

me, it is a matter of expense only; no person doubting the advantage or value of its effects on heavy, wet soils. Owners of large estates adjacently situated, would do well to burn draining tiles for the use of their tenantry, they paying the expense of the carriage and draining, &c., &c.

I am,
My Friends and Gentlemen,
With great respect,
Your obedient and humble Servant,
SAML. SELMES.

Beckley,
Nov. 20, 1840.

REMARKS
ON
THE IMPROVEMENT OF CATTLE, &c.
IN
A LETTER
TO

Sir John Saunders Sebright, Bart. M.P.

BY MR. JOHN WILKINSON,

OF

LENTON, near NOTTINGHAM.

THIRD EDITION, WITH AN APPENDIX.

Let each succeeding race employ your care,
Distinguish which to slaughter, which to spare ;
Mark well the lineage,—let the purest make,
From purest blood, its just proportions take.

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1820.

REMARKS,

&c.

HAVING read Sir, your valuable treatise on the improvement of Live Stock, in a letter addressed to Sir Joseph Banks, that great Patron of all science; I have taken the liberty to enlarge upon some of your observations, and to offer to your consideration such fresh matter as appeared to me of importance to the subject. And this I have been encouraged to do, not only on account of the great pleasure you always take in questions of this nature; but also, because many of your assertions are corroborated by my own experience.

B

It has always occurred to me, that in order to understand the true art of breeding, we must have recourse to first principles; and that it will be easier to shew how any improved breed may be continued, when we have previously shewn how it was first formed.

In the following remarks, I shall confine myself chiefly to Neat Cattle, as being that species of animal with which I am more particularly concerned; but it will be easy to perceive that the observations there advanced, will be applicable, in a greater or less degree, to every other kind which is destined to be the food of man.

Whether the different breeds with which we are now acquainted, descended originally from one common stock, the wild Bison, is a question, I think, hard to be determined. Of this, however, we may be assured, from the very nature of the case, that the distinct breeds at first, if more than one, could have been by no means numerous; so that the great variety which we behold at

present, is owing to food, to climate, or to other collateral and accidental circumstances. And perhaps of all the causes contributing to this multiplicity, none would be more effectual, than the hidden springs of nature itself. For though we perceive that there is a *strong* tendency, for *like to produce like*, as it is usually termed; yet he that is at all conversant with nature, must perceive also, that there is a *certain* tendency to change. And this law of nature would soon be assisted by man, who is ever fond of novelty; and delights in diversity, even for its own sake.

Thus then, we have seen, that distinct breeds might readily be formed by the joint efforts of nature and of art; nor will it be more difficult to perceive how they might afterwards be improved. That all would be capable of improvement is too obvious to need discussion. For no one can behold any breed whatever in its more natural and less improved state, without perceiving a great variety in the shapes of individuals,

their different degrees of tendency to feeding, or certain other remarkable properties, which might give to some a decided superiority over the rest. These, therefore, must be selected from the whole herd; and as you yourself, Sir, have remarked, the male and female be properly matched. When we come to their progeny, some will probably be worse, some equal to, and some even better, than the parents themselves. The worst must unquestionably be rejected, while the rest, and especially the best of these, are carefully to be preserved for future stock. And thus by a judicious selection of male and female, and discarding every thing that is refuse, we must continue to proceed. And by such procedure, animals have at length been produced, so different from the generality of the stock from whence they were originally taken, that none but such as are well acquainted with these matters, could have any idea, that there existed between them the least affinity. The distinction indeed between some, and their own particular variety, has scarcely

been less, than the distinction between that variety and the whole species. The longer also these perfections have been continued, the more stability will they have acquired, and the more will they partake of nature itself. As to the leading properties which may constitute the excellenee of any breed, or of any particular family belonging to that breed, I shall next inquire.

And first with respect to form ; in which case, I shall give, what I conceive to be the most important points for the true symmetry of Neat Cattle in general. These are as follows.

The head ought to be rather long, and muzzle fine; the countenance calm and placid, which indicates a disposition to get fat ; the horns fine ; the neck light, particularly where it joins the head ; the breast wide and projecting well before the legs ; the shoulders moderately broad at the top and the points well in , and when the animal is in good condition, the chine so full

as to leave no hollow behind them ; the fore flank * well filled up, and the girth behind the shoulders deep ; the back straight, wide, and flat ; the ribs broad, and the space between them and the hips small ; the flank full and heavy ; the belly well kept in, and not sinking low in the middle ; † the whole forming, not a round or barrel like carcass, as some have expressed it, for this would leave a deficiency both in the upper and lower part of the ribs ; the hips globular, wide across, and on a level with the back itself ; the hind quarters, that is from the hips to the extremity of the rump, long and straight ; the rump-points fat and coming well up to the tail ; the twist wide, and the seam in the middle of it so well filled,

* The fore flank is the lower part of the side immediately behind the fore legs.

† Perhaps the nearest description that can be given of the carcass, would be to say, that a section of it, (made by a plane passing through its middle, in a direction perpendicular to the line of the back) ought nearly to resemble an oval, whose two ends are of the same width, and whose form approaches to that of a circle ; or (to those who understand the nature of the figure) an ellipse, whose eccentricity is not great.

that the whole may very nearly form a plane, perpendicular to the line of the back; the lower part of the thigh small; the tail broad and fat towards the top, but the lower part thin: the legs straight, clean, and fined boned; and when the animal is in high condition, the skin of a rich and silky appearance.

These appear to be the most material points for the formation of true symmetry in Cattle; there are other of a minor consideration, which will readily be suggested by attention and experience; but I did not think it necessary to mention them here.

Many of the most important of the foregoing properties, may be expressed in the following stanzas, as descriptive of a beautiful Cow; and since verse is frequently found to assist the memory, I have therefore inserted them thus:

She's long in her face, she's fine in her horn,
 She'll quickly get fat, without cake or corn;
 She's clear in her jaws, and full in her chine,
 She's heavy in flank and wide in her loin.

She's broad in her ribs, and long in her rump,
 A straight and flat back, with never a hump ;
 She's wide in her hips, and calm in her eyes,
 She's fine in her shoulders, and thin in her thighs.

She's light in her neck, and small * in her tail,
 She's wide in her breast, and good at the pail ;
 She's fine in her bone, and silky of skin,
 She's a Graziers without, and a Butchers within.

