, characters of farm servants. I can hardly conceive anything more grossly improvident and injurious than such a practice, whether as respects the hirer or the hired. If the mischievous results of this practice were confined to the former, no one need complain; but it unfortunately destroys, amongst a very large class of the population, the most powerful motive to abstinence from all offences which would be a bar to their preferment. *Magister.*

Ears of Wheat.—The object in sending you the enclosed ears of Wheat is to make known that they were taken from a sheaf, the produce of seed sown after Turnips on marled land, on March 31, 1853, which attained to perfection, and was harvested by Sept. 25 following, yielding $3\frac{1}{2}$ qrs. per acre; in six weeks after, however, a portion of it was again sown as seed after Rape, and the produce is that of the present harvest, say about 6 qrs. to the acre, and it would in all probability have been greater had the plants stood thick enough on the ground; besides this variety of Wheat having many properties to commend it for extensive cultivation, there is one that deserves mention, viz., that (with us) it resists the heaviest rains without being beaten to the ground. Perhaps the above remarks may tend to dispel the idea so prevalent, that Wheat sown in spring should not be used for seed in the succeeding autumn. *P. Deane.*

Are Farmers sufficiently grateful for Abundance and fine Weather?—This query has been lately presented in a variety of shapes; in some cases the assumption of a superior degree of thankfulness would seem to require that some parties should first examine the grounds on which their own pretensions to gratitude are raised. It is so easy for a certain class of persons to claim virtue at the expense of their neighbours! Favourable weather and a large comparative addition to the actual resources of the country must afford to all reasonable men great satisfaction, and heartfelt acknowledgment to the Giver of All Good for so merciful an interposition in a nation's favour; and shall any particular interest or party arrogate so much greater sanctity, or propriety, as to constitute itself a judge and decry the merits of any other interest or party, on a subject about which all may equally desire to express thanks without derogating from the joy of any? The consumers of food include the producers of food, and if they (the consumers) rejoice in the prospect of a cheap and a good loaf, the producers have this season, at least, additional reason to be glad at the uninterrupted fine weather that has lessened the cost of securing so bountiful a harvest; and also that their labourers and poorer countrymen will, in all probability, have a better description of sustenance than usual to partake of during the ensuing year, at such a moderate cost as, with plenty of employment, the resources of almost every family will be able to command enough; considering also that prices are likely to be remunerative, no better security for a cheap loaf in future can be found than in the good crops of the present year. The addition to the capital of careful and judicious farmers will ensure so much

more improvement in the treatment of the land, in the employment of labourers, in the attraction of further capital to the agricultural interest, and in, perhaps, other modes not anticipated, that after, we will say, a proper expression of thanksgiving has been fervently and unhesitatingly offered for the immediate and direct consequences of an unusually large growth of corn, we may all join in congratulation on its indirect advantages, in the fact of all connected with farmers being able to spend more money in the industrial products of the manufacturing and commercial part of the community, and in the ability of farmers to avail themselves of the spirit of enterprise and improvement to provide in future years, under the blessing of divine Providence, a larger supply of home-grown corn to meet the growing wants of an increasing population: a fair and impartial view of the question will exclude Pharisaical uncharitableness, and unite all in a due sense of the benefits accruing to the country from a plenteous supply of food; the importance of the agricultural part will be recognised without envy or malevolence, and the blessings of unrestricted industry be so much better appreciated that we shall be able to approach further ameliorations and improvements, so as to remove some of the remaining evils which are still permitted to lurk in our institutions and habits, and hence derive additional cause of gratitude by using the gifts bestowed upon us in a right spirit for the advancement of civilisation. *J. W., Peterborough.*

