The observing farmer's travels through Scotland, : with his remarks on the country, and observations on the improvement of agriculture. : Likewise suggestions for the improvement of farm stocking, and effectual cures for the diseases of cattle, sheep, and horses / By P. Finlayson.

Vita sine literis mors est (Life without literature is death).—*Roman saying.*

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THE . . . . .
SCOTTISH .
FARM . . . .
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UNION. . . .

There is no darkness but ignorance.
Scroll on the Shakespeare Statue, London.

THE

OBSERVING FARMER'S

TRAVELS THROUGH SCOTLAND,

WITH HIS

REMARKS ON THE COUNTRY,

AND

OBSERVATIONS ON THE IMPROVEMENT OF AGRICULTURE.

LIKEWISE

SUGGESTIONS

FOR THE

IMPROVEMENT OF FARM STOCKING, AND EFFECTUAL CURES FOR THE DISEASES OF CATTLE, SHEEP, AND HORSES.

By P. FINLAYSON.

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INTRODUCTION.

A cook desired to make a dinner, of which a great number is to partake, is at a loss how to prepare it; some will be for it plain, and some will be for it high flavoured; each according to their particular taste:—so that the cook may say to himself, It is impossible for me to please you all.

A number of subscribers encouraged me to prepare the following pages for publication. I have done so to the best of my humble ability; but cannot flatter myself that the task has been accomplished in such a manner as to give satisfaction to all. It would be presumption in me to hope to gratify the refined taste of the present day. Indeed this was not my object, even had it been within my reach.

My desire is to bring the result of actual observation to bear upon practical utility; and if this be realized, I am persuaded my readers will lose sight of the style in which my Remarks are served up, and feel that a good rough bone is better than a *dish of trifle.*

REMARKS

ON THE

SITUATION, SOIL, AGRICULTURE, &c.

OF

VARIOUS COUNTIES IN SCOTLAND.

CAITHNESS occupies the north east corner of Scotland, and is bounded on the north and east, by the German Ocean, and Pentland Frith; on the west and south-west, by Sutherland; and on the south, terminating in a rocky hill, called the Ord, the form of the two points, Duncansbay Head, and St John's Head, which stretch into the sea like a pair of horns. The ground is full of morasses, and the climate rainy and boisterous. It is but thinly peopled, and the common people in a very servile state. Its principal towns are Thurso and Wick. They have now a communication to the south of England by the mail coach; and I know no country more capable of improvement than Caithness; for the sea goes almost round the arable land. They have likewise marl and sea sand. Some of the farmers told me it

was equal to lime for some of the land. Some of the gentlemen have recently commenced extensive improvements. The inland is mostly of a good soil. I saw near Thurso good wheat. The people seem to be docile, and hospitable with what they have.

Few of the people have leases of the land that they occupy. On that account, they cannot improve their farms. They told me, each man in Caithness, on what they called Reek, pays to the landlord a hen, and two dozen of eggs; and if the landlord leaves the country, they convert that into money, and when he returns, he must have the hen and eggs; and likewise the money is not taken off. The poor man told me he had paid it three times; and if he refuses to pay, the factor will say, Go about your business to the hill, or where you please. No wonder though people emigrate from Caithness. They complain much against their factors.

On my travels through Caithness, I did not call on a factor but one, and he seemed to be brought up on a three-footed stool at a desk, and knew nothing of land or farming. There is no doubt these three-footed-stool gentlemen know how to oppress even a thrifty and laborious tenant. They can keep the tenant strictly to the last article of his lease, and likewise charge, sequestrate, and protest; and when they have peeled the farmer, set him off to the hill, as naked as a clipped sheep. But there are some feeling factors to be got. I knew a Mr Graham of Orchill,

factor for the Duke of Montrose. When he commenced, the tenants were mostly all rack-rented. The Duke was for him to sequestrate, and make them pay up. Says the factor, we will have patience, till I see what I can do with them this year; and in the course of three years, every man was forward with his rent on the rental day. After that, a number of years, the Duke would have him to raise their rents. Well, says he, I got your tenants, when I came to manage your estate, all rack-rented; and now, by my quiet, easy management, have brought them all forward, and not one shilling due you; and before I put one shilling more on the tenants, I will rather throw down the books, and never more lift them again. He did so, and went off to his estate at Orchill. But still there are factors to be got like him, only they are scarce. It were good for the country, that gentlemen would choose judicious factors, that are skilled in land and climate, and know something of what an acre of ground would produce. They could judge then, betwixt master and tenant, and the landlord would get his rents better paid; and well paid rents make a rich and comfortable landlord. Were a regardless, or a joint band of lawless people, to rise up in the country, every body knows it would be against the great ones; and who is to support them but the tenants? and do you think that an oppressed tenant, with a rack rent, and the snarls of a domineering factor, will support their master? No; they will rather add fuel to

the flame. Not to speak of the burgh-towns or villages, the labouring people in the country do not know what to put their hand to, and are like to starve, even in the midst of plenty. Labourers conversing two and three of them together, with wrinkled faces, and not a smile on their countenance, saying they had not wrought a turn for two months, and some saying four months: but their neighbours will help them, or their families would starve. Where does this come from but from the high ones, and reaches down to the lowest class of the people? Landlords in general! let down your land rents according to the times, and every tenant and peasant will live, and God will bless you; for it is not by the oppression of others that you will become truly rich.

Sir George Sinclair has a good estate about seven miles from Johnny Groat's old habitation. Johnny Groat's house is almost extinct; and there was always a Johnny Groat on that spot till of late. But the factor has now put out the Groats, and one Begbie is in Johnny Groat's old farm. The people in the neighbourhood were not pleased at the factor for putting the Groats out, as they were good neighbours. Likewise, they were afraid, that when people would hear that the Groats were all gone, they would not come to see Johnny Groat's house; for people came from the south of England to see it, and left money always in the country. Johnny Groat's house is about forty yards from the sea, on a level or plain spot of ground, and a neat green before

the house, and a gentle descent about seven feet down to a beautiful green reaching to the sea. It was on this green where Johny combed his family's heads each Sabbath. There was an old man told me that he had seven sons; and it is mostly the fashion in Caithness, for the people and cattle to come in and out at one door; so old Johny thought it below him, or too mean for his old son to go out and in at the byre door, so he made a door for himself. But there had risen some schism in the family, and to keep peace among them, he made seven doors in the house, and each son had one; and the old son sat at one end of the table, and the father at the other. All this did not give satisfaction to the rest; and to make them all agreeable, he made a table with seven corners at it; then each son had his corner. Old Johny sat in a hollow cut out for himself, and told them to be good, obedient sons, and they ought to bow and obey him, and he would make them live comfortably.

I heard no Gaelic, or Earse, in Caithness. They seem to be a quiet, peaceable people; but I suppose they are kept much in servitude. Their living or common food, is mostly potatoes and fish. Round the coast they are all employed in fishing.

The horses in Caithness are mostly of a small breed, and cannot do much work. They are kept lean and poor. By appearance, they had not got corn betwixt the one end of the year and the other, if it be not a stolen bit when the corn

is green on the ground. The people are very agreeable. In the small farms, two of them join and yoke their ploughs together; and when they sow their corn, each man covers or harrows his ground, perhaps with a cow, or a two-years-old stot. When a farm has work for two pair of horses, they are of a pretty good size, and seem to be not badly kept. There is no doubt but there could be a good improvement on the breed of cattle in Caithness, by getting into the country, a few proper bulls, and of a larger bone, and give their turnips to the young stock. In that case, they could sell them at an advanced price. I have seen in bad times, even in the south markets, they were hardly saleable. But cattle of a good stamp always find merchants; and as the farms are small, it is burdensome for small farmers to keep a good bull for a few cows. Therefore, it would do good to the country, if the landlord would buy a few good bulls, and let their tenants get a proper breed off them, till the country got into a proper stock. By such an improvement, the farmer would be enabled to pay his rent with less difficulty, and likewise enrich the country.

The first improvement to a country is good roads. By such means the ground is improved; and land improvements and stock should be carried out together.

Sutherland extends from the Ord to the north west, having the Northern Ocean on the north, the shire of Ross on the south, and the German Ocean on the east. It is a mountainous country,

abounding in cattle and sheep, mostly of the white faced or Cheviot breed. Its general divisions are Strathnavern and Sutherland. The principal towns are Tongue and Dornoch. The Duchess of Sutherland is proprietor of the whole county, except a small estate; and no doubt it is one eye-sore, that she has not that small bit likewise. There are some beautiful farms on the coast, near Dunrobin. Mr Craig has a fine farm, and is farming to perfection. He keeps a regular stock on it, and mostly of the Galloway breed. He is paying particular attention to his stock. It is pleasant to see a stock well managed, even to a traveller passing through the country, besides the profit arising to the farmer. *Helmsdale* is a fishing town, and brings money to the inhabitants. There is little money, or rather there is little trade, but in the few months of fishing. There is at Strathalladale, to the west of Helmsdale, a good pasture for sheep; and some hundreds of families had plenty of milk and meal; this was a nursing place for strong men, where a number of the Sutherland Fencibles got their mother's milk. Now there is nothing but white-faced sheep, and milk for lambs. Only a few shepherd's houses, four and five miles separate.

The road through this strath leads into Lord Reay's country: and as I passed on my way, I called on the Rev. Mr Campbell, the kindest man I think, in all the church of Scotland, and hospiable to all that whole strath, and equally kind

to strangers. When I left Mr Campbell, I came up to a man on the road. The man said it was a warm day. I answered it was. I took out my snuff mull, and gave him a snuff; and he was happy, for he had got none that day before. He said, we can get no snuff nearer than Helmsdale, and it was about sixteen miles from him; so we sat down to rest, as I was a little tired. I asked the man some questions about the country; and of course I asked where he went to hear preaching on Sabbath: to Kildonan, he said; there is none here but it; you would pass it as you came up the road. O yes, said I, I saw it as I came past, and called on your minister; he seems to be a fine man. He is so; very fine, said he. I said, I see but few houses here, only shepherd's houses, about four or five miles from one another. Your minister will have but few people to preach to on Sabbath. Indeed, man, he has but few. I was one day in the church, and there was only twenty people, and twenty-one dogs. I said Mr Campbell would be at a difficulty how to address his congregation, for sometimes the dogs are unruly; and, says he, the dogs come regularly with the shepherds, and they know one another. The strath was all dispeopled some years ago, by a factor of the Duchess of Sutherland. The Duchess was ignorant of it at the time, as I have been told; and there was great cruelty used in putting out the old inhabitants; and they had to emigrate to America, and foreign countries. I heard that the factor was tried by a jury at Inverness; but

he cleared himself, because he had the sheriff warrant to do so; but the sheriff was broken. The Duchess is sympathising, hospitable, and good to all poor people, and wishes all people to live comfortably in the shire, and has been making some abatement of rents to her little tenants. It is expected at the end of the present leases, she will let it out in smaller farms; for she was very sorry her old tenants were all gone. There are a few farmers improving well in Sutherland. It is mostly a hard, bare, sandy soil, and I do not think it will pay the farmer well. Dornoch is the county town, one of the meanest of the Scotch burghs, although once the residence of the bishop of Sutherland and Caithness. Dornoch has no harbour, nor does its trade require any.

ON SOWING.

The preferable method of sowing oats, and especially in clay soil, is to turn the field over after harvest, and to lay it open to the influences of frost and air, which lessens the tenacity of the clay, and reduces it to a fine mould. The surface soil, by this means, is finely mellowed for the reception of the seed, which it would be a pity to bury by a second ploughing, before sowing. We are taught by experience, that this soil ploughed before winter, is sooner dry, than when the ploughing is delayed till spring: and as early sowing is a great advantage, any objection on account of the superficial crusting, is easily reme-

died by a strong harrow, which would produce abundance of mould for covering the seed. For potatoes or turnips, spring culture is considered necessary. But the practice of spring sowing, without ploughing, has been applied on strong land, in some parts of the country, with great advantage; and the oat crop thus sown upon a retentive clay, will be a fortnight earlier than that sown upon a spring ploughing. It is said, that Finlayson's scarifier, and Wilkie's new invented scufling harrow, are improvements upon the grubber. It is likewise observed, that in fine free soils, the scarifier enables the ear to pass two or three inches below the surface of the soil. An experiment on the effects of scarifying, compared with spring ploughing, was tried in spring three years ago, in the south of Scotland, on a field of an enterprising farmer, Robert Roberts of Gorewell. He had a field of about forty acres of flint loam, under a crop of broad cast turnip, eaten off by sheep. Not being able to plough the whole field in time for a crop, he got a scarifier, and used it at the rate of twelve acres a day, followed by the sower and the harrow. Four acres were ploughed, and the rest were scarified. The crop was oats; and the scarified part was greatly superior to the ploughed, in the proportion of one third. In regard to crops of wheat sown before winter, an idea has become prevalent, that too much harrowing is detrimental. When the surface is rendered too fine and smooth, the plants are apt to be thrown out.

It is proper to observe, that to a certain extent, the greater number of harrows attached under the same yoke, the more work in proportion will be done, and of course the cheaper it will be executed. A driver with one horse and one harrow, makes an extremely thriftless operation. Two horses and two harrows are better. But three is the best mode of any, for more than three it is very difficult to manage. The reason why two harrows are better in proportion than one, and three than two, is, that a small piece of land, at the extreme corners of the space covered by the harrows, is insufficiently done, and must be over-leaped the next time the harrows go round. This piece is to the same extent when a single harrow is used, as when two or three are yoked together. Thus, when one harrow is yoked by itself, it will not sufficiently harrow more than two feet and a half; but two harrows together will harrow six feet, and three will harrow ten feet and a half equally well. Each harrow after the first, adds four feet to the space properly harrowed. Hence, three harrows in a set are better than four separately, besides only requiring one driver instead of four. Mr Cocke cuts down his wheat very early, even when the ear and stem are greenish, and the grain not hard. He says that the wheat thus early reaped, is always his best sample, and he gets 2s. a quarter for it more than for wheat cut in a more mature state. I think Mr Cocke must have some enchanting art, when he can sell greenish wheat at a higher price than well-riped grain.

