An account of the systems of husbandry adopted in the more improved districts of Scotland .. (Vol 1)

by

Sinclair, John, Sir, 1754-1835

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The Right Honourable
Sir John Sinclair of Ulbster
President of the Board of Agriculture

Edinburgh: Published by A. Constable & Co.
The ultimate object of the extensive inquiries which have been so long carried on, was to draw up a Code of Agriculture. To render such a work however as perfect as it ought to be, a broad base was necessary, hence originated 1. The Statistical account of Scotland. 2. The County Reports, and 3. The General Report of Scotland. A General Report of England is alone wanting to complete the whole Undertaking.
AN ACCOUNT
OF THE
SYSTEMS OF HUSBANDRY
ADOPTED IN
THE MORE IMPROVED DISTRICTS
OF
SCOTLAND;

WITH
SOME OBSERVATIONS ON THE IMPROVEMENTS OF
WHICH THEY ARE SUSCEPTIBLE.

DRAWN UP FOR THE CONSIDERATION OF THE BOARD OF AGRICULTURE,
WITH A VIEW OF EXPLAINING HOW FAR THOSE SYSTEMS ARE
APPLICABLE TO THE LESS CULTIVATED PARTS IN
ENGLAND, AND SCOTLAND.

BY THE RIGHT HONOURABLE
SIR JOHN SINCLAIR, BART.
PRESIDENT OF THE BOARD OF AGRICULTURE.


IN TWO VOLUMES.

VOL. I.

“Knowledge is power.” Bacon.

EDINBURGH:
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LONDON, HURST, REES, ORME, AND BROWN, LONDON; AND
JOHN CUMING, DUBLIN.

1813.
ACCOUNT
OF THE
SYSTEMS OF INDUSTRY
WORKED IN
THE MORE IMPROVED DISTRICTS
OF
SCOTLAND.

With
Some Observations on the Importance of
the Uses of Raw Materials in the Production of
Manufactures, and on the Influence of the Climate
upon the Course of Manufactures.

By
James Millar,
In Two Volumes.

For I.

EDINBURGH:
Printed for James Ballantyne & Son, 178. and 179.looking Down-bearing Street.
ADVERTISEMENT

to the

FIRSt EDITION.

I have at length the satisfaction of laying before the Public, an Account of the Systems of Husbandry adopted in the more improved districts of Scotland. It was drawn up at the request of a most respectable friend, (Sir Joseph Banks), who thought, that such an investigation would be productive of beneficial consequences to the agricultural interests of the united kingdom; and he urged, that it was incumbent upon a native of Scotland, while presiding at the Board of Agriculture, and possessing all the means of information which that situation afforded, to undertake the task. Being occupied with many other avocations, nothing but the respect which I entertain for the opinion of so zealous a friend to improvement,
could have induced me to engage in so arduous an attempt. Indeed, the labour and difficulties attending it, have gone far beyond every idea I could have formed of them. To execute the task in a satisfactory manner, it seemed to me necessary, personally to examine several of the more improved districts in Scotland, to converse with the farmers in their own fields, to explain to them distinctly, not only the general objects I had in view, but also the particular facts I wished to ascertain; and to obtain from them, not hasty answers, to questions suddenly put, but details, maturely considered, and carefully drawn up. The reader has now an opportunity of examining the result of the whole investigation. The Author claims the merit only of collecting, condensing, and digesting, the important information which was most liberally furnished. The credit of the knowledge which this Work may contain, belongs entirely to the intelligent and public-spirited Farmers from whom that information has been derived.

I trust that there are several observations contained in this Work, which will prove of service in those districts of England, where the cultiva-
tion of arable land, owing to the attention of the farmer having been principally directed to the management of grass land, to the profits of the dairy, and to the breeding of stock, has hitherto been but a secondary object. At the same time, it has been my wish, to make this Treatise useful also to the farmers of Scotland; and for that purpose, I have incorporated a variety of hints, which attention to English Husbandry, and the communications of many respectable correspondents in the southern part of the united kingdom, have enabled me to suggest.

I cannot submit this work to the consideration of the Public, without congratulating my country, on the anxious desire to obtain agricultural knowledge, which now so universally prevails in every part of the united kingdom. Indeed, when I consider that zeal for improvement, and that thirst for useful information, by which the British Isles are, at this time so peculiarly distinguished, I cannot entertain a doubt, that Agriculture will soon reach a degree of excellence in this country, which it has never hitherto attained in any other; and that the merit of discovering the most effectual means, "of providing food for man," the first
of all political objects, will, in future ages, be attributed, to the skill, the spirit, and the enterprise of British Farmers.

JOHN SINCLAIR.

Charlotte Square, Edinburgh, 24th February, 1812.
ADVERTISEMENT

TO THE

SECOND EDITION.

From the anxiety to obtain Agricultural information, another Edition of the Husbandry of Scotland has become necessary. In preparing it for the press, every endeavour has been made to render it as correct as possible, and to explain several particulars which had not been sufficiently discussed in the former impression. The Author more especially alludes to the subject of Straw, the importance of which cannot be too highly estimated, but which had not been treated of at much length, either in the First Edition of this Work, or in any former Publication.

Charlotte Square, Edinburgh, 15th July, 1813.
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AN ACCOUNT

OF THE

HUSBANDRY OF SCOTLAND,

MORE ESPECIALLY AS PRACTISED

IN

ITS BEST CULTIVATED DISTRICTS.

INTRODUCTION.

Of the various circumstances which have contributed to the excellence of Scottish Husbandry, and an explanation of the Plan of the Work.

Before giving any explanation of the plan proposed to be adopted in drawing up the following work, it may not be improper, briefly to point out those causes, which have principally contributed to the excellence of Scottish Husbandry, as practised in its more improved districts, several of which, however, are not to be considered as solely applicable to the northern part of the kingdom.