Should any difficulty still remain in forming a clear conception of the points described, I think in such a case, I may very safely recommend a Print which I published a short time ago, and that too, without vanity ; as it reflects far more credit on the artist, than on myself. In such a recommendation moreover, I feel the greater confidence, both because I was requested to publish it by many of the first agriculturists in the kingdom ; and since published, it has met with their highest approbation. This print consists of a group of five animals, so arranged, as to shew the just pro-

* This epithet alludes to the lower part of the tail only, the higher part ought to be broad, according to the former description.

portion and proper symmetry of every essential part. The Portraits were taken from the most perfect animals in my possession ; and the Engraving, which is in a style far superior to that in which Cattle are generally executed, was finished with the greatest care. And if I am correct in my description for the proper formation of Cattle, and the portraits in the above mentioned Print be also good ; I think he who carefully compares the Portraits with the description itself, cannot long fail of being, at least, a very tolerable judge. For any one reading the description of a particular part, as for example, of the breast ; he will there find, that it ought to be wide, and to project well before the legs ; and on turning to the Print, he will immediately see this projection shewn in the side view of the Bull, and the width in the Heifer which faces him : and so on, with respect to every other part. For as each animal is placed in a different position from the rest, there is no important point which is not

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fully presented to the view.*

In the description which I have given for the formation of Cattle, I have said that the carcass ought not to be round or to approximate to the form of a barrel, as some have described it; and have offered a sufficient reason why this should not be the case. Whoever indeed takes such a form for his model, would quickly be told by a judge, that the animal was not deep enough in its sides. I have, moreover, described the countenance as calm and placid, instead of speaking of the boldness of the eye; the reason of which will easily be discovered by a person of your singular penetration. For the boldness of the eye is frequently caused by a restless or vicious disposition; but a quiet and a docile look denotes evenness of temper, so essential to quick feed-

* This Print, which has already been honoured with many of the greatest and most respectable names in the country, may be had of Mr Orme, 59 Bond Street, corner of Brook Street; of Mr. Wm. Allen, Dame Street, Dublin; of Mr. Barnett, Nottingham; or of Mr. Wilkinson, of Lenton.

ing. And we have only to consider the nature of animals in general, to perceive that this quiet disposition which I have been describing in Cattle, and which in Man might be termed indolence, has a strong tendency to make the eye appear small, rather than bold and large. Let any one for instance, observe another whose mind is at rest from attention to outward objects; the muscles of the eye-lids relax, and the lids themselves come closer together, in which case, the eye necessarily assumes a smaller appearance; and the contrary takes place when our attention is again excited. I must remark however, that an animal which possesses naturally every essential for quick feeding, and whose countenance indicates that disposition by the mildest appearance, may have this appearance altered by ill treatment or other accidental circumstances. I observed that the lower or bony part of the tail ought to be thin, but the upper part broad. The tail has too often been designated by the former appellation only, which is incorrect

in the description of a good animal. For on the upper part of the tail of one that is in tolerable condition, there ought to be a considerable quantity of fat; but as the lower part consists chiefly of bone, it ought to be thin; and will always be so, when the animal itself is a small boned one. Perhaps some may think, that the two latter observations, namely with respect to the countenance and the tail, are but of little consequence; since however these signs generally accompany a good animal, they ought not to be passed over: the latter is an invariable attendant; and the former naturally so, but may sometimes be altered by adventitious circumstances, as has already been observed. It is one thing to be able merely to distinguish in the gross between a good and a bad animal; but another and a far more difficult one, to be able to point out every defect however trifling, and to discover every excellence. And yet no man can arrive at any great degree of perfection in the art of breeding without making this latter kind of knowledge his chief aim and most ardent study.

Some Breeders have asserted, among whom was Mr. Bakewell himself, that a disposition to get fat was *necessarily combined* with a shape similar to that I have been describing. The truth of this may very justly be questioned; and the examples so well chosen by yourself, prove that the above mentioned properties are not even *invariably* found together. Had they said with you, Sir, that "this particular formation *generally indicates* a disposition to get fat," they would have been borne out in their assertion by the fact itself: for it must be observed, that it is one thing to say, that two qualities are *necessarily combined* in the same subject; and another to say, that they are *invariably found together*. And if this latter term would have been too strong for the occasion, and that it would, we have already seen; how much rather ought the former to be rejected? It is frequently no easy matter indeed, to determine whether two qualities are *necessarily combined*; nor in the question before us, is it at all necessary. For if quickness of feeding generally

accompanies this peculiarity of shape (and that it does, it can never be denied,) that alone would surely be a sufficient reason for a preference to this form ; to say nothing of its other and great advantages with respect to the weight of the animal, the laying on of the flesh in the prime parts, &c. &c. Perhaps these Gentlemen had no design to mislead us, but were not sufficiently careful in the choice of their language. It is material however, that we should not only have clear ideas ourselves, but also, that we should convey them to others in the most explicit terms. And in treating on any subject, we ought always to state things as they are actually found to be, and not as we might wish them. One satisfactory reason, I think, we may easily discover, why the best feeders are most frequently found amongst those animals, that at the same time possess the best shapes. For without making the former a necessary consequence of the latter ; those breeders that had skill enough to select Cattle of the most perfect symmetry, would also have

skill enough to select out of these the best fleshed ones. For my own part, I would not keep an animal that had a bad quality of flesh, if the form were perfection itself. The observation which Dr. Jenner made to you, "that no animal whose chest was narrow could easily be made fat," is a fact borne out by almost universal experience; and I believe is satisfactorily accounted for on natural principles. For the chest being too narrow, there is a want of sufficient room for the proper action of the internal organs.

The form that I have already described, is not only the best for affording the greatest weight to the animal; but the flesh is also chiefly laid on, in what is usually called, the prime parts.

I have just had occasion to speak of goodness of flesh, but how to describe this quality in any thing like adequate terms, is a thing extremely difficult. Some persons of great experience, would very rarely be

wrong, judging by the sight only. But the best method of discovering it, is by the touch ; and it has a richness, a mellowness in the feel.

Here it may be very necessary to caution the inexperienced against a certain description of animals, usually called light fleshed ones. And of these, there are too many in the hands of some Breeders, not altogether destitute of eminence. The objection to such, is not on account of the quality of the flesh as regards richness, but the deficiency of its quantity when the animal is in a lean state. I have known such highly approved by some, when shewn to them alive and made very fat, but this has certainly been for want of better judgment ; and had the same persons been able to distinguish between fat and lean, they must have drawn a very different conclusion. This kind is profitable, neither to the grazier, nor yet to the consumer. They are not profitable to the grazier ; because in the first place, they are naturally tender : and moreover,

they carry so small a quantity of flesh in their lean state, that they have much to do, when put to feeding, before they come to any tolerable weight. Neither are they profitable to the consumer; for fat without lean, is of no other use, than to be wasted in the kitchen. Whenever they are found in the hands of a Breeder, it is generally in the hands of such as are in the habit of keeping their stock remarkably high; and when they are sold, and fairly kept as store stock, they bring a considerable loss to the purchaser, and disgrace on the original possessor. It is to be hoped indeed, that this kind of animal will soon be exploded in Neat Cattle, as it has been long ago in the new Leicester Sheep.* Of this we may be assur-

* I have here been misunderstood by one Gentleman, who supposed I was speaking against the breed of new Leicester sheep; whereas I was only speaking against a particular variety of this breed; namely light fleshed ones: a sort which had been introduced by some, but were soon rejected by all good judges. As to the breed itself, my opinion may be best ascertained, by saying it is the kind I have always kept. I do not here however mean to speak against any other breed whatever, as different kinds, may suit different situations.