Ross has Sutherland on the north; is bounded by the North Sea on the east and west, and Inverness on the south. Its principal towns are Tain, Dingwall, Fortrose, and Rosemarkie. Its general divisions are Assynt, Ardross, and Glenelg. More particularly, it contains Easter and Wester Ross, the isles of Lochbroom, Lewis, Locharron, Ardmeanach, Redcastle, Ferintosh, Strathpafer, and Ferndonald. It is a mountainous country, but with many fertile spots interspersed, being in general moorish, similar to Sutherland. Cromarty may be properly called a part of Ross, being bounded on all sides by the shire, except on the east by the Murray frith. It is very fertile in grain, and produces plenty of black cattle. It is strewed with several seats up and down. Its coast abounds with fish of different kinds.

The low part of Ross has a good soil, and good climate; produces excellent wheat, said to be equal to the wheat in the Lothians. A miller told me the one half of the low Ross was cropt with wheat. I saw their land was clapped, and they will soon run themselves out of a crop. There was a farmer told me, if he had five bolls per acre, he would be thankful. I told him he would be better with barley, but he said he would not get it sold. I told him the wheat and turnip crops would soon put the farmer out of a crop, for he was skinning the face of his farm, whereas he ought to plough it four or five inches deeper, and bring up new soil, and it would be manure

to his land. To the eastward of Tain is a poor soil, and the farmer completely rack-rented: but round Easter Ross, to Cromarty, is a mixture of clay and a loamy soil, of an excellent quality, and well farmed, and some good stock of cattle and horses. The people are something different from those of Sutherland and Caithness; more refined than the people in Caithness, and their dress more uniform: but they seem to be an obliging people, and kind to strangers. Strathpafer mineral wells lie a few miles west from Buley, where there is every convenience, and a beautiful country; the climate adapted for health. Mr Dudgeon is farming to great perfection, and raises a good quantity of dung by feeding cattle. He was the first man that sent cattle from that country in ships, to London. He does not fear sea nor land; for he entered into a law-suit with his minister, and conquered him, and took L.200 off him; and very few get the better of ministers at law.

Eddertown borders with the parish of Tain westward, on the frith of Dornoch. The black cattle roaming over the pasturage of the distant hills, repair to feed upon the sea-weed of the shore, on the ebbing of every tide, which, through all its variations, they know with an unerring certainty. *Kincardine* is shared by the counties of Cromarty and Ross; the church is seven miles westward from Tain, the parish of Eddertown intervening. The ferry of Bonar, near the termination of the gulf in this parish, is in the track

of the cattle drovers from Caithness and part of Sutherland, by Dingwall. The cattle swim across the ferry. Were bridges built and the road formed in this track, all the frith would be coasted round without danger of delay. Very remote from the sea, strata of marine shells are found, and in some places under a thick surface of earth. Between Kilmore and Murray frith is situated Negg, having Cromarty Bay on the western side; and the road from Cromarty to Tain, passes through the parish. This parish is well cultivated. It is ornamented by the seat of Bayfield. The parish of Cromarty, with a wing only of its neighbour Kirkmichael, may be regarded as the whole of the county. The other component parts may be ranked as its colonies. It is separated from the Negg by the frith. The village of Cromarty is clean and neatly built, with a commodious harbour. Kirkmichael occupies the whole breadth of the peninsula between the Murray frith and Cromarty bay, stretching to the westward about eight miles. A considerable proportion adjoining to the parish of Cromarty, appertains to that county; a great part also belongs to the county of Ross. *Rosemarkie* borders on the southern quarters of Kirkmichael. The church is on a plain under the hill, on the shore opposite to Fort-George. The cathedral of the diocese of Ross was in the town of Fort-Rose. One of the aisles remains, with some modern monuments well executed. Fort-Rose, of which the village, or Rosemarkie, may

be deemed the suburbs, boasts an antiquity so great as Alexander II. *Urquhart* is situated on the southern end of the frith of Cromarty, and partly on the banks of the river Conon, in which the frith has its termination. It skirts backward on the borders of Belernan and Knockbain. Ferintosh, a part of the estate of Cullodden, is in this parish. The people in this district abused the privilege of using barley, the growth of their own land, free from the duties of excise. This boon of government was resumed, for a liberal compensation to the proprietor. Distillation, about twelve years ago, was the common trade in the country, and money at that time was plenty in poor men's hands; but now they cannot get it by distilling, nor employment otherwise; and, I am of opinion, it is good for the people that it is cut up. To the westward of Urquhart, Uray spreads into a plain, from the river Beuley to the common, through a beautiful wooded plain, with a dry soil and temperate clime; retains agriculture of the Highlands, and exhibits brown cattle, and is decorated by the princely mansion of Lord Seaforth. *Conton* borders on the westward of Uray. So great a proportion of it is included betwixt the river and the Raasay, and they are so nearly conjoined, by the streams and lakes in the valleys westward among the hills, that the epithet of Islands is generally added to the name of the parish. There is a celebrated echo near the lake of Kinellan, which has been so much a warren as to allow

access to a great soil of marle. *Glenshiel* is the most southerly parish of the county of the western coast. It lies along the north-west shore of the gulf of Loch-Duich. The road from Fort-Augustus to Bernara, passes through a part of its extent, and Shiel-Inn offers all accommodation. The principal occupation is pasturage and fishing. *Lochalsh* is situated on the shore of the Northern Sea, which intervenes between the islands of Great Britain and Skye. It is environed on the south by the bay of Loch-Duich and Loch-Long; its circumstances in general are similar to those of Glenshiel. *Kinteal* is separated from Loch-Alsh by the gulf of Loch-Long, by which it is protected on the north. The road which leads into this district, is conducted through Strathglass, in the parish of Kilmorack. The extent of the inhabited district is nearly twenty miles. The road is circuitous and steep; and in some places almost impassable. *Dingwall*, bordering on the east of Fodderty, is of small extent. It is a neat little town. The remains of the castle of the ancient earls of Ross, once the most powerful of the nobles of the north, is still to be traced. A slender disproportioned obelisk somehow exciting apprehension of its fall, marks the burying-ground of the earls of Cromarty. The soil around the town is delightful. *Inverness-shire* has part of Ross and Murray frith on the north, Argyle on the south, Perth on the south-east, Nairn, Banff, and Aberdeen on the east, and the sea on the west. It contains Aird,

Strathglass, Skye, Harras, Badenoch, Lochaber, and Glenmorison. The principal towns are Inverness, Inverlochy, and Fort-Augustus. In general, it is a bleak mountainous country; but the northern part is well cultivated and fertile. Between Inverness and Fort-George, the Earl of Murray has a track of good farms with good onsteads and well farmed, but they are still inferior in stock. Mr M'Tavish on Beuley side had four ewes that had twenty-two lambs within fourteen months, and they were all uncommonly beautiful.

It is a beautiful country from Inverness to Beuley, with some excellent farms; and as well farmed as any part in the south; some good horses also, and good stocks of cattle, but not large in the bone. I saw, near Beuley, in some of the glens, the people carrying off dung, from Beuley, in carts, and not one ounce of iron about all the car or cart; they call them cars in that place. They had a kreel made something like a mill-hopper, only it was round, and sat betwixt the axle-tree and a sheath, and when they turned or couped up the car, the kreel came out with the dung, and they lifted up the kreel, and set it in its place, and off they went. The kreel would hold about two barrowful of dung. They are a contented happy people, and uncommonly so if you had given them snuff. In Strathalladale the women carry the dung to the land, and the men fill it into a kreel something like a fish-kreel, and lift it on the women's backs; and when at the

land, the women stoop down, and turn all over, and return with their empty kreels, singing a highland pibroch. Fort-George is about twelve miles from Inverness; and there is a most excellent road to Campbelton along the coast to Fort-George. This county is one of the most extensive in the kingdom; the greatest length from east to west being eighty miles, and its breadth about fifty. In the east side of the county agriculture is carried on with as much skill and success as in many parts of Scotland. But in the interior, and on the western coast, it languishes under the obstructions of soil and climate. Along the whole of the western coast, the climate is much more rainy than on the eastern side of the land; it is seldom fair weather there with western winds. They do not depend much on their crops. There are some of the people who have drying-houses for the crop, to secure it from the uncommon heavy rains that fall in harvest; and when hung on pins and sticks a few days, then they will stack it, and make way for more of another field. The crops, in a great degree, are uncertain. The exports of the county may be enumerated as follow: Cattle, wool, corn, the skins of goats, deer, roe, fox, hares, and rabbits; salmon, herrings, some dry and some salted fish; some fir timber, with the labours of the hemp and thread manufacturers, and a small amount of tanned leather from the town of Inverness. The spinning of flax and wool is the occupation of women in the winter; a small pro-

portion of the wool is manufactured in the coarse home-spun stuffs. The management of black cattle and sheep, but especially the former, is the principal employment of the inhabitants.

Though the Gaelic is the language of the country, very good English is spoken in the town of Inverness and its neighbourhood, and also in the vicinity of the forts. The districts of Badenoch, Lochaber, and the Isle of Skye, and some smaller islands, are comprehended in this shire. From the nature of the country, it also divides itself into smaller districts or glens, as they are called, separated by mountains, such as Glen-Gary, Glen-Morison, Glen-Elg, and several others. The parishes of this county are certainly by much the most extensive in Scotland, especially those of the islands and highland districts, many exceeding twenty, thirty, and some even upwards of sixty miles in extent. The Isle of Skye, and the islands of Harris, Barra, Eigg, and North and South Uist, &c. are politically situated within this county. On entering Inverness-shire, from the county of Nairn, we meet with the parish of Ardresiar, situated on the Murray frith; in general it is level, yet a great part of its surface lies in its natural state. It contains the village of Campbelton, also the citadel of Fort-George, built upon fifteen acres of a level point, stretching half across the frith; the ramparts on three sides rising almost out of the sea. It would be too tedious to mention every

parish in this county, as I have not room for them; I shall only name a few of them.

Daviot and Dumluchty comprehend twenty-three miles of the river Nairn. The great road from Perth to Inverness passes through this track. Its appearance is not inviting; extensive bare heath, brown tracks of hills, much barren moor, but a good healthy like people, and very generous to strangers. *Alvie* is the lowest parish in the district of Badenoch, it borders on the parish of Duthel, in the county of Moray, it meets with Moy and Dalarossel in the mountainous desart. To avoid it, the high way to Perth is conducted, rather circuitously, through the village of Strathspey. The parish lies on both sides of the Spey. *Laggan* is supposed to be the highest parish in Scotland, above the level of the sea. It lies at the source of the Spey, and from it also receives the Spean, which runs in an opposite direction to the Atlantic ocean. By its traditionary records, it claims the honour of being the burying place of seven of the Caledonian kings. *Kilmanuag* meets with Laggan on its eastern borders, in the mountains which intervene between Badenoch and Lochaber. The river Roy winds through a rugged path. *Kilmalie* is situated in the district of Lochaber. Ben Nevis, the highest mountain in our isle, rears its head to a height which makes it visible almost from shore to shore. *Glen-Elg* is skirted on the east by the mountains of Lochaber. It stretches towards the west along the

sound which separates the islands of Great Britain and Skye. *Kilmorack* stretches almost from the eastern to the western shore, a length of nearly sixty miles. It is supposed to be the most extensive parish in Great Britain. It is on the western side of the Beuley, and comprehends the whole course of that river with its windings. Several objects claim regard in the course of the Beuley: on the wide bend of the river stands Erkles-house, —the wooded seat of the chieftain of the Chisholms. *Kiltarlety* stretches opposite to Kilmure, on the eastern side of the Beuley and Erkles-house. Near to the confluence of the river with the gulf, is Beaufort Castle, the family seat of Fraser of Lovat. *Kirkhill* borders with Kiltarlety, near the influx of the Beuley. Excepting the usage of the Gaelic tongue, it may be regarded as a lowland parish. Wheat, turnip, and grass, enter into its cultivation, and are managed in a manner nothing inferior to the south of Scotland. They are an obliging gentle people, more refined than some of their neighbours, within less than twenty miles of them. *Inverness* stretches along the frith from Kirkhill to Petty, and backwards on both sides of the river of Ness. Among the dwellings of several gentlemen in the county, Cullodden-House and Muritown-House are the most distinguished. This royal burgh is the only town in the county: it is situated on the eastern bank of the river Ness, and has a bridge of seven arches. The town is clean and considerably well built, consisting of

two principal streets running across each other. Beside the sheriff and county courts, the circuit court of the Lords of Justiciary is held for the administration of justice northward of Banffshire. The Academy contains nearly two hundred students, under a rector and four masters, for the different departments of science. It is provided with a philosophical apparatus, a library, commodious class-rooms, and a public-hall; an infirmary has been of late endowed. The trade of Inverness is connected with that of the ports of Cromarty and Findhorn.