1. Though the climate of Scotland is in general rather unfavourable to cultivation, (a disadvantage which the Scotch farmers have assiduously, and often successfully endeavoured to counteract) yet the country, on the whole,
INTRODUCTION.

enjoys several natural advantages of considerable importance. Its maritime situation, and its numerous bays and arms of the sea, together with the lakes and streams with which it is so amply provided, not only tend to promote its commerce, but are also favourable to its agriculture. It is also largely furnished with those essential requisites for improvement, limestone and marl; and it possesses, in most of its districts, that most important article, fuel, in considerable quantities.

2. Owing to the establishment of parochial schools, the farmers of Scotland had, in general, all the advantages of a good education, and having thence acquired a taste for reading, became not only fond of perusing works on agriculture, but were anxious to avail themselves of any information they might thus obtain. Hence the culture of artificial grasses, and the best mode of applying them by means of soiling, with various other useful practices, spread rapidly over the whole country. Numbers of Scotch farmers, also, were accustomed to travel, with a view of acquiring useful information, and of comparing their own practices with those of other districts.*

3. Many of the proprietors of land in Scotland, who were distinguished by the acquisition of useful, rather than of showy accomplishments, took a delight in rural occupations: and, in various districts, now under a complete system of husbandry, they either improved their estates them-

* An intelligent farmer once remarked to me, that he derived more advantage, by travelling about to see the improvements of others, than by attempting to make discoveries of his own. Almost every Scotch farmer has travelled through his own county, and some of the neighbouring ones; many have visited England, and some have even penetrated into Flanders, for the express purpose of obtaining agricultural information.
selves, or encouraged their tenants to exertion, establishing for that purpose a most liberal system of connexion between the two classes.

4. It became a custom in Scotland, at an early period, to grant leases for an adequate term of years, without the possession of which, no material improvement, on the part of the tenant, can possibly be expected; and to that circumstance, perhaps more than to any other, is the excellence of Scottish husbandry to be attributed. Indeed, extensive improvements have not taken place in any part of England, but where the same custom has prevailed. In regard to the granting of leases, nothing can be more ill judged, than for a landlord, both to neglect his immediate interests, and to prevent the future improvement of his estate, in order to procure a little political influence, which a generous proprietor can always command, when he may have occasion for it, without keeping his tenants in a state of slavish dependence.

5. In many parts of England, where estates are possessed by tenants for life, or under the fetters of a trust, it is questionable, whether leases of a considerable endurance can be granted, or whether old pastures, though in extent beyond any real advantage to the estate, can be broken up; whereas in Scotland, even when land is under a perpetual and strict entail, leases may be granted for thirty-one years, and upwards, without any unnecessary restrictions against arable cultivation, and the tenant is enabled to do every thing that the proprietor could have done himself, had he retained possession of the land.°

° The act 10. Geo. III, c. 51, A. D. 1770, introduced by the late Sir James Montgomery, is favourable to the improvement of entailed property. By that statute it is enacted, that every proprietor of an entailed estate, who shall lay out money in inclosing, planting, draining, or
6. The inferior capitals of the Scotch farmers, when their improved system of husbandry commenced, rendered it necessary for them, to study economy in the management of their farms, to cultivate their lands with fewer horses, with cheaper implements, and with a smaller number of servants; and hence originated a system of management, distinguished by two important advantages, economy and simplicity.

7. In the more improved districts of Scotland, the farms are in general of a proper size for arable culture. Small lots are beneath the attention of an opulent and intelligent farmer. Much time is lost in the cultivation of small farms, and the comparative expence is much greater, where the servants and cattle have not constant occupation; whereas, with a farm of a proper size, (the extent of which will be the subject of future discussion.†) every hour may be advantageously employed.

† See Dissertation I, Part II, On the Size of Farms.
INTRODUCTION.

8. Soon after improvements began, the rents of lands were progressively increased, without the spur of which, neither industry in cultivation, nor economy in management, can in general be expected. Oppressive and sudden additions ought certainly to be avoided; but without a fair income for his land, no proprietor ought to part with a control over his estate, more especially for so long a period as nineteen or thirty-one years. A tenant, on the other hand, who obtains a lease of some duration, and on liberal terms in regard to covenants, can well afford a reasonable augmentation, either at once, or at different periods of his lease, on a rent that was previously moderate.

9. It was a circumstance peculiarly favourable to the improvement of Scotland, that the farmers, in general, were liable to no material burden, but their rent to the landlord, by whom the land-tax, and, since the year 1633, the stipend to the clergyman have been usually paid. Wherever there is any uncertainty in regard to the sums to be exacted, (more especially if the burden increases with the industry exerted) no farmer will attempt any expensive improvement. Hence one of the advantages of a recent law, by which the servitude of thirlage, or bondage to any particular mill, may be legally commuted. The personal services also, to which the Scotch peasantry were, at one time, subjected, and which were often indefinite, are now almost entirely exploded.

* One-half of the parochial schoolmaster's salary is paid by the tenantry, together with one-half of the expense of maintaining the poor. This, however, is a trifling object, as the expense of supporting the poor is chiefly defrayed by voluntary collections at church on Sundays. The Scotch farmers are also liable in payment of the property-tax, and either to statute labour, or road assessments.
10. A considerable proportion of the most fertile land in England, until bills of division and inclosure were introduced, (which have in some degree alleviated the evil, though not to the extent that could be wished for) was actually debarred from improvement, by the common-field system; whereas in the more improved districts of Scotland, owing to a general Bill of Inclosure passed by the Scotch Parliament in 1695, every farm, for many years past, has been a distinct possession, or been held in sequestration.