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ed, whenever a Stock is generally known to be of this description, the Breeder himself will soon fall into disrepute.

There is another kind which carry plenty of lean flesh, but of a bad quality. These are invariably slow feeders; and may always be discovered by the touch, the flesh being naturally hard. Some of these are so bad, that when put to the best keeping and continued at it ever so long, they will scarcely have a stone weight of fat, either within or without.

The perfection of breeding as far as flesh is concerned, is a great quantity of rich lean flesh in the first instance, which when the animal is well kept, will soon be covered with a proper proportion of fat. And such not only take a shorter time in preparing for the stall than any other; but their beef will also sell for more a pound; being of the very first quality, and the kind that is eagerly sought after for the tables of our nobility and gentry. It is not

here meant that this kind can never be made too fat ; they may be very much so, this however can always be prevented by the time allowed for feeding.

In a word ; it is not the animal which has scarcely any flesh, when at store keeping, and which when fed, will consist almost of fat alone, which is the most profitable either to the grazier, or yet to the consumer : nor is it the animal, whose flesh is ever so abundant, if hard and bad, and incapable of having its proper quantity of fat : but it is *that*, which when at store pasturage only, carries a great quantity of rich lean flesh ; and which by good keeping, may be made as fat as we please. And of these three sorts of animals, I think the first nearly as unprofitable as the second, notwithstanding the injudicious praise they sometimes meet with.

Having already treated on those two important qualifications, good symmetry with richness of flesh : I shall now controvert a

hackneyed assertion, *that a great tendency to feeding, is incompatible with a great tendency to milking.* And here I shall observe first, that there seemed to be no reason to draw this conclusion before the fact was ascertained by experience: and secondly, that the experience of some in the present day proves the assertion untrue.

In the first place then, it may be remarked generally, that tendency and effect are two very different things; that a tendency may exist, when its effect is wholly or partly destroyed by some other counteracting cause; that when the effect of such counteracting cause can be removed, the other cause may be wholly productive. If it were *assumed* therefore (for I am now speaking independent of the *experience* I shall afterwards advance) that a Cow while giving a great quantity of milk can not possibly keep herself in good condition; because so great a portion of the food being converted into milk, the carcass could not properly be supported; yet I think it would be a rash

conclusion, to infer from hence, that the same animal could not have a great tendency to get fat; and that when dried of her milk, this tendency might not soon produce its corresponding effect: for the effect of the milking quality having then ceased, the other cause, namely, the tendency to feeding, would remain unopposed in *its effects*, and be wholly operative. The assumption however here mentioned, ought never to have been made: as well might it have been contended by those who had seen only a bad race of hard fleshed animals, that there were therefore no other kind, that would produce a much greater quantity of beef from a given quantity of food.

But secondly, to come to matter of fact, and to speak from experience itself. Some animals have the power of obtaining a greater degree of nourishment from a given quantity of food, than others of an inferior description: and therefore, though some of the former may give a larger quantity of milk than the latter; yet their carcasses also,

may at the same time, be better supported. And I have frequently found Cows that are great milkers, to keep themselves at the same time in high condition, to feed with the quickest dispatch when dried of their milk, and whose descendants will arrive at the earliest maturity : a practical proof, that a great tendency to feeding *is not* incompatible with a great tendency to milking. Those also who are anxious to witness the same thing, may have it shewn to them when they please, as many such animals can be produced.

I suspect, the assertion here controverted, originated not so much with those who have done nothing towards the improvement of Cattle, as with those who have been content with doing but little. These latter being anxious to sell before they had sufficiently improved their own breeds, asserted and asserted truly, that where Cattle are to be bred for the slaughter, it is of more consequence to have them early feeders than great milkers. Of this I have no doubt ;

for if only one of these properties could be obtained, I am fully persuaded, that the former would be more advantageous than the latter. But if on the contrary both can be combined, and that they can, I am convinced by experience; we shall not think very highly of those breeds which possess but one of them. For who, that is conversant in these things, does not know the great difference between the value of the produce of two Cows, the one a good, and the other a bad milker, if we take that produce for one year only? I shall not here mention the great quantity of milk that some of my own Cows have given, and the short time that it has afterwards required to feed them, lest it should seem to partake of an air of boasting.

When we consider the skill, the perseverance, and the capital required to improve a breed in the carcass only, it is not surprising that so few have attempted it; and when we consider, that the union of great milking with quickness of feeding, required a

two-fold labour ; we might almost wonder that it has been undertaken at all. But yet, Sir, whatever difficulties may lie in the way, every B reeder who aims at superiority, must follow that excellent advice which you have given ; and with respect to which, I cannot do better, than quote your own words. "We should, therefore, endeavour to obtain all the properties that are essential to the animals we breed." And this rule was surely practicable in the case before us ; by selecting those animals that were the most perfect in point of form, in quality of flesh, and so on ; and again by selecting out of these the very best milkers, using in other respects the same care as I have mentioned in a former part of my letter. Such a procedure in the formation of a breed, clearly adds very considerably to the expense in the first instance ; but the advantages afterwards derived are more than a sufficient compensation, as the property of milking is inherited as readily as that of peculiarity of shape.

With respect to the value of different

breeds as milkers only; some persons have attended solely to the quantity of milk given by each Cow, while others have had regard only to the quality. But it is certain that this value must depend on the quantity and quality jointly, yielded from a given quantity of food.* By a given quantity of food is to be understood, not merely the same weight; but the same weight of the same kind and quality also: and in any experiment, it ought moreover to be given under similar circumstances. The time too allowed for an experiment of this nature ought to be at least a whole year; because some breeds will give a great quantity of milk just after calving, but will not yield that

* This I think is so obvious, that I need not attempt to explain the fact itself; but only mention after what manner experiments ought to be made. Hence too it very clearly follows, that the determining of what quantity of cream is produced from a given quantity of milk, will never ascertain the relative value of different breeds as milkers. This rule indeed is defective on its own principles, as it will by no means ascertain even the quality; for the cream of some cows is far richer than that of others, and will yield a much greater proportion of butter.

quantity for any considerable time ; while others will not give so great a quantity at first, but will approximate to it much longer. As to the number of the Cows, it need by no means be the same in two or more cases of trial ; but the proper number for the consumption of the proposed quantity of food. For the question is not, whether the produce of so many of one breed, be more valuable, than the produce of the same number of any other ; but what will be the value of the produce, afforded by a certain quantity of food, when bestowed on the one ; compared with the value of the produce, afforded by the same quantity of the same kind of food, when bestowed on any other ; remaining circumstances being as similar as possible.