Nairn is bounded on the north by the Murray frith, on the west and south by Inverness, and on the east by Elgin. It is likewise mountainous, but has pretty good climate. The principal town is Nairn. The low part is of a light sandy soil. When the summer is dry and warm, they are often short of straw. The cattle are small in the bone; in a dry season are not well off for grass; and are likewise short of water. There are some good old seats on Nairn-water, now let out to good advantage.

Calder is a parish situated chiefly in the county of Nairn, but a small part lies in that of Inverness. A vast quantity of the parish is moor and moss; the soil of the arable part is thin and sharp, but very fertile; the low lands are liable to be overflowed by the river Calder, and the water of the Nairn. Besides this rapid river, Findhorn, abounding with salmon, runs through the upper end of the parish, and is covered with

forests of oak, ash, alder, and other trees. The people seem to be strict in their manners, and pointed in their religious duties.

Auldern, a parish in the county of Nairn, extends four miles along the Murray frith, being in length five and a half miles. The ground rises gradually from the coast to the inland parts of the parish, where it becomes hilly; the soil is generally light and fertile. Loch-Lochy is about a mile in length, and a quarter of a mile broad. The people here, as in many places in the country, manufacture their own clothes, and in general, live comfortably, being all good neighbours to one another, but complaining of rack rents. The land produces good wheat, and early ready for the sickle; but, when the season is warm and dry, short of straw. A great part of Nairnshire is good for green crop; but the people in that country plant but few potatoes in comparison of the south country,—they have no consumpt for them,—and they use but few of them in their families, and eat little flesh. A farmer in the south country, and his family, will eat more than the population of a whole parish; for many hundreds of them will not have flesh in their houses in a whole year. I have known a family, even in Perthshire, that consumed thirty-seven stones of butcher-meat each week, beside fowls, hares, and other beasts of that kind; so, hold off the town of Nairn, I do not know if all the shire will exceed that quantity. In Nairnshire, at Clauch, in the south-east of Nairn, on east side of the

river Findhorn, is a hilly country, in length twelve miles, in breadth seven miles, mostly covered with heath, and a very poor soil; its produce cannot be much mentioned, it is so difficult to get manure. The roads are bad; and there is no lime in it; it is better fitted for rearing a few cattle than any thing else. The inhabitants are well privileged with peat and turf, which the proprietor ought not to prohibit the inhabitants from using. It is a cold, bleak, wet place. If they live well, they cannot say they are in a beautiful situation.

Ardclaugh occupies a good part of the southern quarter of the county. It is spread on both sides of the river Findhorn; it is a hilly track; the shallow soil is much incumbered with stones; the people thrifty.

Calder meets with Aldern and Ardclaugh on the east; its southern quarter is enlivened by the Findhorn; and the river Nairn flows for a short space through its northern side, which spreads into a broad plain, and stretches southward; rises from a hilly track into a lofty mountain. There is a small part of this parish in the county of Inverness.

Cray is situated on the west side of Calder, it is intersected for eight miles by the river of that name; a great part is in the county of Inverness. On Drumossie Moor, near the northern bank of the river, was the last unavailing effort of the house of Stuart to recover the throne which they had so weakly abdicated. There is

little to be seen on the ground of the field of battle, though it is still visited by many. The simple cottagers take care to supply, at a good price, a relic or some fragment of armour, which they pretend they have lately found. Some of the graves of those who fell are easily distinguished by their verdant surface of grass rising among the surrounding heath.

Elgin is bounded on the east by the river Spey; on the west by Nairn and part of Lochaber; on the south by Aberdeen and Badenoch; and on the north, by the Murray frith. This county enjoys a mildness and serenity of climate superior to any other part of Scotland. It is, however, mountainous, and a great part of it better fitted for pasturage than corn; yet, a considerable proportion of Morayshire yields good crops, and has the harvest remarkably early. Its divisions are Moray and Strathspey; the principal towns Elgin and Forres. Some miles below Forres, there is as good land as can be met with in any country, and well farmed, and a very diligent laborious people. The country in general is of a dry soil, and part of the people, resembling the soil and climate,—a little dry haired likewise. There are hills of sand on the estate of Cobon, at the mouth of Findhorn: the people said, they were four or five miles long, but I did not think they were so long. The ground on both sides of them is level, and they are blown up to a great height, and the sand clear and sparkling: it would run through a time glass.

An old man told me they were blown up all in one night, and there was a gentleman's seat there which was all covered by the mountains of sand. Of late the end of one of the mountains was removed by the wind, and the people saw the remains of a smithy, and they got some bodles and other old coins; they likewise saw traces of an orchard, with a branch of an apple tree, which sprouted and produced two or three apples, a few years ago. The people in the north of Sutherland may see the sandy mountains of the Ord which divides Caithness and Sutherland, and they call them the White Hills. They never knew what they were till I told them; they were all sand. They have the appearance at a distance of drab coloured cloth. I do not think the authors of the Histories of Scotland had ever travelled it; for they never mention Findhorn sand mountains. There is likewise a farmer at the end of these mountains whose rent is valued every year: some of his land is covered one year and uncovered the next. I asked if he was not afraid his house would be blown up, as the gentleman's seat was. Says he, "I am sometimes doubtful." He had nothing to rely on, but that he did not play at the ball like them, when he went to the church. He said, they rattled at the ball or knoot always when they went to the church.

Forres is upon a beautiful gentle ascent from Findhorn bridge, and has a pleasing appearance, and is a clean neat town. The ground around

Forres is equal to many places in Scotland; the soil is capable of producing crops of every kind that can be produced in Scotland, and the farmers are farming to perfection in most parts of it. There is a large track of good land between Forres and Elgin; and I do not think they are behind the Lothian farmers for improving their farms, only they have not the command of dung. Indeed the farmers for twenty miles round that part of the country resemble the Lothian farmers a little in manners; they are both possessed of plenty of pride and dignity; yet a most cheerful people, and something intelligent. The way they managed their stock, pleased me very well. They must be long-living people. There is a man there who has seen three centuries; but I will hold him a good bett, he will not see the fourth. As I was passing through the country, and taking a peep of the land below Elgin, the farmers were ploughing the land, and giving it the second fur, as some people term it, for the turnip crop. The ground was of a darkish or blackish colour, mixed with sand, but looked well, till one took it into the hand. I said it was good land, to the farmer. "Oh no," says he, "it is very light soil; when it is a dry season, it takes in the drought, and the crop is very short; and when the season is wet, the water lies in the bottom of the fur, and sours up. It will neither agree with rain nor drought." I said, "You might help it a little by ploughing your ground more than as deep again as you are doing; your

fur is too light; it is greatly against your crop to plough so light as that; and it is likewise against your land. Your plough is cutting among the roots of the grass, and it impoverishes your land, and will cut you out of a crop soon, if you follow hard in croping. Your fur is about five or six inches, whereas I would have it twelve, if I could get it; then, in a dry season, your crop is not so easily burnt, and in a wet one, the rain gets down, and is partly away from the crop; and the new soil you bring up is manure to the old."

It is not my design, neither do I pretend to lay down a proper mode or rule of farming, there having been so many writers on agriculture, and many of them for very little use to the farmer. I allow that farming is far from perfection, and perhaps will never come to it. There have no doubt been great and advantageous improvements made by enterprising agriculturists in this country, even within the last twenty years. But a complete mode and thorough rule cannot be given; therefore the farmer is to learn every year; but I am afraid that improvements or new plans cannot be carried on by the farmer in the present distressing times, or they must be on a very cheap scale. The land in the southern part of Scotland is falling short of the crops it once yielded, and the farmer likewise is falling back; he never gets one shilling retained in his hand, even to keep his farm in the state of good culture it once was. At every term his purse is

drained out to the last farthing; on that account he has nothing to improve his land with; and unless the landlord reduces his rents thirty or forty per cent. he will get his land to improve himself, and he will make but little of that. For I knew a landlord that took his land into his own hand, and he became insolvent before he completed his improvements. Buchanan says, that Moray, from the pleasantness and profit arising from fruit trees, surpasses the other counties in Scotland. This culture has of late been entirely neglected. The best orchards are at present often found about deserted castles and religious houses, nearly as much in decay as the buildings which they surround. Both Fordoun and Buchanan give accounts of the Danes landing in Moray about the year 1008, when Malcom II. marched out against them and was defeated at Forres; and after this they brought over their wives and families, and were in possession of the country for a considerable time. The upper part of this county is commonly called the Brae of Moray. It is mountainous and woody, and abounds in beautiful lakes. The soil, though less uniform than that of Banffshire, is, for the most part, a sandy loam; yet there is a small part of it sandy gravel, and considerable tracks are of very fertile clay, and the most general mould. In the low part of Moray the climate is said to be as warm and dry as any other district in Scotland; in the high quarter, the weather is more mild than in the county of Banff

at the same distance from the shore, the soil not being so cold. Agriculture is carried on with great spirit, and the land in general yields more rent than in the neighbouring counties. I was well pleased with the attention that they paid to their cattle: and no doubt observing men will easily see, that well managed stock will bring in the rack rents equal, if not better, than any commodity they can rear. The sowing of wheat is not so general any where northward of the Grampians, as in Moray. There is little to be said regarding grain, cattle, linen, yarn, and salmon. Woollen stuffs are said to be made to a small extent. The language spoken by the common people of this county, to a stranger, is like that of Aberdeen. They have a sharp and provoking accent. This proceeds chiefly from their not using the long *a* or *o*, but always substituting the short vowels in their place: thus, they pronounce law, *la*,—all, *al*,—close, *clos*; and giving a singular preference to the slender *ee*, instead of moon, they say *meen*,—for spoon, *speen*,—fruit, *freet*,—for pond, *peend*,—and so on. They also substitute *f* for *wh*, as *fat* for what, *futch* for which, &c. And in spring about seed time, I could not understand the people in Aberdeenshire.

Banff or *Banffshire* is bounded on the west by Moray; on the south-west by Badenoch and the Braes of Mar; on the east by the German ocean; and on the north by the Murray frith. The country is pleasant and fertile, abounding with all the

necessaries of life. The divisions are Banff, Strathdover, and Boyne, Euzy, Balveny, Strathdon, and part of Buchan; the principal towns, Banff and Cullen; with a number of small fishing villages on the coast. There are some excellent farms in Banffshire. The farmers have a good taste for cattle; and a trusty, free, good-hearted people. Buchan and Mortlich are improving, and tearing up the ground to the foot of the hills, and sparing no cost or labour. Mr Finlater, factor for Lord Fife, is an encouraging lad, and has some good cattle on his farm. Mr Thomas Geddes has a garden fenced by Nature; it is beautiful; almost fenced by the nicest descent that can be seen. I saw nothing for a natural garden like it in all my travels. Mr Hutchison has all his articles in a good state, and seems to farm well. Mr Wilson, Tochneil distillery, has all articles very neat; Mr Wilson, Nether Bleroch, farms well; Mr Black, Ardoch, has a good stock; but Mr Ridoch beats all the farmers in the place for gardening; while he again is excelled by the school-master in neatness. Mr Renny had the best and fattest bullocks I saw in Banffshire; Mr Mill, Blairshannachy, has the best breeding cows; but there were many of the farm-stocks I did not see; on that account I decline giving any account of them.

Deveron Water seems to be pretty well farmed, likewise pretty well covered with wood; but in Buchan you will not get a carpin in all that great country. Mr Guthrie, Main, is plowing

up ground one would think impossible to crop, and still he has good corn and green crop. Mr Walker, Moonbletan, had the best bull I saw in all Banffshire.

Aberlour, situated on the west part of the county of Banff, is nearly in the form of a wedge, being nine miles long. It lies on the south bank of the river Spey, besides a few more rivers or small burns. The soil is flat and sandy; but towards the south, it is hilly, with a deep clay bottom. The whole is tolerably fertile, and produces good crops.

Invermay has various kinds of soil; and some farms betwixt Invermay and Caswayend, near Huntley, are well managed. This ground seems to produce good crops, and the farmers are industrious in liming their land. The Duke of Gordon is proprietor. The rents are severely high. How can it be otherwise? it is well-stocked with factors, and each must have his corner; and to keep the Duke himself, trustees, and factors snug, no doubt the farmers must exert every nerve in their body, to support such a number of oppressors. Great men in the present age, look upon their tenants as their property, and take no more notice of them than of the horses in their stables, and never come near their farms unless it be to trample down their corn and grass with horses and dogs, and think it below them to mind the concerns of a poor family. There are some great ones in the nation who have not the proper notions of human nature

for the advantages of birth and fortune are merely accidental, and confer no merit. Real dignity is founded in mental qualities, and only to be supported by a decent and irreproachable conduct. They should consider what they got their lands and estates for,—it was not that the great should tread upon the poor, but rather that they should support them. The great have it in their power to plan out ways and means for employment and relief for the poor; and it were well that our great landed gentlemen were of the spirit and humanity of the late Lord Findlater.—He had great pleasure in calling upon his tenants, and conversing with them familiarly about their farms, and other affairs of the country; and by such familiar conversation he behoved to be acquainted with every circumstance in the country, which he did not slight, but went with heart and hand to effect every thing that was good for the country at large. What a benefit is it that he introduced the linen manufactory into the north of Scotland! and his memory will not be forgotten by many thousands. The community around Forres have the greater part of their living by that branch of business; many families, even thousands of them, are employed at this useful branch of business. Without it many would have been in misery, whereas, by such employment, numerous families are genteelly supported, and all looking well, the women making as much wages per week as the men. And the trade does not impair the health of the women,

for the head of the family has a small bit of ground, and when the web is dressed or sleeked, it takes some minutes for to dry, and in the time of it being ready for working, the women go out to the potatoe-hoeing, and the old wife or mother feeds the swine; then they return with diligence to their old employment; and in harvest they cut corn: By such means they live all snug and comfortable.