11. The expence of labour in Scotland, does not differ materially from that of several extensive districts in England; and the day-labourers in that country, certainly execute as much work, within the same period of time, as those in Scotland; but the servants employed in husbandry in Scotland, are in general more tractable, are satisfied with homelier fare, have fewer perquisites, are less accustomed to waste their time and their wages unprofitably, are generally married, and thence steadier in their conduct, are more regular and constant in their hours of labour, and having commonly received a better education, are thence less addicted to debauchery, or to any irregularity of conduct.

12. In Scotland, the laws are favourable to cultivation and improvement, a circumstance to which the excellence of the Scotch husbandry is greatly to be attributed. Regulations exist, which facilitate the division of commons and of common fields; fences erected between two distinct estates, are made at the joint expence of the owners; the value of the tithes of any estate, can be fixed by the decision of the supreme court of justice, and when once fixed by a legal valuation, and converted into what may be called a corn rent, the amount cannot afterwards be increased: The possessor of any estate can, in general, exonerate his
property from all indefinite demands upon it, of a feudal nature; leases are interpreted, by the courts of law, favourably to the tenant; and the occupiers of land, in general, are not subjected to any arbitrary burdens, under the name of Poor-rates.*

13. The establishment of banks, and the extension of paper money, have certainly materially contributed to the improvement of Scotland.† Enterprising farmers have thus been supplied, when necessary, with aid to carry on their operations, and have obtained a better price, and a readier payment, for their commodities;—no small inducements to exertion. Where the public banks, or their branches, also, are established, the savings of the prudent and economical farmer, have not only been safely deposited, and borne an interest of from 3 to 4 per cent., but were always ready at his command.

14. In the last place, the character of the Scots, industrious, economical, intelligent, and persevering, and their habits of life, calculated to maintain that national character, would naturally enable them to reach a considerable degree of excellence, in any art or science, to which their attention might be peculiarly directed.

Other causes, as will appear in the course of the following investigation, may have also indirectly contributed to the improved state of Scotch Husbandry; but the circumstances above detailed, will, it is believed, sufficiently ex-

* I say in general, for there are exceptions to this rule in several of the southern counties.

† The celebrated Sir James Steuert, in his Political Economy, (last edit. vol. iii, p. 197) says, “To the banks of Scotland the improvement of that country is entirely owing.” Without going so far, it may be safely asserted, that to the improvement of Scotland they have materially contributed.
plain, why that system should have reached a considerable degree of perfection, and may, in various respects, be accounted a pattern for other districts, similarly situated, in so far as regards arable cultivation.

We shall next proceed, to explain the nature of the plan intended to be adopted, in the prosecution of this important enquiry. It is proposed to divide the Work into Two Parts.

PART I.

This Part will be purely practical, explaining, first, the best practices of the most distinguished Scotch farmers, regarding those points which require attention, previous to the commencement of arable culture; and, secondly, those particulars, which are connected with the actual cultivation of an arable farm, and the most profitable means of maintaining its stock. This part of the work will be concluded with, 1. A general view of the improved Systems of Husbandry adopted in Scotland; 2. An account of the improvements of which those systems are susceptible; and, 3. Some observations on the means by which the useful practices of the best Scotch farmers, may be most advantageously disseminated throughout the less improved districts of England and Scotland; together with a general view, of the public and private advantages which may be derived from their more general adoption.

PART II.

There are some questions, however, connected with the husbandry of Scotland, and with the improvement of that country, which are rather of a more abstruse nature, the
explanation of which requires a good deal of research, and much reflection thoroughly to comprehend; in particular, 1. The size of farms; 2. The means by which a liberal system of connexion can be established between the landlord and tenant; and, 3. The characters of those who are employed in agricultural labour, in the more improved districts of Scotland. These are points, which it is thought more advisable to place in a distinct division of the work, and to discuss in separate dissertations.

In an Appendix, some information will be given, connected with the improvement of Waste Lands in Scotland, (a subject to which the public attention cannot be too frequently called) and some other particulars, respecting which the author trusted, that the information he had to communicate, would be acceptable to the public.
PART I.

CHAPTER I.

ON THE POINTS WHICH REQUIRE ATTENTION, PREVIOUS TO THE COMMENCEMENT OF ARABLE CULTURE.

BEFORE a farmer commences the actual cultivation of an arable farm, there are several particulars which will require his attention, as, 1. The position of the Farm-House and Offices; 2. Their Construction; 3. The size of the Fields; 4. The mode of Fencing; 5. The Draining necessary; 6. The Roads on the Farm; 7. The Instruments of Husbandry; 8. The Live Stock; and, 9. The Soil, the elevation and exposure, the climate, and the situation of the farm in regard to markets.

It is proposed to discuss each of these points, as briefly as their importance will admit of, in separate sections.

Sect. I.—Position of the Farm-House and Offices.

The first point that any judicious farmer would resolve to ascertain, in regard to any farm he would wish to oc-
cupy, (more especially if it were of considerable extent, namely, from 300 to 500, or 1000 acres) would be, whether the farm-house and offices were properly situated, and erected as nearly as possible in the centre of the farm. In many cases this would make a difference in point of rent, of from 1s. to even 5s. per acre, according to the size of the farm, and various local circumstances therewith connected. The difference is calculated, by some intelligent farmers, at the expence of a plough, or L.100, and on very extensive farms at nearly L.200 per annum.* If the house and offices are placed in the corner of a large farm, a part of the land will often be neglected by the farmer; less manure will be sent to it; the expence of cultivation is materially increased; the strength of the horses uselessly wasted in going backwards and forwards, instead of being employed in profitable labour; whilst the remote part of the farm is left, in what in Scotland is called an outfield or afterwall state, that is to say, in miserable pasturage occasionally broken up.