In comparing the value of any one breed with the value of any other, in reference to the shambles ; it is very evident, that the placing out certain quantities of different kinds to feed, and comparing the increase of weight in each case with the quantity of food consumed, will never de-

termine the question. Because, here, the question is not, which have paid the best for a certain period ; but which have paid the best during the whole course of their lives ; the different breeds being killed at that particular age which will give to them respectively the maximum of profit. That there is a certain age which is the most profitable for disposing of one kind ; but another age and far different, the most profitable for disposing of another, is a circumstance well known to every practical Farmer. Some breeds cannot easily be made fat till they are three or four years old ; while others are capable of being so at any age we may think proper. I believe the most profitable age for disposing of fat Cattle of the improved Short Horned breed, is from two to three years old, according to circumstances at the time of sale. In all experiments of this nature, there are many and great difficulties to encounter in order to render the comparisons just ; we may however proceed with a sufficient degree of accuracy to determine what breeds

are unquestionably the best ; and the greater excellence has always been yielded to those which arrive at the earliest maturity.

I now come to the descent or lineage of animals ; and so vast is the importance of this part of my subject, that I thought I could not do better than notice it in the *title-page* itself. And for the same reason also, I may be allowed to quote your own words, which are so apposite to my present purpose, and so perspicuous in the delineation of the truth you wish to inculcate ; a truth which can never be too fully impressed on the minds of those who are engaged in the improvement of stock. They are as follows : “ Regard should not only be paid to the qualities apparent in animals selected for breeding, but to those which have prevailed in the race from which they are descended, as they will always shew themselves, sooner or later, in the progeny : it is for this reason that we should not breed from an animal, however excellent, unless we can ascertain it to be what is called

well-bred; that is, descended from a race of ancestors, who have, through several generations, possessed, in a high degree, the properties which it is our object to obtain." This observation of yours, Sir, appears to me so comprehensive, so clear, and yet, at the same time, so concise, that I dare not attempt either to add, or to take from it; I will only endeavour to illustrate it by some familiar example, and as many are more conversant with the colour of animals than the excellence of their shapes, it may not be amiss to refer to the former. Suppose, then, a number of pure Devon Cows to be crossed with a breed of perfectly white Bulls; in this case, it is probable that some of the calves would be perfectly red, others white, and the greater part would partake of these colours jointly. If we were now to take the red Heifers produced by this cross, and put them to a Devon Bull, it would not be a matter of any great surprise, if some of their progeny, though sprung from red parents, should be perfectly white, and still less, that several should be mixed

with this colour ; though it would not by any means be so probable as in the former instance. And were we thus to proceed through several generations, this white colour would be less and less apparent in the breed, but would most probably occasionally shew itself in some individual or other. If on the other hand, we were to breed from pure Devons only, that is from those that have been carefully bred for a great length of time, we should reasonably expect their offspring to be of the same colour with the parents themselves ; while any deviation from this, would be looked upon as one of those changes, which nature sometimes produces out of the common course of things. And what has here been asserted of colour, is equally applicable to peculiarity of form, or quality of flesh.

When a breed is once brought to that degree of perfection it is capable of, the same care must be used in the continuance, as was shewn in the formation itself ; or as you have justly observed, “ what has

been produced by art, must be continued by the same means." For though animals, that are themselves good, and have also been descended from a long race of valuable progenitors, are by no means likely to produce, even in a single instance, a bad offspring; yet I think it will no more be contended, that every animal produced by the same Parents, is precisely of the same value, than that the red colour in the Devon Cattle, is precisely of the same shade in each individual, or that the horns of the Lancashire are exactly of the same length. It has already been observed indeed, that there is a *strong* tendency for *like to produce like*, that there is a *slight* tendency to change, and that nature, moreover, *sometimes* deviates from her common course. If however such a deviation takes place, it may be continued; as experience teaches both in the animal and vegetable kingdom. And hence will very clearly follow, the impropriety of keeping a bad animal, on pretence that it is well descended; an error which some Breeders have fallen into, if

not in judgment, at least in practice. Hence also it will appear, that this defective kind of animal of which I have been just speaking, is generally produced from some mixture of impure blood, or that the breed has been declining through several generations ; in either of which cases it can never be said to be well descended. For in order that an animal may be well bred, it is not sufficient that we are able to trace it to parents, the most perfect of their kind ; but every intermediate gradation ought also to be good. It will appear too, from what has been advanced on the formation, the descent, and continuance of improved Stock, that no animal can be depended upon for breeding, but what is in itself *good*, and is moreover *well-bred* in the *strictest sense* of the words.

It may not be improper to observe, both with respect to the improvement and the decline of breeds, that they are in general gradual, and proceed but slowly through several generations. And hence, it is not

at all inconsistent to say, that “ animals have *at length* been produced very unlike their original stock ; ” and yet, at the same time, that there is in nature a strong tendency for “ like to produce like. ” But this remark, respecting the slowness of change, refers to distinct breeds, and also where any particular family is not crossed with others that are much better or much worse of the same kind ; nor does it include adventitious circumstances, as pasturage, climate, &c. And it is on account of this slowness of procedure, that so many, who have originally engaged in the improvement of Stock, have been obliged to expend a considerable sum of money, before they could obtain any material advantage ; while those who have purchased of that Stock, when improved, have reaped an immediate, and even a large profit.

With respect to crossing distinct breeds ; it may be proper to divide the subject into one or two separate heads. And first, as to what may reasonably be expected from

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such a union. Here, you remark, Sir, that “you do not, by any means, approve of mixing two distinct breeds, with the view of uniting the valuable properties of both.” And from what follows, I conclude the import of the words to be, with the view of uniting these properties in the full perfection, in which they existed separately in each. We have occasionally been amused with such pretensions, yet he who is a careful observer of facts, will scarcely, I think, be inclined to credit them. I have seen much of the nature of crossing, for reasons that I shall afterwards mention, but never yet saw the accomplishment of an object, so desirable, as the full attainment of the good properties in each, without any mixture of the bad. Indeed, it must be obvious to every man of sense, that there is no more reason to expect a perfect union of the former, rather than of the latter. The one are just as likely to be inherited as the other, and for the very same reason. The thing generally to be expected from mixing the breeds of animals, possessing properties