An experienced farmer in the Lothians, near Musselburgh, Mr George Begrie, at Monkton, has, for a long time practised the feeding of horses with steamed food, consisting of one half potatoes, and the other half Swedish turnips, with the greatest success. The turnips and potatoes are steamed together; one boll of potatoes is put in the bottom of the boiler, above them are about eight hundred-weight of turnips, and then two bolls of potatoes on the top; this fills the boiler, and the turnips being in the middle, they are effectually steamed. No other food is given to the horses but the steamed potatoes and turnips, mixed with a little chaff or corn dust: It has been proved, that farm horses will do their work as well upon this food as upon oats and hay, and they always appear in much better condition. With the addition of some straw, he has maintained his horses in this way for six months, viz. from the 1st of November to the 1st of May. It is ascertained, that the produce of half the extent of land will be sufficient to feed the same number of horses on this plan, that is required when

they are fed on corn and hay. Mr Begrie is also of opinion, that milk cows or black cattle in general, might be fed upon this food, a small portion of salt being mixed with the liquid that flows from the steamed potatoes and turnips, and any small unmarketable greens ground down on purpose to be added to it. This food, he is convinced, would equal any produced by the distillery; and cattle would fatten better in two months when thus fed, than in four as they are usually treated. But they should be tied up in a warm place, and their food given them warm. The apparatus for carrying on this, rises in price, according to its size, and may be had at Gutsmere's old work, at Leith Walk, near Edinburgh. The white yam is the preferable sort, and the potatoes when used should be large. The plan suits all kinds of horses except those used in hunting, or in running in the mail.

If this answers the purpose, as Mr Begrie alleges, it is a pity but such useful improvements were introduced from one end of the kingdom to another. It is well known, that hay or straw will go much farther when cut, than when put before the animals as it comes from the threshing-machine or the flail. If a horse is compelled to cut these articles with his teeth, the labour requires an exertion of strength; and the time it requires diminishes what might be devoted to rest and sleep. It is now pretty generally admitted, that the saliva from the mouth is not essential for promoting digestion, that important

operation being performed chiefly from the gastric juice in the stomach; if, therefore, the nourishment is put into the stomach in a state fit for the gastric juice to act upon, whether performed by machinery without, or within by the teeth, is immaterial. Undoubtedly it appears that machinery for cutting hay or straw is highly beneficial; and it is perfectly adequate to crush the corn given to horses, whether beans or oats, particularly the former, which becomes extremely hard when long kept; and by these means the horse gets the whole benefit and substance of them. It is likewise an additional improvement to prepare the food of our domestic animals by cookery. Steamed potatoes are of use by preventing affections of the skin, from which so many horses have been nearly killed; and those who have tried steamed chaff and potatoes, or given their horses mash of boiled barley, should be induced to give up these practices. Indeed barley in a raw state is preferred to oats; and in the south country, that species called *beer* or *bigg* is usually given them; and, with it, they thrive as well, and, it is said, can go through as much labour, as when fed on oats. When oats therefore, are dear, and barley cheap, it may be worth while to give horses alternate feeds of each. On the whole these hints are submitted to the farmer, or whoever inclines to prefer the practice.

Aberdeenshire is bounded on the south by the river Dee, and the Grampian mountains; by

parts of Moray on the north; the German Ocean on the east; and the river Deveron, and part of Badenoch on the west. The country in general is fertile, and affords plenty of both arable and pasture ground. The divisions are Mar, Buchan, Geroch, and Strathbogie; and the principal towns are Old and New Aberdeen, Frazerburgh, Peterhead, Kintore, Inverary, and Old Meldrum. Aberdeen is the third town in Scotland for size, and greatly improved within these ten years, and is a flourishing town at present. There are people in it from all quarters in the United Kingdom. It is said, if one travels or passes through Aberdeen without trick, he may travel over all Scotland without trick. But that character does not belong to the people of the county of Aberdeen. They are such people as I never can forget—a free, hospitable people in general; and those of Buchan excel all people I know of; for if a traveller calls or raps at the door, he hears a shout from the fireside, "come in;" and if one goes in, "set in our a chair; sit down if you please, Sir;" then a bottle of ale or beer is brought, and the cork drawn; "help yourself, Sir, you will be dry travelling." If the traveller says, "not very dry," then, perhaps, a dozen of cakes, and a large cheese; "take a peace, and don't spare it." Travellers have sometimes as much need to eat as to drink; and if one be sparing of the ale, "O perhaps you don't like it; would you choose milk?" I was, in short,

ashamed of the kindness. In Aberdeen and Banffshires, are the freest people I ever met with in Scotland—an industrious, thrifty people.

But I cannot give that large track of land called Buchan, such a character as I have heard of it. There is a vast deal of it a poor, thin, bare soil; and likewise part of it red till or clay, unfit for corn, or green crop. There is not a tree in it to shelter a bird, which is greatly against the look of the country. Good shelter helps to feed the ground.

The farms in general, in the north country, are very badly planned, not contiguous to the farm steading at all. Many of the farms are in a complete hotch-potch. Were they not a docile, sweet people, they would be on one another's ears continually. There could be a great improvement made on that grand country called Buchan. By Auchterless, and round a number of parishes, there are thousands upon thousands of acres of land that could be improved to good advantage, were the landlords to give out their waste lands to people at a moderate rate. Twenty years of a lease, without rent at all, would enable poor people to improve; and at the end of the lease it would be worth something: whereas at present, the landlord is getting nothing, and never will in the state it now stands. If gentlemen would advertise it, they would see a number of people would be for it. Yet I think it would be encouraging, if gentlemen would give wood to put up the houses. In these times, when labouring peo-

ple are not employed, it would be a mean to keep even some from a bad turn, and great numbers from emigrating to other countries. It would put another face on Buchan. It is surprising what these small people would do in a short time; for they are always carrying home, and taking nothing away. I am very unfit, and likewise I do not intend, to give out plans how gentlemen should manage their estates; but a small hint may be useful, and cause some men to see with an eye they never saw with before. Were the country cut off in such lots or farms, for farmers, they would be better improved, and the country beautified. At present, there are many places where some riggs are drawn out six or eight yards longer than their neighbours, when the farmer sees where it will produce a few sheaves, and has one rigg short, and another long; whereas if it were squared off by some regulation, and parked or fenced, the farmer would not leave one uncultivated fall within his park; where stone dikes can be found conveniently, they are preferable. Ditches and hedges may be a good substitute; and if thorns or birch will not grow, I am certain whins will; and I have seen a good fence of whins planted on a ditch, and very bieldy for cattle. This is just the time for landlords to fence and improve their estates, when labouring people are easily got. Landlords would not only be doing good to themselves, but would be doing good to the country at large; and those destitute people who have no employment at pre-

sent, would not forget them in their prayers; and it perhaps would be a mean of causing blessings from on high, to be poured out on them and their offspring.

Captain Grant, Eden, near Banff, is improving greatly, and I hope will shew an example to his neighbours. He is offering to provide stones, and build, if his tenants would carry the stones, which, I hope, on their getting a new lease, they will agree to. If Captain Grant will give his tenants an equal bargain, according to the present times, the tenants will not repent the driving of the stones, and Captain Grant to be at the expence of building; only the tenants ought to have twenty-one years of a lease. By his proposals, I consider him to be an encouraging gentleman, and deserving of praise.

Gordon Hall is improving a large park of old fir wood, upwards of forty acres, and trenching it. He is employing a number of people in leveling it, and putting it into a delightful state. Each acre before was not worth half-a-crown, and now it is of more value than eight half crowns per acre, each year. There are many hundred such spots in the north country, which, were they improved, would turn out to good account to the proprietor, and be useful to the inhabitants. The noblemen and landlords in the north country, have too much land in one man's hand; and while this is the case, they will not think of improvements; and till the law of entail be broken up, there will be but little improve-

ment carried on by great men. They have too much to do at London, France, and foreign kingdoms, and have no time to look after matters in their own country.

That law of insurance or entail to the heir, has done much harm. I knew a landed gentleman in Perthshire, whose estate was entailed to the male heir. He had females, but no males of his own body; but no doubt he knew the estate would fall back to Lord Duncan; and to provide for his female offspring, he borrowed money wherever he could find it. Common people thought their money very sure with such a gentleman; and what they had gathered together with hard labour and industry, they deposited in this fine gentleman's hand, and there it lay, and they have not seen it yet.

I stopped two nights with a farmer near Gordon hall, and was well used. He had but one only daughter, an amiable young woman, well disposed. Her disposition was superior to many of the present age. Mr Wilson near Kleat, has a taste for a good stock, but he has not come at it yet. There are many in the north of Scotland, who are very far inferior to some near Kleat. The place called the Geroch, is a fine corn country. The inhabitants seem to be an enterprising people, and full of schemes. None of the farmers have large granaries; and in this country the farmer must put up his houses or want; and to save them from building granaries, they will put from sixty to eighty bolls in the heart of a stack

of corn. They told me that no vermin could touch it. They generally keep old stacks, till one crop forces the other out of its way. There has no farmer gained any thing by that, since Buonaparte sheathed his dirk sword. In the Lothians, where they have every accommodation for keeping up their grain, as they have granaries to any extent the farm needs; yet they sell off always when thrashed, or get it conveniently ready for market. A farmer often loses by keeping up; and so he should. If keeping up was always to the advantage, people's hearts are insatiable; them that could, would monopolize, and keep up to the starvation of the poor. At the end of last century, and beginning of this, we had a dearth—the meal 3s. 6d. a-peck, and more in some parts. It was at 5s. for a short time, in Alloa. At that time the five shilling notes were plenty; and in the south country there was no good meal to be got. We had nothing but rye and white peas, which were brought from other parts. I remember of a farmer near Down, who had some good country meal; and there was a woman that went from Dumblane, to get a peck of his good meal, and when she got the meal in her bag, gave him a five shilling note. He said, that is just the thing. It was considered to be too much by all but himself; and when any bargain was settled agreeable to the parties, they had a by-word, as we call it, and said, "that is just the thing, like Watty Dun's peck of meal for a five shilling note." So I may say it is not this world's

goods that will satisfy the heart of any ambitious man; for even after having abundance, his heart is like the barren womb, or horse leech, still crying, Give, give.

In Buchan they have mostly a good stock, and I believe they are well pleased with them; but as I heard a good judge say, there is too much day-light below them. Were they to get bulls from Argyleshire, and cross their breed, they would find it a good improvement. They would get a good bull there from fifty to sixty stones weight, which, by good keeping, could be raised to a greater weight, and by such means, they would produce a more healthy stock, and be easier kept. I do not despise Buchan cattle, but still I say they are light in the belly.

There are a number of farmers in Aberdeen and Banffshires, who keep turnip from their young stock after harvest, till about the month of February. By such usage, their cattle lose three or four months growth. Last spring I saw them throwing in cartfuls before their young stock, when the growth was on the turnip not less than two feet long; and their cattle was spotting and rushing off, and clapping up in the belly, so that a man with long fingers could almost span some of them. Cattle ought never to fall back. They ought always to be kept clean and sleep in the skin, and never let the shape of the tongue be off their back: when it is not seen, there is no great sign of thriving. Indeed, taking the north country at large, they rear too

many cattle. Were they to breed even a fourth part less, or fewer each year, they would find it an advantage. Give three the same usage you give five, which you will say is a great difference, or keep the same cattle till three years old, and I will hold, that the small number puts more money in the purse than the large; and I am sure you will have less trouble, and more pleasure looking at them, and likewise fewer deaths. In short, look at the matter with an impartial eye, and without doubt you will adopt the one, and give up the other. But I may say, there are some people that will not be put off their old system, although every thing were made perfectly clear. This is my old number, and we have as much grass this year as we formerly had. I am persuaded, that before some people would kill a calf, they would almost kill a man, though he were of a respectable character. There was a woman in Badenoch, and her cow calved; but she could not want the cow's milk for her family, and she offered her calf to a farmer. He said he did not think he would have grass for it, and likewise, he could not spare milk for her calf. I said, Honest woman, go home and kill your calf; that is the best way for you. She got in a passion at me, for proposing to kill her calf, and said it would be a sin to kill it. Well, says I, honest woman, there are many such sins committed in the south country, for they kill more than the half of them. She said they were murderers of cattle in the south country. I said, if

the south country people did not buy from you in the north country, and kill and eat, you would not get your rents paid at all; for you kill none yourselves to eat. We do not get cow's flesh to eat, said she, but we get old ewe's flesh. We kill some of them about Martinmas, and have a piece in our pot on the winter term. But I have some friends near Aberdeen, in Buchan, who will not have a piece flesh in the pot from christmas till christmas again, said I. They will be poor people, she said. No, said I, they are good farmers.

I think it would be an advantage for a farmer, to feed off an old cow. I am certain she will not bring much in the market to help the rent; and by using her in your family, you save more than her value of butter and cheese, and likewise part of meal. By doing so, you would not glut the cattle market so much; for it is not long since your cattle was mostly unsaleable; and there has been a good sale for stock of every kind this year, which makes Scotland in general to rejoice; but they may soon fall back again. You use green kail very much in the north country; and a piece good, well fed cow or ox, salted into a close well hooped barrel, and laid into the goodwife's hand, she could slip in a useful bit into the pot, which would cause the kail slip down the throat more easily, and likewise they would be more nourishing for the eater. It is long since I heard of the

"Green kail in Aberdeen,
Castocks in Straboggie,
Every lad has got his lass,
And Jenny's gotten Geordie.
He threw her our amang the kreels,
And barr'd the door we baith his heels;
And that's the reel o' Boggie."