In the improved districts of Scotland, this is a point as much attended to as the circumstances of the case admit of, more especially when any new buildings are constructed.†

* Mr Walker of Mellendean states, that the old farm-buildings on his farm of Rutherford, before he got possession of it, were placed on the very extremities of the ground, and the acclivity from them being considerable, the upper part of the land of course got a very small share (if any) of the manure. The principal buildings are now nearly central, for 800 acres, and another set of offices equally so for the remainder; by which means the corn is carried a much shorter distance to the barn-yard, and the dung to the fields at much less expence. These, and other conveniences, he calculates are equal to a saving of nearly L.200 per annum.

† It is remarked by an intelligent correspondent, that the farm-buildings in the more improved districts of Scotland, are in general much more convenient than those to be met in almost any other country; and that
POSITION OF THE FARM-HOUSE AND OFFICES.

How different from that state of feudal barbarism, (which may still be found in some districts in England) where all the farm-houses of a parish were collected into a village, originally for the sake of mutual protection and defence, and where all the neighbouring fields were cultivated in common. In such cases, one yoking a-day, is frequently the plan adopted for working the servants and horses, to which, in consequence of the distance of the fields from the residence of the farmer, the name of journey is most emphatically and properly given.

There can only be one reason for not having the farm-house and offices in a central situation, and that is, when a better command of water, for family use, for the farm stock, or for driving a threshing-mill, can be had elsewhere. Sometimes, also, wind cannot be commanded in the centre for the use of a threshing-mill, by which a great saving in the labour of horses might be obtained. These, however, are only exceptions to the general rule; for it may be laid down as an axiom in agriculture, "That the farm-house and offices ought to be placed, as nearly as possible, in the centre of a farm."

Where the circumstances of the case will admit of it, the farm-house and offices should front the south, should be sheltered from piercing winds, and the fold-yard should enjoy the benefit of the morning sun in winter. The farmstead should be placed on an elevated situation. It is not only healthier for the farmer, his family, and his servants, but carts will bring home the corn in harvest time, with least waste, when going up hill, and when empty, they can return to the harvest field, in very urgent cases, with a quicker step, which will much expedite the getting home and securing

in a large farm, there is the difference of at least the labour of one man throughout the year, between a convenient and inconvenient set of offices.
the farm produce. The manure from the farm-yard so situated, will all be conveyed down-hill to the fields, in the cheapest and most expeditious manner.*

SECT. II.—The best Construction of a Farm-House and Offices.

This is a most material point for the consideration both of the farmer and of the landlord, and the rent to be paid, ought certainly in some measure to depend, on the goodness of the accommodations with which the occupier is provided.† With convenient offices, it is evident, that the grain produced on the farm, can be better preserved, and more advantageously separated from the straw, and prepared for market. The live-stock also on the farm, can be more easily and regularly fed; and being thus kept in better order, must consequently be fitter for their work, or for the market. The propriety and advantage likewise of having suitable accommodations for the farmer, his family and his servants, need not be dwelt upon. The expence of erecting such buildings must be considerable when first laid out, but no liberal landlord, who has the sum requisite at his com-

* Remark by an intelligent correspondent. It may also be observed, that when the house is built on an elevated situation, the farmer will have it in his power to see what is going on all around him.

† Even minutiae may be of great consequence to a tenant; for instance, in the erection of barns, more especially if the walls are rough, it is of importance to have a projecting stone or brick at every aperture for the
mand, will grudge to lay it out for the comfort and benefit of an industrious tenant, who pays an adequate rent. Every convenience afforded to the farmer, for enabling him to carry on his business with as little expense, and to as much advantage as possible, must indeed greatly enhance the value of the farm, and will insure to the landlord, should he have occasion to seek for a new tenant, abundance of competitors for a situation in these respects so eligible.

Where convenience and utility are the objects principally attended to, it is recommended by an intelligent agriculturist in Roxburghshire, who has had great experience in the erecting of such buildings, (Mr Walker of Wooden) to have the farm-house of three stories, the kitchen-story half sunk. This makes the house itself drier, as it is necessary to take such peculiar precautions against dampness in the foundation, and less roofing will furnish the farmer with the accommodations he may require. He adds, that he has made plans of farm-houses, both of that construction, and with only two stories, having the kitchen and dairy behind; but he knows that the house of three stories gives most satisfaction to the occupier. Others object to this plan, maintaining, that though a half-sunk story may tend to make the upper floor drier, yet that it is very apt to be damp itself; that it likewise gives much more trouble to the mistress of the house in superintendence; and that the noise from the kitchen is often disagreeable, more especially when a number of servants assemble toge-

admission of air, to prevent the access of vermin; and in laying the foundation of barns, that material object, the exclusion of vermin, ought always to be kept in view. If the foundation stones were regularly cut like bricks, and jointed, it would prevent the possibility of vermin getting in at that part of the building. But where it is the custom to have barns, with floors of board, into which loaded wagons are admitted, the exclusion of vermin is impossible.
ther in the evening. Hence a double house of two stories, with a back jamb, (or lean-to, as it is called in England) and wings attached to the house, is preferred by many farmers.*

In regard to the expence of erecting new farm-steads, it cannot be properly estimated, as the price of building, and the expence of materials, vary in every district. In some publications it is stated at from two and a half to three years' rent of the farm. It is evident, that this can only refer to farms of a small size. In larger occupations, when the landlord receives a considerabl r t, the allowance must be higher.