differing in degree, is such an union of those properties in the progeny, that they may be greater than in the ancestry on the one side, but less than in that of the other : though it is also true, as you have observed, and as I have before hinted, that the offspring will sometimes nearly resemble one parent only. In crossing the Cart Mare with a Blood Horse, no man expects to obtain from the produce, the strength of the former with the speed of the latter ; but an animal, that is swifter than the Cart Horse, yet incapable of drawing so great a burthen. It does not follow, however, that no cross can be useful ; it may be very much so. For instance, there are many situations, which will readily suggest themselves to the mind, where an animal with less speed, or less strength, than such a one as might reasonably be expected from the cross in the foregoing example, would by no means be so useful ; and yet, where more of either speed or strength, would be almost, if not altogether, unnecessary. Again, it occasionally happens, that a breed of Cattle

which is possessed of the greatest excellence, may be too large for the pasturage of a particular situation ; and yet a cross from these might obtain a very considerable advantage. Or a breed, which is unprofitable on the whole, is sometimes kept for the sake of a particular quality, which it possesses in so high a degree, that it would scarcely be the worse, if this quality were somewhat diminished. And this I think is the case with the Alderney Cow ; a breed which is kept by some of the nobility and gentry, entirely on account of the richness of the cream ; but yet, the quantity of milk afforded by them is so small, as to make them extremely unprofitable, even as milkers. I have frequently known this breed to be crossed however by a well-bred Short Horned Bull, the produce are generally much better milkers than the Alderneys ; are more beautiful in their appearance, as not being so raw-boned ; and frequently come to a very considerable weight. It will be inferred from what has been already said, and it is an inference which I have

seen supported by numerous examples; that where one breed is inferior to another in each individual point, the worse will generally be improved by the better, not partially, but altogether. But where distinct breeds possess their several advantages in different ways, to expect a full and complete union of the good qualities of each, without any mixture of the bad, is to expect a result, contrary to the whole analogy of nature.

I shall inquire secondly, whether a cross from two distinct breeds can be *obtained* and *continued*, so as to unite in almost an equal proportion, the properties of both; and I am fully of an opinion that this can be accomplished. The former part of the question has, I think, been already answered; and I have seen the latter effected between the Long and Short Horned Cattle. In this neighbourhood there were many daries of Long Horned Cows, descended from the stock of the late Mr. Bakewell; and it was not at all surprising, that the

possessors of such stock should be much prejudiced in their favour, on account of the eminence of so great a Breeder. When however the improved Short Horned Cattle began to make such rapid strides as they did about thirty years ago; many were willing to try a cross from them, but were not willing to proceed further for the present. This cross being extremely approved of, they rejected such as inclined too much after the one or the other : and continuing to breed from those that partook of the mean ; a breed, usually called half horned ones, was at length established ; as well known by their particular characteristics, as either of the former.

There is another mode of crossing, which has frequently been attended with the greatest advantage for the improvement of inferior breeds ; which is, by crossing the females of the worse with the males of the better, and their produce again in the same manner, through several succeeding generations. By this method, the blood of the

former will be more and more exhausted, and a breed at length obtained nearly resembling the latter;* according to the example you have given of Merino—Rye-land Sheep. Since however, the blood of the former, though less and less in each succeeding generation, can never entirely be taken away; it will follow that the value of the produce at any particular time, must depend partly on the value of the females from whence the cross originally descended. I mentioned under the last head, a cross, introduced by many in this neighbourhood, between the Long and Short Horned Cattle, partaking in nearly an equal proportion of the properties of both. But afterwards, when the improved

* It has before been remarked on the subject of crossing, that though the produce may be expected generally to partake of nearly an equal proportion of the properties of both; yet it not unfrequently happens, that some individuals take very much after one parent, and some the other. And hence it will follow, that the approximation above mentioned, may be accelerated or retarded by a judicious or improper selection in each succeeding cross.

Short Horns had gained so complete an ascendancy over the Long, and prejudice in favour of the latter, was borne down by experience; this cross, as well as the remaining Long Horned Cows, were put to Bulls of the former description, and their produce again, through many generations: the result of which agrees with my present position; namely, that the future crosses, at length, so nearly resembled the Short Horned Cattle, as scarcely to be distinguished from them. The same thing has been effected by crossing Scot's in like manner; and I doubt not, might be from any breeds whatever.

It may be observed generally, and lastly, that no arguments against the system of crossing can be drawn from the nature * of the case; because it is *highly probable* that the various breeds of Cattle, descended originally from one common stock: and it is

* That *crosses are unnatural*, seems to be a phrase used by some, without understanding its meaning; and taken up by others without consideration.

absolutely certain, that the original breeds if more than one, could not have been numerous. This, therefore, must necessarily exclude all objections, drawn prior to experience; and experience itself has frequently proved it to be highly beneficial. I have already mentioned a valuable cross, where richness of cream is preferred, between the Alderney Cow and improved Short Horned Bull. I have seen moreover, both Devons, Herefords, Lancashire, and Scots, all crossed with these Bulls, and all producing very valuable Stock. In Linconshire also, they are beginning to use them very much. Since indeed the improved Short Horned Cattle have been in such great request, as they have of late, there is scarcely any breed in the kingdom, where individuals have not been crossed with them; or any county into which some of them have not been sent.

But it is proper to remark, that the object of every cross, as well as of every distinct breed, ought to be the attainment of an

animal, adapted to that particular situation, for which it is designed : for what may be the most advantageous in one situation, may be unprofitable in another. And unless this observation be attended to, we can never reasonably look forward to success. For instance, though I consider the improved Short Horned Cattle as by far the best for the country at large, yet there are situations where I should by no means recommend them. I do not think that the mountains of Scotland could be better stocked, than with that hardy, nimble little race, which at present possesses them ; while some of their more fertile situations, might very well bear a cross from the breed just mentioned ; and some, the breed itself. On the other hand, scarcely any greater blessing could befall Ireland, than the introduction of the breed to a considerable extent. For land which is capable of bringing to any tolerable state of condition, a race of such hard, bad fleshed ones, as are generally found to infest that country, would be capable of bringing a better kind, to the greatest state of perfection.

Nothing can be more contradictory than what has frequently been advanced by various persons on the whole system of crossing; the understatement of some, seems only to have called forth the overstatement of others; and interest or prejudice have rarely been forgotten. It would have been well, Sir, had some of these Gentlemen attended to you on the subject; they would have been directed to an example where the result was likely to be beneficial, and their own reflections might have suggested many more. They would have seen also the idea of *the union of the good properties, existing separately in distinct breeds, without any mixture of the bad*, discarded on the ground both of reason and experience. In a word, they might have perceived, what they ought reasonably to expect, and what they ought not.