Thin Sowing.—In reply to your remark on our article of the 9th inst., that our experiment of growing corn on small plots is "entirely useless for the purpose of calculating from it acreable produce," permit us to say that if the principle were carried out on a broad scale all in square yards alternately, thus, only half cropping the land, and only half as much produce were obtained upon them, as we have described we grew on one square yard, it would even thus very far supersede crops usually grown. We agree with you that it is no just criterion that a proportionate yield could be obtained from an acre, as from a yard, as there would be more outside rows on the yards than on the acre, but it goes very far to prove that a very considerable larger crop could be grown on such a principle, than is usually produced from ordinary thick seeding; and the plan is but just tantamount to Mr. Smith's, of Lois Weedon, and goes to confirm his principle to be correct and good, viz., cropping only half the land; but with all due deference to Mr. Smith, his row system is the best of the two, inasmuch as it admits of fallowing and cleaning by horse labour, &c. His principle is the same as our own; with this difference, however, that we improve by sowing thinner than he does, and take credit for persisting in our motto, "sowing early, and isolating each plant with more precision, whether thick or thin, than he and many others consider essential, to realise the best of crops." *Hardy & Son, Maldon, Essex.*

The Causes of the late Good Harvest.—The harvest of the present year (1854) has been so universally excellent, both in quantity and quality, that it would be profitable to inquire what causes, meteorological or otherwise, have conspired to produce so favourable and unexpected a result. I say "unexpected" because, when we consider the remarkably long sunless period of May and June, and the prevalence of insects and disease on trees and plants generally during the past season, one would have been disposed to predict anything but such an abundant harvest as we have had. Since 1844 we have certainly experienced no harvest like it; and I am told (though I do not remember it) that the harvest of 1815 was just such another. Now, were the meteorological features of 1815, 1844, and 1854 at all alike?—and, if so, in what particulars? This is the question I would respectfully propound to your numerous meteorological readers; and I think the subject an important one, because if it should appear that those seasons were alike in certain great features, it would afford grounds hereafter, when we meet with a recurrence of those features, for looking forward with some confidence to a repetition of the abundance and quality of the memorable harvest of 1854. You will see I have limited the inquiry to causes meteorological. The result has been so uniform throughout the country, that the cause which has produced it must be an equally universal one. Indeed, the present harvest proves that if only the meteorological conditions are propitious, almost any land and any sort or style of farming will produce a fair crop. Now how is this? The glorious sun adds no inorganic constituent to any soil. It puts nothing in, which was not there before, and yet the plant finds somewhere and somehow the indispensable phosphorus, sulphur, and ammonia, without which corn is an impossibility. The proximate cause of all this cannot be in the farming, nor in the land; we must look for it further a-field, viz., in a happy coincidence of physical causes, or, in other words, meteorology. If genial airs, genial showers, and genial sunshine can add no inorganic constituent to the soil, they may and do so invigorate the constitutional powers of the plant as to enable it to dive its roots deeper and spread them further, and to seek out, seize hold of, and assimilate more of its real pabulum than under ordinary circumstances of seasons it could do. It is clear that the causes of a universally good harvest must be either positive or negative. Positive in the presence of favourable conditions, negative in the absence of unfavourable conditions. Now the positive must be solely meteorological. The negative, on the other hand, may be both meteorological, entomological, and fungal, and it would be a highly interesting fact, if in the progress of an inquiry

such as I have indicated, the last two causes of mischief, viz., insects and fungi, should be enumerated, as being in fact dependent wholly upon the former, and that, therefore, it is to meteorological causes alone that we must ascribe both our good and bad harvests. With out much acquaintance with meteorology I speak diffidently; but I venture a guess, that dry weather will be found to have had more to do with our late magnificent harvest than anything else. The old proverb that—

"A dry May and a dripping June
Brings all things into tune,"

at any rate will not hold good this season, for the month of June was unusually dry. To my mind, there is far greater truth in another proverb, which, I believe, is more current among millers than farmers, viz., that "it was never known to rain flour." *W. Marshall, Epsom, Sept. 21.*

Farm Memoranda.