As to farm-houses and offices, the following princi-

* Opinions vary much regarding the proper construction of farm-offices. Mr Stewart of Hillhead is of opinion, that farmers who occupy from 200 to 300 acres, or who have capitals from £1000 to £2000, ought to be satisfied with a double house of one story, with garrets for various apartments; which will afford convenient accommodation at a moderate expence. Captain Henderson of Aimster, in Caithness, on the other hand, recommends a lean-to, back-jamb, or to-fall, as it is called in some parts of Scotland, which furnishes as much accommodation, in the two lower flats, as a double house, and at less expence. But Mr Wight of Ormiston greatly prefers Mr Walker's plan of three stories, as better than a house with a wing and back-jamb, which is neither so neat nor handsome, besides requiring a greater extent of building and roofing in the first erection, and a greater extent of roofing to keep up ever after. In the half-sunk story, dampness can certainly be excluded, and the noise of the kitchen can also be shut out, either by proper deafening, or by removing the kitchen to that end of the house least occupied by the family. Mr Walker of Mellendean is decidedly of opinion, that in a dry situation, the same conveniences can be had at a much less expence, in a house with a sunk story, than in one with wings, and he has accordingly erected of that construction one on his farm at Rutherford.
CONSTRUCTION OF A FARM-HOUSE AND OFFICES.

1. The house and offices should be on a scale proportionate to the size and produce of the farm, having utility, and not ornament, principally in view; though, at the same time, every landlord of taste, in fixing on the site and plan of a new farm-house and offices, will certainly not totally overlook the embellishment of the country. Not only the original cost, but the very expense of keeping unnecessary buildings in repair, is a heavy burden upon any property, which it is for the interest both of the landlord and of the tenant to avoid. The house and offices should afford ample convenience to the farmer in carrying on his business. On the other hand, all superfluous buildings, and useless decorations, ought to be avoided; for, as Dr Coventry has well observed, durable economy should be preferred to shifting taste.* Nothing can be more absurd, than the enormous barns usually attached to all the great farms in England. Grain in the straw, keeps infinitely better in the open air, than in close barns; it is less apt to be destroyed by vermin, and saves the enormous expense of constructing and repairing great barns. Threshing-mills, when generally introduced, will soon prove the absurdity of erecting such unnecessary buildings.

2. The accommodations necessary for preparing the grain for market ought never to be too scrump. The threshing-barn, for instance, must be sufficiently spacious to contain one stack of grain in the straw, in case of an unfavourable season. In good weather, it is the common practice to take in the corn when it is threshed, in which case no more room is necessary than to hold the machinery, and the peo-

* See Discourses on Agriculture, p. 5.
ple employed to manage it. The straw-barn, as recommended by Mr Walker of Wooden, should be so large as to pile up the straw of two stacks when threshed, so that a considerable quantity of straw may always be kept in good order for fodder. Indeed, the straw-barn ought to be so contrived, as to keep different kinds of straw separate, at least separately accessible, for fodder, and for litter, as bean or pease haulm, the straw of white corn, &c. Where cattle are fed on straw, (which it would be better to dispense with, if richer food, as will afterwards be explained, could be provided for them) the farmer would otherwise be obliged to thresh more frequently than he would wish to do. There ought to be a granary adjacent to the barn, in which the grain, when threshed, may be put, the lower part of which will furnish space for a cart-shed, which ought to be large enough to hold two carts for every plough. Others recommend, that the granary should be placed under the roof of the barn itself, by the addition of another floor, into which the grain, when dressed, may be conveyed by "hoisting tackle," driven either by the threshing-mill, or by hand, from the ground-floor.*

3. In regard to the size of the stables, cow-houses, and feeding-sheds, much must depend on the manner in which the farm is occupied; as to the feeding-sheds, in particular, whether it is most advantageous to rear young cattle for the grazier, or to fatten older stock for the butcher; but it is a rule that ought never to be departed from, not to stint them in point of space, but to give the stock ample accommodation.† Where horses are kept in stalls, Mr

† Mr Shirreff's observations upon this subject are well entitled to attention. He thinks that all horses so heavy and large that two are
Brown of Markle is of opinion, that five feet of room in breadth is required, to give each horse comfortable accommodation, and that the stable ought not to be less than capable of drawing a plough, ought to have divided stalls, at least five feet wide each, that they may lie at ease; and every horse fed separately, and, if he choose, that he may feed leisurely, whatever be his provender. The stalls may slope, say one-eighth of an inch to the foot; from the bottom of the wall, below the manger to the gutter, which may be ten feet from that wall, and two feet from the back part of the division. There ought to be five feet for a thoroughfare between the gutter, and the other side-wall, behind the horses. The length of the stall will admit of a broad-bottomed manger, for holding clover and other green herbage for souling. The racks will not hold enough of this fodder, and its weight compresses it so much, that the horses cannot, without difficulty, draw it out. Green herbage should be divided between the manger and rack, when working horses are foddered up for the night. Stables in which horses are soiled, ought to have openings in the roof, for allowing the heated air to escape in hot weather, and which can be shut in cold. The width will allow of shelves and pins for the furniture of each pair of horses, immediately behind their stalls.

Cattle in general have by far too little room. Working oxen, large feeding cattle stalled, and milch cows, should have stalls four feet wide, or even more, and as long as those of horses. Were all those animals fed separately, they would no doubt thrive much better than when they are fed in common. Cattle should be foddered at the head, and littered and cleaned from behind. They should stand single, unless they are of the same age, and have been bred together. Cattle suffer much from being huddled together, and stewed close up in a low-roofed cow-house in winter, particularly milch cows, more especially if sent out to drink cold water in frosty weather, when in a heated state. The urine of both cattle and horses should be carefully collected, by means of retentive gutters, into reservoirs, and carried out and regularly sprinkled over the surface of the dunghill. Much valuable manure is lost, by neglecting to have these accommodations erected along with the buildings in which the stock is to be kept.