The reason I have been thus diffuse in the present part of the inquiry, is, that prejudice may not prevent a partial improvement, where a full and perfect one

cannot be immediately effected; and to save others an expense, which some have unnecessarily incurred. Several Gentlemen who have been convinced of the great advantage of improved Short Horned Cattle, have no sooner been in possession of a Bull and one or two Heifers, than they have wished for more. On account of the demand however, it has frequently happened, that they have not been able to be supplied with a greater number for the present. To remedy this, they have bought up some of the best Short Horned Cows they could meet with in the market, many of which, as might have been expected, have not answered the end proposed. My advice, therefore, to such Gentlemen, is, rather to cross the Cows they already possess with the improved Short Horned Bull; and gradually to get rid of them and their progeny, as the stock from their thorough-bred Heifers continues to increase. By this means a pure breed would shortly be obtained; and, in the meantime, the rest, greatly improved. It would afford, moreover, an

opportunity of comparing the improved Short Horned Cattle with the stock that had previously been kept ; and conviction arising from experience, is always to be preferred to bare assertion.

It can scarcely be expected, that I should enter particularly into the praises of the improved breed of Short Horned Cattle, as it would have too much the appearance of extolling a race of animals because in ones own possession. I thought it would be better to confine myself to general rules, and to shew by what means the best of each kind may invariably be discovered. I have endeavoured moreover, to make the whole statement plain and simple ; to divest it of every appendage which might serve either to disguise or conceal the truth ; and to use that order which seemed best calculated to assist both the judgement and the memory. To this end therefore, I have treated, first of all, on the formation and improvement of distinct breeds ; then, on the perfection of their shape, and the

quality of their flesh ; afterwards, on the comparative value of all, considered both as milkers and feeders ; and lastly, on the means to be used for the continuation of the most important properties, when such properties have been once established. But in doing this, I have adverted to several other particulars, which appeared to me to arise immediately from the subject, and to be in themselves of the greatest consequence. How far I have succeeded, Sir, in this part of my design, must be left to your superior judgment ; I can only say, should it meet your approbation, it will certainly afford me the greatest pleasure.

There is one observation I will make, which to many, may be of considerable use. In the course of my experience, when applied to for Cattle, I have several times been requested to send the smallest in my possession ; when in point of fact, the situation for which they were wanted, was capable of feeding the largest Ox that ever grazed, supposing the animal to be of a

superior quality of flesh, and in other respects good. And such requests I have *generally* found to be owing to the badness of the Cattle in those particular districts, rather than to the inferior quality of the land itself. In such cases, therefore, it is clearly of importance, that the animal should be of a good size, as well as of a good quality ; because when such Cattle are found to do well, that alone will serve to remove the unfounded opinion respecting the soil. But you, Sir, who have excelled in such a superior degree with your Sheep* and also in other respects, well know how much depends on the animal ; and that the soil is frequently blamed, when the fault lies wholly in the stock. This I have seen proved again and again.

* I suppose, indeed, had some of the finest animals, selected from your flock, been described to those who had never seen them, they would scarcely have given credit to the fact ; while those who had been eye-witnesses, if unacquainted with what judgment and perseverance could effect, might have considered the production of such beautiful creatures, rather as accidental, than as arising from extraordinary skill in the art of breeding.

Nothing can be more just, than your observation, "that the attention which gentlemen of landed property have of late years paid to the improvement of breeds of domestic animals, has been extremely beneficial to the country." Had no such improvements indeed taken place during the last fifty years, it would not have been possible to supply the market with that quantity of animal food which the present population demands. Although in several districts these improvements are chiefly owing to the professional breeder; yet it is nevertheless certain, that there are many other situations, where they must first be introduced by the man of fortune. For the common farmer, either from a want of money, or the fear of a miscarriage, will rarely be induced to try an experiment, before he has had it in his power to witness the result. In such places therefore, where the improvements in stock, are at present, either few, or none; I think it would not be found a bad plan for those gentlemen who supply themselves with valuable animals,

to allow their tenantry to improve from their own stock at a certain reasonable rate. By this means they would soon repay themselves the small expense they had been at; would possess a valuable breed, instead of an inferior one; and by increasing the property of their dependants, would afford to themselves an additional security for their rent. Nor would this be at all injurious to the breeder; for the more valuable stock is known, the more it is sought after. And its great importance can never be better ascertained, than by a reference to the late distressed state of agriculture. The extent of bankruptcy in those districts where such stock was to be found, was never any thing like equal to the extent, where it was not; other circumstances being the same in both cases. Whatever may be the real degree of success of each nobleman or gentleman in these undertakings; I think all may look forward to a fair remuneration; besides the satisfaction of conferring so great an advantage to their own immediate

neighbourhood, and being justly entitled
to the thanks of the country at large.

I remain,

Sir,

Your most Obedient,

And very Humble Servant,

JOHN WILKINSON.

Lenton, near Nottingham, 1818.

APPENDIX TO THE PUBLIC.

It was highly gratifying to me at first, that many who have given their most serious attention to these matters, should have thought me in any measure qualified to elucidate a subject of such vast importance ; but it was still more so, when after repeated solicitations, and I had at length complied with their request in offering my remarks, that the remarks themselves should have met with so much approbation from the public at large. Nor can I pass over the pleasure I have felt at being told, that they have already been of considerable practical use.

I have had reason to hope indeed, that they may have been of some slight service in directing the attention to the shapes of Cattle for laying on the greatest quantity of meat in the prime parts, and in describing the best kind of flesh,—in shewing, that the fattening qualities of Cattle are not incompatible with the milking, and that the latter therefore ought by no means to be neglected,—and lastly, by pointing out the absurdity of keeping an inferior animal on pretence that it is well-bred.

In these particulars, I had observed many and grievous mistakes ; and it was really lamentable to find with the present desire of improvement, that some had given large prices for animals, that were in themselves so extremely defective. It happened, therefore, that the end proposed in several cases, was not answered ; and a consequent disappointment was thrown in the way of future exertions. And hence it became desirable to give, in the most plain and simple terms, such general rules, as might

enable every one in some measure to judge for himself.

In questions of a practical nature, experience must be attended to ; and results carefully observed : for theory without practice, is generally idle and visionary ; and of little or no use when put to the test. But then it is also to be remarked, that along with practice, the most patient thought and careful reflection, not only may be, but often are of the highest importance. In the case before us for instance ; to know what would be the best possible shapes for Cattle in their several parts (whether such animals could exactly be found or not) would be one of the surest means at length to obtain them ; by selecting those continually, which most nearly approximate to the form itself.