I was much surprised, when I was taking my tour away to the north country. I came in by Dundee, Angus, and the Mearns. In all the south, there are hams hanging in every farmer's kitchen, six or eight, and some tongue; and when I past Stonehaven in the north, there was sometimes nothing to be seen, even in a farmer's kitchen, but only herring and half a haddock: and good, strong, stout, well disposed people in that district. In Lochaber are the strongest and hardiest men that I saw in all the north country; but I do not think they labour hard. As the old wife said, they are meat like, and claith like. Their clothes are all of their own manufacture. Each family spins and dyes it, and it makes a very comfortable dress; and whatever money comes into the country, is kept in it, except the gentlemen run off with their rents. And they have little or no occasion to put away money, as they have no law suits; the justice of the peace, and baron bailies settle all differences among them. If we in the low country were as wise, the notary publics would be forced to sell their pens. Many a man in opulent circumstances, they have brought to misery. I have felt the

weight of their hand; and well may the word of truth be mentioned, or held up to their eye; "Woe be to you lawyers, for ye lay on heavy burdens on men's shoulders, and will not so much as touch them with one of your fingers."

I was even better pleased with Alford stock, than with that grand stock of Buchan. The farmers in Alford pay particular attention to their stock; and I am certain they will pay them well. Horse and cattle are both well managed. I may say, in short, they are good farmers; and likewise a gentle, good, civil people. I do not pretend to dictate a mode of farming; but I judge it not good farming, to put the horses on the sown grass, nor on any grass; but it is almost the universal practice in Aberdeenshire and Banff, I saw. There is not such a practice even in Rossshire, or in Caithness; nor is such a thing done in all the south country. In the first place, they do not eat the grass clean, but leave parts of it to wither, and that wastes the ground; they tramp it down, so as the second crop will not grow; and more than all, the farmer loses the dung, for dung beat with the sun, is of little use to land. One acre cut and eat in the stable, will feed the same number of horses that two will, and keep them as well; and one acre of good grass eat in the house, with plenty of litter, will nearly dung an acre. All things considered, it must be plain, that it is not good farming; and how many ropes will each horse break and rot in a year? As soon as grass will cut, then take

it and mix it with straw, and keep your horses in the stable. You will find an advantage by it.

I was perfectly well pleased with Alford stock of cattle, and the particular attention paid to them; and if a farmer will not pay his rent with a good stock, he will never do it with a bad one.

The Church of Scotland does not allow a minister to hold two offices. This law is past in the General Assembly at Edinburgh. But when an ambitious member of the church goes an hundred miles north from Edinburgh, and breaks the the law, no man says to him, What doest thou? His itching desire covets a small piece that a poor man could support his family with. But the reverend will have it either by hook or by crook. He then lets the flock wander, and says, "I have goods laid up for many years." But, perhaps, the General Assembly will not consider a minister having two ploughs of land, to be holding two offices. If it were referred to the reverend himself, he would say he only held one. There is, perhaps, a reverend bother that dips a little deeper in the dish. There may be a reverend Alford, Knocando; he perhaps, could yoke five ploughs, and not think shame—three in his own parish, and two below Elgin. His neighbour told me, he took the farmer's farm over his head, at Knocando, and yokes two ploughs on it; and he has two glebes put into one, and that holds another plough in work, which makes five in all.

There is a small church built on the farm of Knocando, by the Seceders; and the late removed

farmer was active in getting it built, and likewise getting preachers to it once every fortnight. All this might be an eye-sore to a parish minister, who, perhaps, has charge of a number of hundreds, to see them going in shoals away from himself, and not getting such good food for their souls as he could bestow. The care he has of his parish, no doubt, would induce him by every means, to get the farm, and then throw down the little church, which he used every effort to accomplish, by attempting to prevent the repair of the building. But he was sadly disappointed when three ministers came and told the workmen to go on with the repairs, till he should lay an interdict or arrestment, and if he did so, to come and tell them, and they would put a pin in his nose that would trouble him to take it out. The honest reverend, no doubt, was galled to the heart; but to avoid trouble, he persisted no farther in the matter, and amused himself by improving his farm.

There was a minister in the south country, whom the patron got pushed into a parish church, but not without some difficulty. He was only a short time settled, when he went to the patron and asked a farm from him. The gentleman said he ought not to have a farm; it did not consist with his office: I have given you a whole parish to farm, and let me see what improvement you will make of it. Were every landed gentleman to do so, there would be fewer reverend farmers.

If ministers will be farmers, let them throw down the pen, and take the plough.

The people in the Highlands of Scotland, in general, and in Ross and Black Isle, are an innocent looking people, and something anxious like in their appearance. Their dress is almost all of their own manufacturing, and neatly made. The young women wear prints on Sabbath, but nearly all uncovered; and their hair is most neatly put up. No art, but all nature. The old women have old-fashioned caps. They answer the head better than straw hats, or bonnets, as they call them in the low country. In Ross-shire, the people are something religious, and have a number of faithful ministers, who keep good order in the parishes. I am of opinion they do not occupy farms. But betwixt Dee water, and Spey water, the ministers occupy farms: and generally they will not preach, or rather read a short discourse, extending to 25 minutes; some 30 minutes; and 35 minutes is a long discourse; and having gone through that heavy task, they clap down in the pulpit like a fore-foughten cock; they then rise up again, and read perhaps sixteen or twenty lines of a psalm; and having sung, they then pray, and conclude the work of the day in public. Then, at the door of the church, the bellman reads *his* sermon, or discourse,—a roup of wood, at such a place, or the whole farm stocking of such a man's farm. Then the shaking of hands for a few minutes, with cheerfulness of countenance, and friendly compliments ex-

pressed partly in English, partly in Gaelic, or Earse.

The Scots in general, are the most civilized people in the world, and likewise the most religious. The civilization of the Scots was commenced chiefly by the example, and excellent disposition of Queen Margaret, who is represented on all sides, as a pattern of piety and politeness. She began by introducing into this country, the offices, furniture, and manners of the more polite nations of Europe. A most infamous custom had been established by Ewen III. who is said to have been nearly cotemporary with our Saviour, —that the king should pass the first night with every noble bride, and the landlord with every bride of his tenants; and this abuse was now become so prevalent, that the authority of the king himself being insufficient to abolish it at once, he was obliged to change the privilege, for that of the bridegroom paying a fine of money to the landlord, which was afterwards long known by the name of the woman's mark. Queen Margaret introduced the practice of saying grace at meals, and of giving a glass of wine, or other liquor, to those who remained at table after the thanksgiving, which thence obtained the name of the grace drink. In this, and other reformations, the queen was assisted by her confessor, Turgot, whose advice she asked originally on the subject. It is complained, however, by some historians, that along with this reformation of manners, the luxuries of the French and English

were imported into the kingdom; and it is said the Scots degenerated from their ancient simplicity of manners, and method of living, and thus lost their former strength and vigour of body.

Malcom having countenanced and encouraged the reformation set on foot by his queen, as much as he could, once more quarrelled with England, on account of Edgar Athling, whose cause he espoused against William Rufus, the natural son of the Conqueror. The war seems to have terminated in favour of the Scots, as the terms of peace were thought to be so dishonourable to the English monarch, that he resolved not to fulfil them. This occasioned a recommencement of hostilities, in which the king of Scotland was killed at the siege of Alnwick Castle, in Northumberland. The Scottish historians relate that the place was reduced to the utmost extremity; and that a certain knight came forth with the keys of the castle on the point of a spear, which he pretended to deliver up to Malcom, but run him through the eye as he advanced to take them; whence, say the same historians, the knight above mentioned had the appellation of Pierce-the-eye, bestowed upon him, and became the founder of the illustrious family of Percy. It were good for Scotland they had a Queen Margaret at present. How many families do I see sit down and partake of God's bountiful mercy and goodness, and rise up again, without asking a blessing, or returning thanks!

Cluney is a parish in Aberdeenshire, situated

between the rivers Dee and Don. Its length may be about ten miles, and its breadth about four miles. It lies very low, and is intersected by many rivulets from the surrounding hills, forming a great deal of meadow ground, which is often overflowed. The soil is warm and dry, even in the low grounds. Agriculture is much attended to, and the crops are productive. The only fuel is peat; formerly they had turf; but gentlemen are now so fond of game, that the inhabitants are prohibited from using turf. The last resort is coals from Aberdeen. Gentlemen cannot keep that from them.

Daviot, a parish in Aberdeenshire, extending nearly five miles in length, and four in breadth. The surface is level, having very little of the parish inclosed. The soil is partly rich fertile loam, and partly strong clay, producing good crops of oats and barley; likewise good turnip. Few potatoes are used in that or the surrounding districts. The potatoe crop failed in many places, last season, and no reason can be given for it; nor do I pretend to assign the cause. But I am of opinion, that it is partly from the dung not being well made, and the drills being filled up with long dung; and the spring being very dry, the drought seized on the field, and there was not moist in the ground to cause it to spring. I examined different spots of potatoes, in various parts of the country; and I looked on the long dung, and where the ground was swampy, they had failed most. You will not get much land, even

in one spot, without some swamps, or some a little damper and stiffer than others, and likewise knotty. Now, if great care be not taken in planting, the drought goes speedily to the bottom of the drill, and the seed moulders away to nothing in a short time. There will nothing of the seed remain but the skin. It will all moulder away in the heart, and the skin will turn like that which is called the "Deel's snuff-mull."

As the crops have been so large, and the straw so long, for some years by-past, the farmer cannot get his dung rotted. On that account, the farmer ought to give his potatoe ground as many furs as he thinks it would need, and do it after harvest; then drill up the spot. Let him fill his drills with long dung, or straw, and cover the drills again, and let it remain in that state till the first of May, or seed time; then open up his drills with the split plough, and it parts the drill equally; then plant the potatoes, and cover them. The dung will be turned back upon the seed; and it is of no consequence whether the dung be above or below the seed. By this method, you will have no blanks, nor rotten seed, if it be not where land is uncommonly wet; and wet land is not good for planting potatoes, or any green crop. The farmer has so much ado now, to get every thing to meet, that man and beast both are hard pressed. And they cannot get their potatoes planted in the proper season. Now, to speed the work, put out the dung any time in winter, and spread it on the ground where you intend to have your

potatoes; plough it down, to keep it from the frost or washing rains; then at seed time, you have no more to do, than drill and plant. And by doing so, you will have as good a crop of potatoes as any way, and less work; and likewise the following crop will be as good, if not better. There is another mode of planting potatoes, which was first introduced in this country; and I am not of the opinion, but it is equal to any of the modern ways. They can be got planted without incumbering any of the rest of the ploughings on the farm. One ploughing will do; and then a man, with a boy, or a young girl, may be employed dibbling and setting the potatoes, and they will plant three acres in six days. There is no call for any more being done, till they be coming through the ground; then dung them equally, and cover them above the dung with earth out of each fur; then, through the summer, work them well with the hoes, and there will be as good a crop as any of the former ways; and by casting up the earth out of the furs, it improves the land, and quickens the soil. And although one may think he is casting up bad earth, still it is quickening the old land that has been wrought for some centuries. It is become as it were dead, and will not produce what it did at first. And likewise, casting up the fur deepens the land. About 20 or 30 years ago, there was not the half of the green crops that are now. At that time, a light or small fur was thought to be best, especially when they ploughed up the old land. All the

reason they had or gave for it, was, that they had more seams of corn. There were some farmers who were so much in favour of it, that they almost ran themselves out of a crop before they would give it up. It is not in favour of the land, so much green crop as is raised now. But the best means I know for it, is to plough deep, and where there is any depth of earth, get a trench plough, and put four horses in it, and tear up a new soil; and though one thinks he is bringing up bad earth, it will quicken the old dead soil, and make it produce, when it would not otherwise. Then one can get a deeper fur afterwards; and in a dry summer the drought does not seize on it so soon; and in a wet or rainy one, it does not choke the crop with weeds; and likewise, where the land is of a stiff soil, the water lies at the bottom of the fur, and when the fur is deep, the water is farther from the roots of the crop, and does not sour up the crop so soon.

I saw a farmer lately, when in the Lothians, trenching with his plough. But I did not approve of it. He had two ploughs going in one fur, with a pair of horses in each, where one plough would have done more than both, and to better purpose. The ploughs were going into one fur, and the last plough could not turn or bring up much earth, because there was little weight of earth on the plough; a small stone caused it to start, and pass some of it altogether; whereas, one strong plough, having a good deep hold of the ground, tears up all that

comes before it, if it be not rock altogether. And it is the better to tear out stones; then you work the land more easily afterwards. No doubt, trenching land is a good improvement in many respects, and if rightly done will prove itself: and the most part of Scotland has need to be at it in some form or other. There are some farmers, when they are working their fallow ground, plough the first fur very ebb; whereas, I would have the first fur as deep as I could get it. One cannot get down, if he does not go down with the first fur; whereas the land is getting all the season of the sun, and you get the better of all the weeds at once; whereas, scraping up every fur, there is part of your land does not get sun at all. In my opinion, the first fur ought to be deep, let the rest be what they will. It is but of late that ground bones were known to be a manure for any crops in this country; and it has been very useful for producing turnips; yet it is often that the seed never tastes the bone dust. There is such a small quantity put into the drill, that if the drill barrow wavers but one inch, the seed misses the manure, and fails of springing, which causes blanks in the crop. But to prevent that, I saw an instrument which has been proven, and said to do well. Take a piece of wood, as long as the space in which you intend three turnips to grow, and have a short pin at the one end of it, to direct the next dibble to be put down in the drill. This piece of wood must have three dibbles—a dibble where each turnip will grow.