Where economy must be attended to, separate stalls may be objected to on account of the expense: in that case a pair of work-horses may
eighteen feet wide, upon the supposition that the horses all stand with their heads to the wall, which is the custom for farm-horses in all stables recently built. In this way the access is easy in the longest stable, both for removing the dung, and supplying the horses with provender. With respect to cattle, he adds, that it requires three feet eight inches to give due room to a bullock of 45 stone Amsterdam weight; and if the house is fifteen feet in breadth, or at the most sixteen feet, cattle may not only be comfortably accommodated, but full access permitted to supply them with food, and remove their dung. Many cattle-houses are not made more than fourteen feet in width, some of them even less; but fifteen feet may, on the whole, be considered as a very proper size. At the same time, where the expense can be afforded, more ample space may be given, and will probably be found advantageous.

2. It is maintained by some, that the farmer should have a view, from a window in that room where he usually sits, of what is going forward in the farm-yard,* the very idea of which, it is said, keeps the servants in awe, and may often prevent negligence and depredations. It is certainly desirable, that the farmer should be able to command a view of the other parts of the farm from the windows of

be accommodated in a space of sixteen feet by eight, leaving room for bringing them their food and litter, and carrying away the dung. Cows require nearly the same room in the breadth of the cow-house, but usually stand much closer together; so that on the average six feet may serve two cows for the above purpose, where the breed is not large. In many feeding-houses for cattle, for the convenience of feeding at the head, there are holes left in the wall, with shutters, to allow of putting in the food.

* It is known that a farmer has on every door a large patch, painted of a different colour, as white upon black or black upon white, that he may see at a distance when any one of them happens to be open.
his house, if a situation sufficiently elevated for that purpose can be obtained.

5. The house should be situated at a moderate distance from the offices, say from twenty to forty yards. When in the line of the square, the farmer and his family are distressed with the unwholesome vapours of the dunghill, which are also extremely unfavourable to the keeping of provisions.

6. It is of great importance to have either a pavement, or a good road, all around the farm-yard and dung-pit. Farmers suffer more than is commonly imagined, by having their carts and cattle struggling in farm-yards, through piles of straw and dung, where this is neglected.

7. It is highly expedient to raise the party-walls above the roofs of the offices, to prevent the communication of fire, more especially where the offices are thatched.

8. It is also desirable to have two reservoirs for urine, when cattle are stall-fed in any number. As soon as one is full, it should remain in that state till it becomes putrid, previous to its being taken away, and the other in the mean time may be filling. This plan is strongly recommended by Mr Allan of Craigcrook, near Edinburgh. It is likewise proper, in order that the urine may be as strong as possible, and to prevent an accumulation of wet, that the buildings should not admit water to go inwards from the roof, at least in wet climates, but that where water is likely to

* It has been remarked, that urine may be too strong, unless it is diluted; and that if it is kept too stale, some of the most valuable parts of it may evaporate. There is certainly no better mode of applying urine, than to mix it, as soon as possible, with peat, or if that cannot be had, with fine earth, or straw, tanners bark, or saw-dust.
be too abundant, it should be taken away by spouts and drains.*

9. It is evident that the access to the house and offices should be as commodious as possible. The road should be kept in good order. The corners of the garden and enclosures to be rounded instead of square, by which, owing to the great facility of turning, many accidents may be prevented, injurious both to the carts and to the cattle.

10. A command of water is essential; it is desirable, therefore, that the house should be situated near some river or stream; but if that cannot be obtained, ponds and wells, and the means of conveying water by troughs to the feeding-houses, both for horses and cattle, and to the dairy, should be constructed. Nothing can be more injurious to stock, than to compel them to drink at ponds, the water of which is not perfectly salubrious. A bore, made according to Elkington's plan, would in general raise water to supply any part of the offices.

11. As an appendage to farm-houses, a kitchen-garden is of infinite importance, and may be more profitable to the occupier, than any part of his farm of the same size. This is certainly less essential, since potatoes, turnips, and other articles have been cultivated in the fields; but still it is expedient for a farmer, to have a garden for other articles;

*It is said, that where abundance of litter is given in the yards, it hardly ever happens that too much wet gets to them, and that there is sometimes a want of moisture in dry winters. There must, in this respect, be a diversity in practice, between the eastern and the western districts of the kingdom. On the eastern coasts, the water that falls from the roofs, may be required, for the litter, though it would be much better to saturate it with urine, and to take great pains in collecting it for that purpose. In dry seasons, on the coast, sea-water may be used with great advantage.
to enable him also to try experiments, with new plants, on a small scale; to train up his rising family to an attention to such objects, and to furnish his table with small domestic luxuries, which no farmer would be willing to purchase, if he can procure them at home.

12. It is a peculiar feature of the improved husbandry of Scotland, that in all the best cultivated districts, cottages are considered to be as indispensable as a barn or a stable. They should be placed at some distance from the farm offices, and it is desirable that there should be a small byre for their cows, near their houses, so that the women and children may have no pretence to come near the farmer's offices, except when called on. These byres should be accessible at all times to the farmer, or his confidential servants; and an allowance of straw and hay, (or sometimes a few turnips) should be regularly served out, and divided among their owners, at a certain hour every day. If the cows are not soiled, it is not uncommon to keep a field in grass, near the cottage, for the summer pasture of the servants cows; but if the farmer resides on the ground, they usually pasture along with his own.

In conformity to these principles, the annexed sketch has been drawn up, pointing out the proper position of a farm-house and offices, accompanied by the plan of a farm, whether the soil be of a strong or of a light description; and explaining the rotations adopted, according to the most improved systems of Scotch husbandry.