Were people to think more indeed, errors in opposite extremes, would not so frequently follow each other. Light fleshed animals would not have been approved of

for a single moment, merely because some that had plenty of flesh, were of a hard and bad quality. Of such, the trial need never have been made : it was obvious, they would not answer. By a little reflection too, it never would have been concluded, that Cows that were great milkers, could not also be quick feeders ; for this at least could have occurred to the mind, that when they were wanted for feeding, they would at that time be dried of their milk ; so that the objection, urged against their feeding, would have fallen to the ground, even on its own principles. Again ; most hard fleshed Cattle, have also thick, hard skins ; hence many have sought for such as have their skins remarkably thin, and these are too often of a very delicate and tender constitution. The truth is, though hard fleshed animals, are generally covered with a thick, hard skin ; yet there is a skin of a certain substance, which is by no means hard, but of a rich and mellow feel, covering an animal exceedingly inclined to fatten. And these I think are very greatly

to be preferred : for every one must perceive, that the skin is of the highest use to protect the animal from those various changes in climate, it is obliged to undergo.

But lastly : of all the errors arising from a want of due reflection only, (independent of a proper attention to facts) none can possibly be greater, than that of keeping an inferior animal to breed from, on pretence that the animal itself is well-bred. It is observed by the advocates of this system, that *breed will shew itself* ; that *the qualities of the ancestry will be seen in the future stock*. True ; and will not this law of nature then apply to inferior animals in the pedigree, as well as to the superior ? It unquestionably does. In theory, there is the same reason for it holding in the one, as in the other : and in practice we find that this is the case. It is strange that persons who have fallen into this error, and have brought forward the foregoing argument in their defence, did not immediately perceive, that the argument was quite as

much against them, as they took it to be in their favour. From this mixture of good and bad animals in the ancestry of some flocks and herds, it happens, that while we behold in the progeny some that are good, we also find some that are very deficient : and on such stock, little or no dependance can be placed. I observed in the remarks themselves, that a bad animal has scarcely ever a good pedigree ; that on examination, we shall generally find something wrong in the ancestry at one point or other : or that if such a case actually occurs, it is most probably owing to some accidental circumstance, such as illness, or injury received by the parent while pregnant, &c. &c. But supposing such a thing really to happen without any such accidental circumstances at all, then it is a deviation in nature, I think not less remarkable, than that a pair of rooks or blackbirds should produce a nest of young ones that are perfectly white. Whatever may be the real cause however of the birth of an inferior animal, we shall perceive in each particular case many and

strong reasons why it should not be kept to breed from. If it has arisen from illness in the parent, its own constitution is most likely weakened and injured, and this in all probability would again be entailed on its offspring. If it be one of those strong deviations in nature, which may possibly occur (though I am persuaded very rarely takes place) without our being able to account for it according to the common course of things; then we know, as in the example given above, that this deviation, however great, may be continued; that white rooks being once obtained, a breed of the same description might by care be at length established: and moreover without this care, that the white colour would be almost certain to shew itself in some of the progeny. And by analogy, the same thing would appear reasonable with respect to deviations in make or shape: but what a practical man is most concerned with, it is so in fact. That the bad qualities as well as the good, are liable to be inherited, was a circumstance well known to the ancients,

and has often been remarked by their best poets.

In bringing forward these examples in order to shew that if practice were accompanied by more reflection, many errors would certainly be avoided ; I have at the same time selected them of this particular nature, the better to illustrate my own subject. But the observation itself, is one of so general a nature, that it applies to almost all our undertakings. I have chosen such, moreover, where the errors have not only been frequent ; but where some of them are of that consequence, and particularly the last, that wherever a due attention shall not be paid to this part of the subject, there, much progress can not reasonably be expected.

I stated in the remarks, that no animal can be depended upon for breeding, but such as is in itself good, and is moreover well-bred in the strictest sense of the words ; and I am persuaded that experience will bear me out in the assertion. I might also

have added, that when such and *such only* are used for this purpose, we need not be in the slightest fear of disappointment. Horace, a celebrated Roman Poet, well understood the importance of this, when he expressed himself in language to the following effect; of which this translation may be given :

The brave are offsprings of the brave and good :
 In *steers* and *steeds* we trace the *worth* and *blood*
 Of *high-bred sires* ; “nor can the bird of Jove,*
 Intrepid, fierce, beget th’unwarlike dove.”†

As if the poet had said ; that where the ancestry is really good, there is almost as little reason to expect, that the valuable properties of the parents should fail in the offspring ; as there is to expect, that an animal of one kind, should ever be the parent of that of another.

* The eagle.

† The part between the inverted commas, is taken from the translation of Francis.

From what has been advanced on the inheritance of peculiar qualities, it will immediately appear in the selection of Bulls, that besides attending to those properties which belong to the male, we ought to be careful also, that they are descended from a breed of good milkers, at least if we wish the future stock to possess this property. It is of far more consequence indeed, that this should be the case with respect to the Bull, than it can possibly be with respect to an individual Cow; because the whole of his descendants will be effected by it.

Since the whole number of good Cattle in the country is at present unquestionably very small; I shall add a few words on what appears to me to be the most probable means of increasing it; but particularly with respect to the use of Bulls. I mentioned in the remarks, that in those districts where valuable animals were first introduced by Gentlemen themselves, I thought it would not be a bad plan to allow the Tenantry to improve from their own stock at a certain

reasonable rate; and gave my reasons for the foregoing opinion. I find however, that some spirited Gentlemen who have obtained Bulls of me, being anxious to benefit their immediate neighbourhood, and particularly solicitous for the welfare of their own Tenantry, have allowed such to send their Cows to the Bulls without any compensation whatever. There can be no doubt but that such a disposition does them the highest credit; but still I think it would be more beneficial (I speak not on their own account, but for the neighbourhood at large) to take a certain compensation; and that too such a one, as should at least keep away the very refuse of the Cattle.* Nor

* Others have taken a fair price for the general use of their Bulls, but have allowed their own tenantry to send Cows for something less, which I think is by no means, a bad plan; as this liberality while it encourages the tenantry, affords the Landlord the security I mentioned in the conclusion of the remarks; and to a man of a noble disposition, the gratification of seeing the improvements made on his estate. I presume not however to dictate the best plan for each particular case; that may vary according to circumstances. But I do think in *all cases*, some plan should be adopted to keep away the Cattle just mentioned.

do I think it a bad plan, beside the usual charge for each individual Cow, to have an extra sum for all bull calves that are uncut at four or six months old. Where the cows are tolerably good, even if not remarkable for their breed, the heifer calves produced by sending such to valuable Bulls, may be very useful for future stock ; though they can not by any means be so well depended upon for breeding, as if their Dams had been thorough bred also. But such stock crossed time after time with the thorough bred Bulls, will soon arrive at a very considerable degree of perfection. If however persons breed from half bred Bulls as well as half bred Heifers, it is obvious that there is no continual advancement in blood ; the progeny will still be only half bred. Why I would admit of this partial improvement from the Heifers, is this ; because in the present state of things, a sufficient number of really valuable animals can not be procured ; and by crossing them in the way I have just mentioned, each succeeding race would no doubt be considerably improved. Still how-

ever as the value of such a cross must depend partly on the excellence of the original stock of Cows, put to the thorough bred Bulls; I must again repeat, that I think very bad ones are better excluded altogether. My reason also for advising to charge an additional price for the bulling of any Cow, if the calf itself be reared as a Bull, is to prevent as much as possible the use of Bulls that are descended from moderate females ; for on account of the extensive use that may be made of a single Bull, the good or harm done to a neighbourhood, according as the Bulls are good or bad, well bred or not, is much greater than most are apt to imagine.