Let one woman dibble, another put in the bone dust, another the seed, they will not lose much ground of the driller and his plough.

There is a hill in the Gerioch, called Benahee, but the proper name is Ben-up-high. It rises almost perpendicular in the south east, and very high. There is an excellent quarry on the top of it, containing a beautiful granite. It is out of that quarry the stone was taken, of which King George the Fourth's monument in Edinburgh is built,—a beautiful building; but it has no appearance to Lord Melville's. Among all the monuments in Edinburgh, Lord Melville's has the most splendid appearance. But there cannot be a more beautiful stone got for building, than Bend-up-high stone,—bird's eyes sparkling through it like silver. It is said there is a well on the very top of this hill that never dries up. Many of Bend-up-high stones are sent to London. This hill is about a mile from what they call the chapel of Gerioch. The Rev. Mr Simson is minister of the parish. His father was the first settled minister in the chapel of ease at Ardoch. This chapel was taken off three parishes, Dumblane, Muthil, and Blackford. Mr Simson having been minister in Ardoch for some few years, he was translated to Tulliallan. His people at Ardoch lamented greatly his removal. He was not a paper preacher, but had his sermons all by heart, and had a fine address to his hearers; he had likewise a ministerial walk among his people.

One cannot go very far into the north country,

at least high up, when the people will know every stranger; and they are very inquisitive about a stranger's business, and what he has ado here. If one be travelling on the public road alone, and if he meet an old man, he will give him a bonnet, or hat, as the low country people call it; and if the traveller stops and takes out his mull, then pleasure is expressed in every feature. "If you please, where did you come from?" "The south country." "What part?" "Edinburgh," perhaps the stranger would say. "What brought you here? I am sure it was not little brought you here: you will be seeking cattle. They are selling well now. Will you buy some from me?" "I have not money to pay them." "Oh, you have a good coat; you will have plenty of money!" "If you and I were to make a bargain, would you give me them away, and I would pay the one half at present, and the other half at the Castle-town of Braemar fair?" Then he would fidge and claw his elbow leisurely. "O no, I cannot want the price of my cows." "But I will see you again at the market." "O ho, I'll may be never see you at the market; but John M'Intire will sell some to you; he knows all the south country drovers." "There is another snuff, I must go and leave you." "How far north are you going?" "To Ross-shire." "I am sure you will not have easy going there." "Will you come this way again?" "Perhaps I may come this way when I return." "Well, I will speak to some of my neighbours; and we will have our

cattle near hand; and perhaps some of them will know some of the south drovers; and if you will get their bill, we will sell our cattle to you." "I will get plenty of my own countrymen to be caution for me to you. Do you know Mr M'Combie?" "O yes, I do; if he will give his bill, we will sell them to you." "I will have to bring his bill to you, then." "If we make a bargain, I will not do that; I will see him, or make out the bill." "You may take my word for it." "No, I must see him making the bill." "How long credit will you give?" "Till Martinmas." "You will be for a great price?" "No; we have sold them to nobody but they sold them soon again; and I am sure if you buy them, you will not repent it, for we have good beasts." "But I will see you, perhaps, again." "Come back this way, and I will give you a night's quarters, and you will see my son-in-law, and Duncan and Donald, my two sons, and they will be fain to see you; for we have not sold cattle these two years."

I parted with the old man, and did not intend to return that way. I saw a man on the road, betwixt the bridge of Carr and Kingussey; it was a warm day; he had a good staff in his hand, and I had only a small switch. I took out my snuff mull, and desired him to sit down and rest himself; he took a snuff pretty greedily, and returned the mull again, and said he could not rest, he was in a hurry. I said, Cannot you rest a little, and walk the faster when you set to the

road again? *Himself* could not stop. "That is a good staff you have got." "Aye, her be a good staff." "Will you exchange with me, and I will give you mine for your's?" "Oh, no;" and seemed to go away. I took out my mull and gave another snuff, for you will not choke a highlandman with snuff. He said, "She is a good sneeshan." "Will you not make a bargain about our staves?" "O no; mine be a good staff." "I will give you a penny for your staff, and likewise my own staff to you." "O, her be a fine staff. I was in Inverness, and two gentlemans bidded me a sixpence for her; but me said, her be better than a sixpence." I said, the Inverness gentlemen are rich, and have plenty of money, and I am a poor man, and I will give you two pence and my own staff. "O no; I like her better nor a two-pence." "I'll give you my staff too." "O, your's no be strong, no good." "Take a snuff; you will soon get another about the glens; what kind of wood do you call it?" "O me canna speak it; but she," putting his hand to his mouth, said, "she knaks it this way." I said, "It will be hazel or nut." "O, aye; her be nut; hersell pu'd her out aneath the truff." I pulled out my snuff mull and gave him about a half-penny worth of snuff, and the staff. When I paid him the two-pence he went off rejoicing, and we parted in good terms, with the shake of hands.

I fell in with another man that same day, on his own small farm, as I was passing the road to

Fort-William, and we had our snuff together. I asked how many sheep he kept. "No mony, me canna speak so mony." "Have you forty or fifty, perhaps you have more?" "I have—I have —forty lamb sheep." "How many cows will you keep?" "Three cows, two stots, and a bull." "You will pay a great rent for that stock." "Aye, her be a mukle rent: L.3, three days cast peats, four days shear corn, three days at hay, and two days bigging peats." "You have a great deal of work to give to your master." "Him very greedy." The women are all industrious, and expert at knitting stockings; and an old woman, sixty or seventy years of age, will take her clew of worsted in her lap or apron, in the morning, and travel over a hill twenty miles to see a friend, and return the same evening with her stockings finished and fit for sale. Mr Farney, Fifeshire, has the prettiest calf bull in Fifeshire. Mr Watt Pitcairn has the best bull at present, but Farney's will beat when grown up. But still he has something defective; yet he is well boned, and a fine colour. If he thrives well till he be three years old, his equal will not be easily got. I have forgot Mr Farney's title, or name of his estate; yet he is a judge, or he would not have such a taste for a good stock. There is a Mr Craig, a Mr Wood, Brodie of Brodie, Mr Farney, a Mr Flockart, Mr Johnston, a Mr Duncan, a Mr Bell, Mr Strachan, and hundreds more too tedious to name; and as the Government is to give a large sum for the abolition of

the slave-trade, and this sum must be raised off the nation some way or other, I have thought on a plan that no doubt will be adopted and executed speedily. The persons before mentioned, with hundreds of their brethren, all bachelors, with good situations and full pockets,—the females are neglected by such men; and if war was to take place with a foreign power, by their making no help for getting men to strengthen the nation, where can money be raised better than from such as are for no use to the nation otherwise. I am expecting soon to have a seat in Parliament, and the bachelor's bill will be the first that will be presented; and it being so reasonable, no doubt of it passing; and in short, we will soon pay off that heavy sum, the Parliament has so foolishly promised to pay. I consider it a very foolish agreement, only this will be the easiest way to pay it.

I heard a minister on Don Water, about thirty miles from Aberdeen, read his discourse. He was about twenty-five minutes with it, and he seemed to be completely exhausted. He set himself so smoothly on his seat, that it would have made a feeling heart relent for him. He then rose up, and read a few verses of a psalm; after singing he prayed, then sat down again a short space; and then rose up and read sixteen lines of a psalm; then two men went to every seat, and handed a long handled ladle to receive the offering; and when all was done, the reverend gentleman started up, and said, "Our sacra-

ment will be this day three weeks, or this day month. If there be any young persons to join with us, they will come to the church here, at twelve o'clock, on Tuesday, and I will examine them; and I intend to examine the people on the south side of Don on Wednesday. The young people, I mean, not the old people. And on Thursday, the people on the north side of Don, only the young people: and if I cannot come, God will take the will for the deed." When I went home to my lodging, I asked the good man, "What! does your minister not know what day his sacrament is to be on?" "O," said he, "he is under petticoat government." "What did he mean by saying, if he could not go to the people and examine them, on the north side of the Don, on Thursday, that God will take the will for the deed?" Says the landlord, "He has been saying that these three years bygone, and has never gone to see them yet." But, to give him fair play, he does not occupy a farm; but my landlord said he could not get one. Almost all the ministers in the north country occupy farms. Still I would not find much fault with a minister to take a small bit of land adjoining to his glebe, and yoke a plough, as he needs a man-servant to cast and carry home his fuel for his fire; for coals are not easily got in the north country. On that account an allowance should be given, but not to exceed a pair of horses; not to have such a heavy back-full as the reverend in Knockando.

I was in Helmsdale in the month of June last year. The parish minister preaches there only once every month. But there is not a house nor church to preach in; he preaches in a tent. It happened to be a coarse day, both of thunder and rain. It got better about two o'clock. After the parish minister went home, there was a missionary stept into the tent about six o'clock in the evening. I went out to hear him as the evening got pretty clear and fair. His text was in Isaiah; but I did not hear it. His discourse was mostly about bringing back the Jews from Babylon to their own land. He said, in those days their directors blew trumpets at high days, and were pointed in giving warning to the people; but he said, now-a-days, the ministers did not warn the people, and did not direct them to the terrors of the law. Now-a-days they do not blow the trumpet, but whistle, and tell the people smooth things; their lips are like velvet, and they do not lay the terrors of the law to the people. I was like to laugh when he extended his voice very high, when he mentioned the word whistle. I thought he was not far wrong with regard to some of them.

The farms in the Highlands of Scotland are some of them very large stock farms. There are some of the farms that keep twelve, and some sixteen, and some twenty, shepherds; there are also many small farms. The farmers in the large farms live very comfortably; but the small ones in a pinched manner; but they are very

prolific; a father will have from four to seven sons all on the same small farm; and when the old son marries, he gets a small piece cut off for him, and so on till they are all into houses of their own; and they are not long of getting houses built. Before the old son leaves the house, he will, perhaps, have two or three of a family; and when they are hampered, or any way pinched for room, they break out another place, generally at the kitchen or fireside, and make a too-fall, and put a bed in there, and break out always as the family increases; and when every place is full, then they must part. Two or three of them then set to and bind cuples in the morning, and next day a house is put up that will accommodate ten or twelve of a family. As the family increases, they go on accordingly. The young men go off in the summer season and work at roads, or any thing they can get conveniently. And there are always as many old women as sort the potatoes: and they have now, since they dropped the whisky work, as much meal and potatoes as serve them. The young men make as much in summer, and the young women in harvest, as pays the rent; and in winter they buy a few crook ewes from the large farmers, and clean up the intestines, and take off the ribs, and salt them, and feed well on them and potatoes through the winter season. They likewise smoke the four quarters, and sell them in towns in spring; and they have often more

off the shanks than pays the whole ewe; and they never pay till they sell the shanks.

Angus-shire is bounded on the north by the Binchinnen Mountains, which separate it from Braemar; on the south by the river Tay; on the north-east by the Mearns; on the east by the German Ocean; and on the west by Perthshire. It is more mountainous than the former, but in general is rich, fertile, and well cultivated. The principal towns are Forfar, Dundee, Montrose, and Brechin. From the hills above Blairgowrie, a most delightful prospect may be seen, beautifully varied with plantations, and rich arable land. The scene is not inferior to that of Mid-Lothian. The farmer pays particular attention to his stock of cattle, and you will see by the report of Falkirk tryst, that Angus and Aberdeen cattle take the lead of all that are sold in the Falkirk tryst, and they are every tryst mentioned in the public papers. There are some Forfarshire farmers getting or wishing to have their breed or stock enlarged in size. I would recommend, that a farmer should first improve his keeping, before he enlarge the size of his stock; for bad keeping will make a good stock very soon a bad one. There are some farmers even in Buchan, who have got a bull of the Tees-water breed, but, with the exception of some individuals, I am certain they will not keep them long. For, let Buchan or Strathmore get but two bad crops, or two bad seasons, in succession, they will soon see, that a well-boned stock, close

and well baked, are the preferable stock, though not so very large in the bone.

As I am making some remarks on the country, I must not forget the female sex. Forfarshire and Angus-shire have the best stock of women I saw in my travels,—handsome sized, neat, and clean, and well dressed. The chief branch of business in that place is weaving; and the women are equally as good weavers as the men; they are likewise obliging, civil, and kind to strangers. I was somewhat surprised when I went north by Stonehaven: in the houses which I called at, I found a different sort of people and manners, but I did not meet with any of them uncivil or rude.

In this tract of land the people generally are of a fair complexion. To conduct an extensive farm well is not a matter of trivial moment, or a thing for which every one is competent. Much may be done by capital, skill, and industry; but even this will not always ensure success, without judicious management. With it a farm furnishes an uninterrupted succession of useful labour, during all the seasons of the year; and as the labouring persons and cattle are regularly employed at such work as is most likely to be profitable, the utmost is made of the farm that circumstances will admit of. Under such a system it is hardly to be credited how little time is lost, either of the men or horses, in the course of the whole year. This is a great object; for each horse may be estimated at three shillings per day, and each

man at two shillings. Every day, therefore, in which a man and horse are not employed, occasions the loss of at least five shillings to the husbandman.