It would be entering into too wide a field, to dwell on the various offices necessary for the accommodation of a large farmer, more especially as that subject is very fully detailed in a valuable paper, printed in the communications to the Board of Agriculture,* and will be fully explained in the

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* See a paper on Farm-buildings in general, by Robert Beatson, Esq.
CONSTRUCTION OF A FARM-HOUSE AND OFFICES.

General Report on the Agricultural State of Scotland, now preparing to be laid by the Board of Agriculture, before his Majesty, and both Houses of Parliament. But it may be necessary to dwell on two points: 1. The construction of convenient places for feeding cattle, for the purpose both of consuming the turnips, and the straw raised on the farm, and for converting the surplus straw into dung; and, 2. On the best plan of a stack-yard.

In regard to the feeding cattle, three plans have been suggested for that purpose: The first is to feed them in large open yards; the second, in feeding-houses; and the third, in small open sheds, or what, in Berwickshire, are called Hammels or Hemmels, with separate straw-yards attached to each.

The plan of fold-yards is certainly the cheapest, being in general formed by the offices which afford shelter to the cattle; but where a number of animals, of all sorts and ages, are suffered to mingle together, many accidents must happen, and the cattle must often be injured, by going through a yard full of straw and dung, and often very deep, in which they are apt to sink, * and by master cattle preventing the others from feeding. Though this plan might answer for young cattle, where divisions are made by walls or hurdles,

Communications to the Board of Agriculture, v. i. p. 8. But by far the best plan of a farm-house and offices hitherto published, is to be found in Mr Kerr’s valuable report of Berwickshire. It is founded on actual experience, and comprehends every convenience essential to the accommodation of a large farmer.

* This is often the case, though in well-regulated farms the dung is never suffered to remain in the court or fold-yard, but is carried out, before it becomes so rotten that the cattle can sink in it. This is sometimes done in wet weather, that the dung may have sufficient moisture to make it ferment, but is better done in frosty weather, when more can be carried in each cart, and the fields are less liable to be poached.
CONSTRUCTION OF A FARM-HOUSE AND OFFICES. 25

yet it would never do, for feeding valuable cattle for the butcher.

Feeding-houses are, in some respects, well calculated for fattening cattle, and are less objectionable in the immediate neighbourhood of a market. The animals are kept warm and quiet, and each can have the due portion of food allotted to him; but the animals having no exercise when thus stall-fed, cannot be so healthy, nor the meat so wholesome, as when kept in fold-yards or open sheds. The legs of cattle also, more especially in the case of heavy oxen, when confined to one spot, are so apt to swell,* that they are hardly able to go to any distance. Where a less confined mode of feeding is adopted, the cattle not only thrive better, but the expense is considerably less.

On the whole, the third plan, that of Hammels, though the most expensive, yet is certainly to be preferred. I first had the satisfaction of seeing them at Mr Robertson’s of Ladykirk, in Berwickshire. An engraving of this excellent plan is annexed, which will give an idea of the form of the construction. The advantages of it are described by Mr Robertson in the following terms: “I have found these "hammels or cattle-sheds, much better than any large or "open court and yard. Cattle kept in great numbers, waste "more straw, they fight, and hurt one another with their "horns. All this is prevented when they are kept in sepa-"rate divisions; and, above all, in these hammels, we can "give them what meat we choose, and in what proportion "we think proper; and can separate those of different ages, "which ought not to be associated together.”

This plan, however, is not confined to cattle; a spirited

* It is remarked, that the legs of cattle fed in stalls on yams, or exclusively on raw potatoes, are particularly apt to swell.
farmer on the estate of Ladykirk, having long used exactly the same buildings for his horses, and with very great success. He had lost none by death for a number of years, and they seldom have colds or any other disease.* His horses lie in these open hammels in winter, and it is remarked, that in frosty weather, when snow is falling, and lying on the ground, the animals do not go under cover, but prefer to lie out, with their backs and sides covered with snow. It is well known, that if a horse is kept out in winter, he will have no grease, nor swelled legs, and perhaps no other disease. These hammels seem to have all these advantages, at the same time that they protect the animal from damp, and prevent his back from being kept wet by heavy or long-continued rains. Every farmer who keeps a large stock of horses, occasionally loses one by inflammation, brought on by coughs and colds; but the horses of the farmer alluded to, become aged, and he has not had occasion to purchase a young horse for several years. It is evident, that horses taken out of a warm stable, perhaps with some degree of perspiration on them, when they stand behind a hedge in a cold day, either to have their corn given them, or when the servants are taking their dinner, must be much more liable to catch cold, than if they had been hardened by being kept in open sheds in the manner above described.

The celebrated George Culley, (whose death the agricultural world has recently had reason to lament) though he approves much of the hammels, or sheds with a small fold, or curtain, annexed to them, where only two or three cattle

* Mr Kerr fully confirms the advantages of this plan, having repeatedly seen these open-horse hammels at Mr John Herriot's, tenant at Ladykirk farm; each shed holds two horses, with a niche for their harness. To each there is an open small straw yard. Each has a water trough, and each a gate large enough to admit a cart to take out the muck.
can be kept in one place, yet observes, that few farmers can have such expensive conveniences. Almost every farmer, however, can have open sheds, and folds adjoining, with mangers under the sheds, and close wooden hecks, or standing mangers in the folds, where from six to twelve steers or queys can be kept together, and are at liberty to feed and rest, either in the sheds, or the open parts, and although the master cattle will eat where they choose, the rest have so many places to eat at that they are never at a loss. It is found that cattle thrive best in this way. Those who are so disposed, make exceedingly fat, and the slower feeders, are always fitter to turn into the pasture in May, than when tied up under either shed or byre. This mode of feeding, therefore, is now generally adopted on both sides the Tweed. If a very wicked mischievous beast happens to be amongst the lot, it must be put by itself. It is to be observed, that the steers and queys, are always kept in separate folds, and are now universally made very fat when three years old.