But with every precaution, I know from what I have frequently seen, that it is no easy matter to prevent the use of Bulls, descended from inferior Cows. In the case of my Bull Alexander (an animal well known in most parts of the Country) when he was allowed to serve other persons' Cows, I found the greatest possible mischief arising

from it. For as it frequently happens, that my applications for Cattle are greater than I can supply, many were induced to give large prices to others for half bred ones descended from him ; when the fact was, some of their Dams were of the worst and most inferior kind. That the public therefore might no longer be thus imposed on, I very soon determined to keep him entirely for my own use. And though while a yearling he earned me so large a sum of money ; and after I had made the restriction and his stock began to be seen, applications were made to me from various parts of the Country, in some cases offering any sum that could be asked or given for the use of a Bull ; yet I have seen no cause, sufficient to induce me to alter from my first determination ; nor do I suppose I ever shall.

In districts where the Tenantry themselves procure good Cattle, there I should by no means advise the Landlord to allow the neighbourhood to send their Cows to a Bull of his own at an under price, if he

possessed a valuable one ; because this would have a tendency to damp the emulation of the tenantry among each other, and to deprive the most spirited and skilful among them of that reward they are so justly entitled to. One thing is very certain, that there is a greater desire for improved Stock in the present day than was ever before known. Nor can we be at all surprised that this should be the case ; for those who have had an opportunity of seeing the vast difference that is made in the return between good and bad animals, would naturally be very anxious for the former, though they may incur a little expense in the first establishment of a breed.

And here I can not refrain from passing my highest encomium on the Board of Agriculture. The liberal premiums proposed by it, on various occasions together with the enlightened experience of many of its members, have, and I trust will ever continue to be productive of the greatest good. When we behold men of the rank

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and opulence of its Noble President * devoting so much of their time and attention to the public welfare; the inferior orders and middle classes of society, ought, surely never to think it too much to exert themselves on their own behalf. Such Noblemen and Gentlemen by their various experiments are continually discovering something new, and of importance: the experiments that fail, fall entirely on themselves; while those that succeed, are generously made known to the public at large. By their rank in life, they render the pursuit of agriculture respectable: and by their liberal assistance, they rouse many to a degree of exertion which is not unfrequently crowned with success. †

* The Right Honorable the Earl Hardwicke.

† I might here mention the aid afforded to the improvement of Stock, by the various exhibitions in almost every part of the country, established either by the munificence of distinguished individuals, or the joint contribution of the respective members: in most of which societies, we generally perceive the Nobility and Gentry of the neighbourhood come forward in such a way, as does them the highest credit.

Whoever wishes to make himself acquainted with the value of fat and lean Cattle exposed for sale, at the different markets and fairs in various parts of the Country, can not do better, than consult the *Farmers Journal*. This is a publication indeed, that no agriculturist ought to be without. To a man of business, its trifling expense is soon repaid by the correct information he *weekly* receives of the prices of not only one kind of agricultural produce,* but of almost every description whatever; by which means he will be enabled to adopt the more prudent measures, as to such articles, as he himself may have to dispose of. It contains moreover a fund of information, on practical subjects, belonging to agriculture, from the

* The concluding page of each Journal contains a list of the prices of all kinds of corn, seeds, meat, hay, straw, &c. both in the London and also in the most important of the Country Markets. Nor is it of small moment, that if there be a sudden rise or depression of the various articles, the cause is generally adverted to.

jont contribution, of the most scientific men of the day. To mention the signatures of Sir John Sinclair, Mr. Hall, Mr. Blakie, and Mr. John Elman Junior, might alone suffice; but to these, if need be, many more of the first note, could easily be added: the whole being arranged and corrected under the inspection of an intelligent Editor.

I have only to add again in conclusion, how much real pleasure, it has given me, to have received the approbation, of so many intelligent men; and most sincerely wish that my "remarks" were still more worthy of their attention. And I can assure all, if specimens of Cattle please them better than description, that they are extremely welcome to a sight of any or the whole of mine, at any part of the year. For as I never make a point of forcing them by extra keeping, I am quite regardless of the time they are shewn. The improvement of the Stock of the country, indeed, is a subject of such vast importance,

that it can never be made too clear ; and on this account, I shall always be happy, to adopt every means in my power, to facilitate so great an object.

Should this pamphlet fall into the hands of any, who have been waiting for Heifers from me, and have thought themselves neglected by not receiving them so early as they might imagine ; I have only to assure them that it has arisen from others, who had given a prior order, either taking more than I at first expected, or putting in their claim for a second supply ; and that every attention has, and will still continue to be paid, to serve all as soon as possible. I ought perhaps here to mention generally, that from the great demand I have, my plan has been, if any one applies at a time, when I am unable to spare any to make a memorandum of the application, if wished ; and then to send word as soon as I have such to part with, as are likely to suit.

From this demand too, my Bulls and Bull Calves are disposed of at all times of the year; several of the Bulls are frequently sold or re-let in September, soon after their return from former engagements; and many of the Bull Calves, often disposed of during the first Summer, that is, as soon as they have been well reared and are ready to send off. The plan that many have adopted therefore, that live at a distance, is to write to me to know if they can be supplied with a Bull, Bull Calf, or Heifers; and if not, how soon they can. In which case I describe what I have, if any to part with at the time what are coming forward, and how soon they will be ready; so that by this means, they have the trouble of one journey only. Perhaps no Gentleman, who takes this plan, will think it too much to pay the postage; for though the expense of each letter is but trifling, yet from the number I receive, it would soon amount to a considerable sum. Some who live at a great distance and have seen the Cattle I have sent to neighbouring

places, have left the selection entirely to me ; but though I have had the pleasure of finding, that those I have sent have given great satisfaction, yet I very far prefer, wherever it is practicable, that all should make choice for themselves. And I should still recommend but a small number at first, not merely on account of my own convenience, owing to the demand I have ; but because persons have then an opportunity, at no vast expense, of seeing whether they are the kind of animal they wished for : and as I have before said, conviction which arises from experience, is always greatly to be preferred. To me however, it has been highly gratifying to find, that in so many cases, where they have once been established, a fresh supply has so soon been wished for. I think therefore, a Bull and one or two Heifers might suffice in most places at first, where the trial is made ; and in some, a young Bull only.

Lenton, near Nottingham. 1820.