As the foundation of a proper arrangement, it is necessary to have a plan of the farm; or at least a list of the fields or parcels of land into which it is divided, describing their productive extent,—the quality of the soil,—the preceding crops,—the cultivation given to each,—and the species and quantity of manure they have severally received. The future treatment of each field for a succession of years may then be resolved on with more probability of success. With the assistance of such statement, every autumn an arrangement of crops for the ensuing year ought to be made out; the fields or pieces of land being closed according to the purposes for which they are respectively intended. The number of acres allotted for arable land, meadow, or pasture, will then be ascertained. It will not then be difficult to anticipate what number of horses or labourers will be required during the season for the field in culture, or the live stock that will be necessary for the pasture lands. The works of summer and harvest will also be foreseen, and proper hands engaged in due time to perform them, as nothing contributes more to the dispatch of business than to prepare for what must be done. A farmer should have constantly in view a judicious rotation of crops, according to the nature and quality of the soil, and should ar-

range the quantity and succession of labour accordingly. Constant labour, when frost and bad weather do not intervene, should be arranged for some months; and hard labour for some weeks, according to the season of the year. A general memorandum of business to be done, is therefore essential, that nothing may escape the memory, and that the most requisite work may be brought forward first. If suitable to the state of the weather, the work will in this way go on regularly, and without confusion.

It is indeed in the skilful method of setting men, and cattle, and implements to work, that the practical farmer has an advantage, which an experimental theorist never can attain: excellency in this, frequently makes a difference equal to half the rent of arable land. Judgment in the selection, and proper management of stock, is equally necessary. A good farmer, it is said, should have a hundred eyes; for it requires constant activity advantageously to manage, if the concern is large and burdensome.

The following rules connected with the arrangement, and the successful management of a farm, are particularly to be recommended. 1. The farmer ought to rise early, and see that others do so, in the winter season. Breakfast should be taken by candle light; for by this means an hour is gained, which many farmers indolently lose, though six hours in a week are nearly equal to the working part of a winter day. This is a material object where a number of ser-

vants are employed. It is also perfectly necessary for farmers to insist on the punctual performance of their orders. 2. The whole farm should be regularly inspected; and not only every field examined, but every beast seen at least once each day, either by the occupier, or by some intelligent servant. 3. In a considerable farm, it is of the utmost consequence to have servants equally appropriated for each of the most important departments of labour; for there is often a great loss of time where persons are frequently changing their employments. Besides, where the divisions of labour are introduced, work is not only executed more speedily, but also much better, in consequence of the same hands being constantly employed in one particular department. For that purpose, the ploughman ought never to be employed in manual labour, but regularly kept at work with his horses, when the weather will admit of it. 4. To arrange the operation of ploughing according to the soil, is an object of essential importance. On many farms there are fields which are soon rendered unfit to be ploughed, either by much rain, or by severe drought. In such cases, the prudent farmer ought, before the wet season commences, to plough such land as is in the greatest danger of being rendered unfit for it by too much drought. The season between seed time and winter, may be well occupied in ploughing heavy soils intended to be laid down with beans, oats, barley, and other spring crops; by means of the scarifier, on farms

where these rules are attended to, there is always some land in a proper condition to be ploughed; and there is never any necessity either for delaying the work or performing it improperly. 5. Every means should be thought of to diminish labour, or to increase its power. For instance, by proper arrangement, five horses may do as much labour as six perform according to the usual mode of employing them. One horse may be employed in carting turnips during winter; or in other necessary farm work, at other seasons; without the necessity of reducing the number of ploughs. When driving dung from the farm-yard, three carts may be used, one always filling in the yard, another going to the field, and a third returning. The leading horse of the empty cart ought then to be unyoked, and put to the full one. In the same manner, while one pair of horses are preparing the land for turnips, the other three horses may be preparing or carrying the dung to the spot, either with two or three carts, as the situation of the ground may happen to require. By extending the same management to other farm operations, a considerable saving of labour may be expected. 6. A farmer ought never to engage in a work, whether of ordinary practice or intended improvement, without previously giving it the best consideration of which he is capable, and being satisfied, that it is advisable for him to attempt it; but when begun, he ought to proceed in it with much attention and perseverance, until he has given it a fair

trial. 7. It is a main object in carrying on improvements, not to attempt too much at once, and never to begin a work without a probability of being able to finish it in season. 8. Every farmer ought to have a book for inserting all those useful hints which are so frequently occurring in conversation, in books, or in the practical management of a farm. Loose pieces of paper are apt to be mislaid or lost; and when a man wishes to avail himself of them for examining a subject previously investigated and discussed, he loses more time in searching for the memorandum than would be sufficient for making half a dozen new ones. But if such matters were entered into a book, and if that book had a table of contents, or an index, he can always find what he wants, and his knowledge will always be progressive, and in a state of improvement, as he will thus be enabled to derive advantage from his former ideas and experience. By the adoption of these rules every farmer is master of his time, so that every thing required to be done, will be done or performed at the proper moment, and not delayed till the season and opportunity have been lost. In regard to house-keeping, the safest plan is not to let it exceed a certain sum weekly or monthly, stating every thing or article from the farm. An annual sum should be allowed for clothing, and the personal expences of the farmer, his wife, and children; which ought not to exceed. The whole allotted expence should be considerably within the probable re-

ceipts, and at least one eighth of the income actually received, should be laid up for contingencies, or expended in extra improvements on his farm.

Argyleshire. This county, along with that of Perth and the Western Isles, is said to have comprehended the whole of the ancient kingdom of Scotland. It is bounded on the south by the Irish sea and the frith of Clyde, on the east by Perthshire, on the north-east by Lochaber, and on the north-west by several islands. The country is very mountainous and rocky. Its divisions are Argyle proper, Koul, Knapdale, Lorn, Kintyre. The principal towns are Inverary and Campbeltown. The domestic servants employed in carrying on the operations of a farm, are of four descriptions, 1*st*, Bailiffs, overseers, or upper servants; 2*d*, Ploughmen, and inferior male servants; 3*d*, Apprentices for agricultural purposes, when such are to be had; and, 4*th*, Female servants.

Upper servants.—In all large farms a bailiff or overseer is necessary, to assist the farmer in carrying on so extensive and complicated a concern. His business is to be perpetually on the watch, wherever persons are employed; consequently he must not work himself, which would confine him to that spot. He should be invested with sufficient authority to compel the other servants and labourers to do their duty: and if he does not hire them, he should have at least the power of dismissing them, subject to the master's

concurrence. All market transactions, however, and all buying, selling, bargaining, and receiving money, should be done by the master. If the bailiff be a person of the better sort, and single, many advantages will result from his eating at the farmer's table.

Inferior servants.—These consist of ploughmen, shepherds, cow-herds, and carters. Of these the ploughmen are the most important; for on them, in a great measure, depends the success of the whole crops. It is interesting to trace the manner in which these inferior servants have been progressively maintained. In former times, the servants lived at the same table with their masters; and that is still the practice in those districts where the farms are small; and on large farms they are usually sent to a separate table; but of late a custom has been introduced, of putting them on board-wages. This is a most pernicious practice; as it often leads them to the ale-house, corrupts their morals, and injures their health. It is a better plan, with a view of saving trouble, to board them with the overseer; but it is still more desirable for the farmer to have them under his own eye, that he may attend to their religious and moral conduct. He will find much more useful assistance from the decent and orderly, than from the idle and profligate. The following plan of maintaining the hinds or ploughmen on the most cultivated districts in Scotland, is found, by experience, to be greatly superior to any other mode hitherto

adopted. 1. Proper houses are built for the farm-servants, contiguous to every farmstead. This gives them an opportunity of settling for life, and greatly promotes their future welfare; also the farmer has his people at all times within his reach. 2. The farm-servants, when married, receive the greater part of their wages in the produce of the soil, which gives them an interest in the prosperity of the concern, in which they are employed. Under this mode of payment, they are certain of being supplied with the necessaries of life; and a rise of price does not affect them; whereas when their wages are paid in money, they are exposed to many temptations of spending it, which their circumstances can ill afford; and during a rise of prices they are sometimes reduced to considerable difficulties, from the adoption of an opposite system. Habits of sobriety and economy, so conspicuous among the farm-servants of Scotland, and the advantages of which cannot be too highly approved, have arisen, and still prevail, in these districts. 3. A most important branch of this system is, that almost every married servant has a cow of a moderate size kept for him by the farmer all the year round. This is of great advantage to his family. The prospect of enjoying this advantage has an excellent effect on the morals of young men unmarried, who in general make it a point to lay up as much of their yearly income as will enable them to purchase a cow, and furniture for

a house, when they enter into the married state. These savings, under different circumstances, would mostly have been spent in dissipation. 4. They have also several other perquisites; as a piece of ground for potatoes and flax,—about one eighth part of an acre for each; liberty to keep a pig, and half a dozen of hens; their fuel is carried home to them; they receive a small allowance of money per journey, when sent from home with corn, or for coals or lime; and during the harvest they are maintained by the farmer, that they may always be at hand. There are no where to be met with more active, respectable, and conscientious servants, than those who are kept on this system. There is hardly an instance of their soliciting relief from the public; they rear numerous families, who are trained to industry, and knowledge in the operations of agriculture, and whose assistance in weeding the crops, &c. is of considerable service to the farmer; they become attached to the farm, take an interest in its prosperity, and seldom think of removing from it.

In Scotland, the plan of apprenticeships, with a view of training servants or labourers to husbandry, is not in practice. But it has been adopted for the purpose of educating farmers for their professional duties. As this seems to be an admirable plan, it may be proper to select an example of it. Mr Walker of Mellandean, an eminent farmer in Roxburgh, who rents about 2866 acres of arable land, and is distinguished

for his skill in agriculture, takes young men under him as apprentices; who, instead of receiving wages, have uniformly paid him ten pounds each. Some of them remain with him two years, but the greater number only one. They eat in his kitchen, where they have always plenty of plain wholesome food. He takes none who are above living that way, or who will not put their hand to every thing going forward on the farm. He has sometimes been offered ten times the above sum to take young gentlemen to eat and associate with his own family; but that he has uniformly declined. These young men have an opportunity of attending to every operation of husbandry, as practised on Mr Walker's farm, and are taught to hold the plough, to sow, and to build stacks, &c. He considers them on the whole as rather profitable than otherwise, and in some seasons finds them particularly useful.

Female servants.—These are principally employed in the dairy, in which their skill and diligence are useful in the highest degree. Men often milk the cows, but are not so well calculated as females for the management of the interior of the dairy house, where so much depends upon attention to cleanliness. Female servants are usefully employed in weeding and hay-making at harvest, and in barn work, and are well entitled to the inferior wages usually given them.

Next in importance to the ploughmen and other hired farm-servants, those labourers who are employed in executing the several branches

of incidental work upon a farm, are the most valuable to the arable farmer; for without a sufficient supply of such hands, it is impossible for him to carry on the various operations connected with an accurate system of agriculture, either in a perfect manner, or in the proper season of the year. It is evident, indeed, that the farmer who depends entirely on his farm-servants, whose chief employment is working with horses, must either allow many necessary jobs that daily occur to lie over; or, if they are performed by the ploughman, the horse must often be completely idle. Where agriculture is carried on in any thing like perfection, it is a matter of essential importance, for the farmer to have at his command a sufficient number of such useful assistants.

In the wages of labour, as well as every thing else, moderation is desirable. It is remarked, that high wages have a tendency to throw labourers out of employment, as farmers in general, and even small proprietors, are not able to give such wages. Hence they are obliged to carry on their work with fewer hands, or to postpone improvements, which otherwise they would have undertaken. Nor is it only the labourers themselves who suffer by it, but the public also. In the fens of Lincolnshire, wages have risen in harvest time from 3s. 6d. to 7s., nay 10s. 6d. per day. The consequence was, that the labourers got drunk, would not work above four days out of six, spent their money, hurt their constitutions, and contracted indolent

and vicious practices and habits, so that their labour was lost to the community, for at least one third part of the time, at a most important crisis. The farmers were thence compelled to go for aid to other districts, and even to induce the natives of Ireland to assist them in getting in their harvest.

Perthshire has Lochaber and Badenoch on the north-west; Mar on the north-east; Argyle and Dumbarton on the west and south-west; with Clackmannanshire, part of Stirlingshire, and the Forth on the south; Kinross and Fife on the south-east; and Angus or Forfar on the east. The country, in some places, is very mountainous, but in others plain and fruitful; and the climate varies accordingly, being cold and sharp among the mountains, but mild and temperate on the plains. Its divisions are Perthshire proper, Athole, Gowry, Breadalbane, Monteath, Strathern, Stormont, Glenshield, and Rannoch. The principal towns are Perth, Dumblane, Blair, and Dunkeld. Perth is a pretty lying town, and well planned; streets all regular, free, and airy, good and pleasant for families to live in. The Scottish kings of old were crowned at Scone, about five or six miles from Perth. The country around Perth is most beautiful, and the soil excellent, likewise well farmed; but the cattle in general are inferior to Angus-shire; they have not the taste for such a good stock; and I am not certain but they are likewise inferior in hospitality and good manners. As I was taking

a bit peep of the barony of Stobhall, I called at a farmer's house; his name was Mr Hervey; he was not in the house, and the maid supposed he would be at the plough. I went to a field where there were two ploughs going, in the expectation, that the farmer held one of them. There was an elderly man holding the plough that was nearest me, consequently I supposed him to be the farmer. I said, It is a warm day, and said that he might let the horses take their breath as they were warm; he answered with a disdainful and ill-natured like tone, "It is not long since they were yoked yet." I told him I was taking a bit look of the country, and about to publish a small book, with some remarks on it. He answered in a passionate manner, "Go to ——, you ———, with your books." I said, in a quiet manner, "I am surprised that an old man like you should express yourself in such a manner." The next word he said, was, "You —— ——, begone with your books." I turned; and on my way, before I went off the farm, I came to a cot house, and the woman was taking in some potatoes. I asked her what was the farmer's name. She said, "Mr Hervey; you will see him down by there, mending a fence:" "I supposed he had been holding the plough:" "No; it is his brother that you would see at the plough." I went on, and came to the farmer mending his fence, as the woman said; and I spoke with him anent some affairs of the country, and found him quite civil, and a perfectly

different man from his brother. I asked at a labouring man, what sort of a man Mr Hervey's brother was. "O," says he, "he is a regardless man; he was a merchant about Perth some time, and kicked the bucket twice, and of a very indifferent character." I did not meet with such a man as Hervey in all my travels, even all the way betwixt Perth and Caithness. I am a Perthshire man myself, but cannot conscientiously give the people of Perthshire the character I would wish to do; yet I hope there is but few of them like Hervey. Perthshire is the largest county in Scotland, and I know many excellent people in it, both nobility, gentry, and common people; likewise it is a place where religion seems to be in a thriving state. The honourable Lord Willoughby is proprietor of the barony of Stobhall. He is a very encouraging landlord to his tenants. I know none in Scotland that gives so much reduction to their tenants as Lord Willoughby. He gave a reduction of twenty-one and a half per cent., last Whitsunday term, and they expected as much at Martinmas. It is not of late that he has given so much of return, for he has been practising it for a number of years bygone. The year 1826, when the crop was short, because of the warm and dry season, and few could get their stock brought through the winter for want of fodder, there were some of his tenants who paid only about eleven shillings in the pound: and it has been his practice a long time back, as has been seen by the public papers.