The proper arrangement of a stack-yard, is of more consequence than is commonly imagined, and is capable of much improvement.* It is a common practice, to begin building the stacks at the corner opposite to the entering gate from the farm, packing them as close as possible, by which they are deprived of air, and if any of them should shew a tendency to heat, it is extremely difficult to get them turned over, or put into the threshing mill. Mr Mitchell of Balquharn near Alloa, has arranged his stack-yard on principles peculiarly well planned and judicious.

* In the Berwickshire Report, p. 86, the rick-yard is directed to be ploughed into twice-gathered ridges 21 feet broad. By this means, as the ricks seldom exceed 12 feet diameter, there are 9 feet free between the rows for air and carrying in sheaves. No allowance for heating, as a good farmer has no heated stacks.
His stacks are divided into regular rows, and there is a road on each side of every double row, besides a road round the whole yard.* This plan is attended with the following advantages: 1. By these parallel roads, there is a greater degree of ventilation; 2. He can remove any stack he pleases, as necessity or markets may require; 3. In the hurry of harvest, there is no confusion or loss of time, whatever may be the number of men or horses employed; and, 4. By having the rows and the stacks regularly numbered, there is no difficulty in ascertaining what each field of the farm produces. That plan was originally suggested by that respectable agriculturist Mr Erskine of Mar.

Two points on the subject of farm-houses and offices in general, remain to be discussed: 1. By whom they ought to be erected; and, 2. By whom they ought to be kept in repair.

In regard to the first point, it is certainly desirable, as a general principle, that the landlord, who has a permanent interest in the soil, should be at the expense of all substantial improvements.† But unfortunately that cannot be the case in regard to entailed estates, where the proprietor has

* As four rows, if the stacks are pretty large, will in general be sufficient, two roads will be enough, one through the middle of the longitudinal direction, and one round the whole yard.

† Mr Church of Hitchill in Dumfries-shire, observes, that the farm-house and offices ought to be erected free of expense to the tenant. Many an industrious individual has got the character of a bad farmer, by having been unguardedly led to exhaust his capital on buildings, so much so, as to disable him from bestowing a proper proportion of it on the cultivation of the soil. Inclosing ought to be done at the expense of the landlord, and the fences reared or maintained at the mutual expense of landlord and tenant. In short, all great permanent improvements on a farm, should be executed by the landlord, and in consideration of these, let the tenant pay a higher rent.
only a life-interest in the property, and cannot borrow money for expensive erections, notwithstanding the provisions of an act for promoting the improvement of such estates. Sometimes, also, the tenant has a greater command of ready money than the landlord, and will lay it out with more economy, and to more advantage. In that case it may be most advisable for both parties to arrange a plan, by which the buildings are to be erected by the tenant, the farm being let proportionally, at a lower rent, and he receiving a certain sum for those buildings, according to their value, at the termination of his lease. * It must be acknowledged at the same time, that every plan, which tends to abstract the tenant's capital from the culture of the grounds, is unfriendly to the interest of agriculture. nn a

As to repairs, the farm-houses and offices in the more improved districts of Scotland, are usually built in a sub-

* Mr Milne of Alvah, near Banff, remarks on the subject of farm-buildings, that few farmers have capital sufficient for a farm of 200 acres, the expence of stocking which, at a moderate computation, costs £2000 sterling; and if new houses are required, which very often happens, a great deal more is necessary. Any allowance the proprietor gives for building, is seldom or ever paid until the end of the lease; the tenant's capital is thereby very much drained, before the fields can receive much benefit. It also often happens, that the outgoing tenant has a considerable claim for houses, and in many instances they are so ruinous, that the farmer can neither trust himself or cattle with any degree of safety, but he must be at a great expence in repairing them. In such cases, the landlord should certainly give every assistance he can afford. In regard to the plan of valuing the whole premises at a tenant's entry, and again when he removes, it is remarked by an intelligent correspondent, that such a system is rather hazardous. The price of wood, its workmanship, and other materials, vary so much in the course of a lease of even nineteen years, that he has known a tenant, to receive a great surplus sum at his removal, without his having laid out a single shilling, the value of building materials having so much increased.
stantial manner, and it is in general the practice, that the tenant shall keep the house in repair. It is a great addition to the landlord's income, to be exonerated from so heavy a charge, which in England amounts to from 5 to 15 per cent. per annum, on the rental of farms above 100 acres. In Berwickshire, the calculation is, that a thoroughly well-built farm-house and offices, which must cost about L.3000, ought to be kept in repair, during a lease of 19 years, for L.100 in all, and left in thorough repair for an equal sum, which will only be at the rate of 10 per cent. on one year's rent, and will hardly exceed ½ per cent. on the rental per annum; and in Scotland, laying the repairs on the tenant, is rarely found to be attended with any material loss.

On the whole, it can hardly be questioned, that it would make a difference of from L.50 to L.100 per annum, in the expense of labour, where the particulars above mentioned have been properly attended to, when farm buildings are erected.

SECT. III.—Size and Shape of Fields.

This is a point, which, in so far as regards arable culture, has been brought to a considerable degree of perfection, according to the system of husbandry adopted in the more improved districts of Scotland. Nothing can be more absurd, with a view to the culture of grain, than to have a number of small inclosures, irregularly shaped, surrounded with high hedges and trees; and such a system perhaps general in a flat country, where so much shelter is unnecessary. Such a plan is peculiarly reprehensible, where horses