THE PALACE FARM, ARMAGH.—While at the great national show at Armagh, in August last, we took advantage of the opportunity afforded to visit and examine the Palace farming, under Mr. Yule. On inquiry we found the area available for farming purposes, exclusive of those portions of the demesne under plantations, pleasure grounds, &c., amounted to about 300 statute acres—viz., grazing 130, meadow 90, and tillage 80 acres. The Grass lands are rather light and wet, and in some places the rock lies near the surface, surrounded and interspersed by woods and plantations; but that part to which the tillage is confined is a heavy clay, and exposed to a north-west aspect. The rotation adopted by Mr. Yule is a peculiar one, being a modification of the four-course, and admirably suited, in a general way, to the requirements of the farm, which will be best understood by the following:—

- No. 1. 20 acres of manured green crops, consisting of 5 Potatoes, 5 Mangolds, and 10 of Swede Turnips.
- No. 2. 20 acres of Wheat; one-half of the Turnip break being sown with Spalding's Prolific spring Wheat.
- No. 3. 20 acres of winter and spring-sown Beans, after Wheat, without manure, but the ground thoroughly cleaned and pulverised.
- No. 4. 20 acres Wheat, after Beans, which is invariably a superior crop to that sown after a manured green crop. Which finishes the rotation, and it begins again.

Mr. Yule sows no Clover or Grasses, having so much permanent Grass land, and it being so situated as to render it inconvenient and disagreeable to break it up; and it will also be observed that he grows neither Oats, Barley, Vetches, Rape, nor Clover. Now for the results. We find an account of stock is taken every year on the 1st May, and the accounts closed up to that period. We were favoured with a view of the balance-sheet for the year ending May 1, 1854, which, after deducting all expenses, including a very high rent (427l. 3s. 9d.), poor-rate, cess, insurance, income tax under schedule B, steward's salary, and five per cent. on floating capital, leaves a net profit of 825l. 6s. 5d. To put the matter beyond a doubt, the accounts have been passed and signed by the agent, Mr. Paton, and audited by a gentleman named Smith. ["To put the matter beyond a doubt," we incline to think that every one will feel the accounts need to be audited by himself.] Mr. Yule estimates the profit at 87½ per cent. on the capital employed; but as a great deal of his time is occupied in other duties beyond the farm, he very properly considers that the entire of his salary should not be charged against the farm, and that by charging one-fourth of his salary against the other duties performed, and adding the five per cent. interest charged in the current account on the capital employed, he would have a clear gain of upwards of 90 per cent. Mr. Yule intends making an important change in his rotation, in consequence of the winter-sown Beans having suffered much from blight this season, by substituting a Flax crop for half the crop of Beans, when the rotation will stand thus:—

- 20 acres of manured green crop,
- 20 acres of Wheat after green crop,
- 10 acres of Beans after Wheat,
- 10 acres of Flax after Wheat; and
- 20 acres of Wheat after Beans and Flax.

The ground for the Flax to be autumn grubbed and cleaned, and after the Flax is removed to fallow and clean the land for Wheat, and by changing the Flax and Bean crop every rotation, the Flax will occur only once in eight years on the same land, by which he expects to add to the profits considerably.

In going over the farm and steadings we were particularly struck with the great weight and evenness of the Wheat crop, and the luxuriance, cleanliness, and regularity of the Turnip crops; the spring-sown Beans were a splendid crop, podded almost to the ground; but the winter-sown had suffered considerably from blight. The utmost order, cleanliness, and neatness pervaded the offices and steadings; and the cattle-houses, though empty till the feeding season comes on, were admirably arranged with troughs and fastenings. *Farmers' Gazette.*

Miscellaneous.

The Hagnaby Sale of Short-horns.—The sale of this valuable stock, the property of John Kirkham, Esq., took place at Hagnaby lately, under the auspices of Mr. Strafford. The interest excited in agricultural circles by the announcement of this sale was very considerable, Mr. Kirkham being well known throughout the kingdom as one of the most spirited breeders of short-horns in this part of the country. The herd consisted of upwards of 80 bulls, cows, and heifers, descended from some of the best stock in the country.