His clerks have all receipts made out before the rental day, and the whole ready for the tenants when they come with their rents; and they go home sometimes with nearly the one half of their rents in their pockets,—happy and content, even in bad times.

Strathern is well farmed, and a very aspiring people. There are no less than seven large distilleries round Crieff, within seven miles of one another,—an evidence of a good fertile country; and the people mostly all inclined to some trading way or other, as we call it.

At Drummond Castle there are uncommon large trees; there are some of them twenty and twenty-one feet thick, upwards of an hundred feet high, and the circumference of the span of the branches two hundred. An experienced farmer in the south country considered the following course of crops preferable to every other: 1. A cleaning crop, of whatever kind, as best suited the soil, as turnip, tares, or cole seed, to be hoed, but not to stand for seed. 2. A crop of wheat corn, of the kind best suited to the soil, to be laid down with seeds. 3. Either grazed or mown. 4. Beans, when suited to the soil. He contended, that, however various the soils, and however different in their nature, the same order in course of cropping should be pursued,—strong heavy land only excepted,—changing the species of corn and vegetables, and adapting them to the nature of the soil to be worked upon, and the demand in the market for the articles that are cul-

tivated. It is obvious, that by such a mode of cropping, a soil of tolerable natural richness might not only be supported, without foreign aid, but might increase in fertility. A certain degree of richness, however, is sufficient to produce a good equal crop of grain. Land may be too rich, as well as too poor, for growing corn. The injudicious application of a few cart-loads of manure per acre more than was required, has often rendered a crop of little or no value, and perhaps turned it mostly all into the dung-yard. Six years' rotations, or six crops, are particularly calculated for large farms. On small farms, and large ones near great towns, where manure can be had in abundance, a succession of two or three crops may be safely adopted; but on large farms a variety of articles ought to be cultivated, by which the risk of loss, either from the weather, or the markets, is diminished; fewer horses are necessary, and the labourers are more equally divided. During all the seasons of the year, the following may be considered the three great divisions, 1. Clay lands; 2. Sandy lands; and, 3. Loams.

1*st*, Clay lands, or wet, or spungy, which have been long in cultivation; a fallow; and in some cases the favourite rotation is, 1. Fallow, tares, Swedish turnip, or cabbages. 2. Wheat. 3. Clover. 4. Oats. 5. Beans. 6. Wheat. Clover cannot be too near the fallow.

2*d*, Sandy lands. A rotation of six may also be adopted in sandy soils, as 1. Carrots, tares, turnips, or potatoes. 2. Barley or oats, with seeds. 3. Hay.

4. Pasture. 5. Pasture. 6. Oats. Under that course, such soils become highly productive, and instead of exhausting, improve in fertility. The first year's grass ought not to be made into hay, unless where sheep have been fed on the ground with the turnip crop, or the land is in good heart. Indeed, if the soil be thin, it should be pastured during the whole three years that it carries grass.

3*d*, Loams. On this species of soil, the following plan is recommended: 1. Turnips, or fallow. 2. Wheat, or barley. No doubt barley is the best crop for keeping the land in good heart. One will know perfectly on the same field, if barley was sown upon one side of the field, and oats on the other; and where the oats grow, the grass will not be so heavy when cut, as where the barley grows; and likewise, where the barley was when broke up, it will produce better than where the corn grows. 3. Crop ought to be pastured to keep the land in a proper state for the other succeeding crops. 4. Oats. 5. Tares, peas, or beans. 6. Wheat. Rich loams adapted to this productive rotation, will pay the highest rent of any, more especially when early oats are sown after clover; for invariably in all friable soils, that grain is the most beneficial of crops, seldom producing less than sixty or seventy bushels an acre, and is much more profitable than wheat, which is apt to be blighted. By this plan, also, the crops are divided in a most advantageous manner; all the most valuable crops are raised without any being sown twice in the same course, except a little

barley, owing to a part being sown with it after the turnips. Some farmers sow early oats after turnip, more especially in the northern districts, where oats are more in demand than in the south; for they wish much for the change of early seed oats for their crops. In Aberdeen and Banff it is almost corn or oats; therefore oats sell high in spring.

Grass seeds seldom fall among spring-sown victual, which is not so apt to lodge as winter or autumnal sown wheat, or perhaps any other grain. It is proper to add, that as wheat is sown earlier than the barley or oats, so is the clover. As this early sowing secures moisture, and promotes vegetation, seven years' rotation is advisable. The following rotation is adopted in some of the rich, deep soils: 1. Turnips. 2. Barley. 3. Beans. 4. Wheat. 5. Barley. 6. Clover. 7. Wheat. Under that system, the crops are said to be productive, the land to be clean, and to have the neatest possible appearance.

Eight years' rotation. Upon rich loams, and clays, or where there is abundance of manure at command, a course of eight crops has been strongly recommended. 1. Fallow with dung. 2. Wheat. 3. Beans, drilled and horse-hoed. 4. Barley. 5. Clover and rye-grass. 6. Oats or wheat. 7. Beans, drilled and horse-hoed; and, 8. Wheat or oats. This rotation is calculated to ensure an abundant return throughout the whole period, provided dung be given to the clover stubble. Without that supply, the system

would be crippled, and only inferior crops would be obtained in the concluding years of the rotation.

It is proper here to observe, that in these rotations, pease are only once recommended; it being found by experience, that they will not succeed above once in ten years. They are chiefly adapted for protracted rotations, or soils which are not of sufficient depth for beans, as light turnip soils, or thin, weak clays. They are most likely to answer when sown after grass; but even then, the crop is precarious, and is apt to encourage the growth of weeds.

In the vicinity of the metropolis, and near Aberdeen, double crops in the same year are raised on the same ground, not only in the gardens, but in the fields. There are many farmers near London, who manure for tares, and then have turnips in the same year, and next year wheat; by which they obtain three valuable crops in two years, which average from L.18 to L.20 per acre, per annum. Some farmers grow clover the third year, by which the average annual produce is kept at nearly L.20 per acre. This system was formerly limited to a few fields near the farm yards. In favourable seasons, what are called stable turnips are likewise occasionally raised. But these practices, though they may be partially adopted, where they have the advantage of soil, climate, and manure, are but rarely calculated for the northern parts of Scotland.

Rape has been strongly recommended, as an

excellent article for an after crop, being easily cultivated, and the seed cheap. If rape were sown in good land, immediately after any corn crop is cut, it would afford a good bite for sheep as winter food, and the land would be much improved for a succeeding crop of oats. But rye is to be preferred. If sown thick in September, upon dry, fertile loams, it stands the winter much better than rape; comes rapidly on in the spring; and is excellent food for sheep, when green food is scarce and valuable. This practice gives great relief to the pastures, and is the means of securing an abundance of grass, during the remainder of the season. In strong soils, indeed, which do not admit of a wheat crop succeeding the clover, the best, and almost the only chance for a crop of wheat, is after fallowing and manuring. By some, beans have been recommended, when they form a part of the rotation; but even then, it would be advisable that barley should follow the beans. Beans are not always harvested in time, to secure a good season to cultivate land for wheat. But a season can always be had for barley, upon the land that has been ploughed up, and exposed to the influence of the winter frosts. Barley, also, requires less manure than wheat. On strong land, the following has been found a safe and productive rotation: oats, beans, barley, fallow wheat, with clover seeds. It is found, that the land is always better prepared for the reception of small seeds, after fallow, than after any crop; and that clover, when sown with the

crop that comes next after fallow, succeeds better than in any other part of the course.

In earlier times, the culture of wheat on a clover ley, was much practised. The crop, however, is liable to great risk from the depredations of the worms; and it has been clearly ascertained, that oats are a more sure and profitable crop, and that they leave the land in a better condition than wheat. Three methods, however, have been suggested, by which the mischief effected by the worm might be obviated. The *first* is, that of ploughing clover in the beginning of July, immediately after the crop of hay is taken off, before the land has been cut for soiling; then sowing it with rape seed, with one furrow, and after eating the crop down with sheep, in September and October. Sowing wheat by this plan, the feed in September and October compensates for the loss, or after-growth, or pasture. The ground is more sensibly enriched, than by the usual mode of pasturing. The soil is brought into so mellow a state, that it can be drilled, if necessary; while, by the treading of the sheep, any insects in the ground are destroyed. The *second* mode of destroying such insects is, to delay ploughing clover stubble till December. If ploughed in October or November, the worms, when turned up, are able again to creep into the soil, where they lie dormant, till they are revived by the warmth of spring, and then they prove extremely mischievous; but if exposed in a torpid state, to the frost, and the inclemency of the season, they

are speedily destroyed. The *third* plan, is to sow the wheat, even winter wheat, in spring, instead of winter. This may be done with success, so late as the beginning, or even the middle of March. The wheat thus raised, is generally as productive in quantity, but seldom so good in quality, as after turnips, pease, or beans. The plan, however, merits attention, as the attacks of worms may thus be got rid of. It may be proper here to observe, that by far the greater proportion of the wheat grown in the counties of Northumberland, Roxburgh, and Berwick, is sown in the month of February, and the beginning of March, upon land that had grown turnnips, and upon which sheep had been folded, and even a part of the crop been drawn off in alternate rows. The land, however, is sufficiently enriched, and acquires that firmness which is necessary to the production of grain, and more especially for wheat. Whereas, if that crop had been treated in the usual way, the great proportion of the plants sown in winter, would have been thrown out, and what remained would have produced a weak, straggling, unproductive crop. By sowing winter wheat in the clover leys, in spring, the devastations of the wire worm would be prevented, and an immense addition made to the produce of the country. To afford an experiment of this, winter wheat, accustomed to spring culture, from the Lothians, or Northumberland, ought to be procured.

The best mode of increasing and preserving

the fertility of weak soils, is to have a division of them in pasture, for three, or four, or even five years, and then brought in again. So that in the course of a twenty-one years' lease, each division in its turn, remains in grass for a considerable period of time. In lands which are naturally fertile and productive, and where town manure cannot be had, this plan must be attended with very beneficial consequences. Every part of a farm thus derives a proportional share of the advantage of being kept in grass, which is preferable to the plan of preserving one part of a farm constantly in grass, and the remainder under cultivation. On dry lands adapted for sheep, there is always a return for their food; and the land, while in pasture, is always gaining strength for another course of crops. There is a great saving in the amount of labour, and the expence of seed, especially the clover and the grass. The crops of grain are more abundant, than when more regularly repeated; and turnips are obtained with less difficulty, when the land on which they are grown is fresh. An eminent farmer in Northumberland, John Gray, Esq. of Millfield Hill, near Wooler, has, under three years' grass, cultivated a large farm,—1500 acres of dry loam, and with the greatest success. Where that plan is not adopted, the crops of grain will be deficient in quantity, and still more in quality.

General Deductions respecting Rotations.—The following important rules in regard to rotations,

are particularly to be recommended: 1. When any farm or district begins to be improved, it is necessary to commence with such crops as are most likely to produce manure. Hence barley ought to be avoided, as it yields, when compared to other crops, the smallest quantity of straw. Two exhausting crops also, ought never to be attempted in succession. If the soil has not acquired a considerable degree of fertility, or naturally possesses it, as is the case in regard to alluvial lands, green crops are greatly to be preferred, as, from their superior bulk, they are more productive of manure, and go farther in supporting live stock. In similar soils and situations, green crops will furnish at least one fourth more, and in many cases, one third more putrescent manure than can be obtained from the straw of corn crops grown on the same land. After green crop also, the weight and quality of the next crop of corn are greatly improved; and it brings a higher price at market. 2. The crops should be so arranged, that the labour of ploughing for each, and sowing, weeding, reaping, &c· may proceed in a regular succession; by which the labour of cultivation is not too much crowded on the farmer, at any one season of the year, nor is any quantity of extra stock rendered necessary. All the crops on the farm may thus be cultivated by the same labourers, with the exception of hand hoes in spring and summer, and assistants during the harvest, and with the same cattle. Those crops should be raised which are the best calcu-

lated for the extirpation of weeds. The most effectual plan for that purpose would be, except on the richest soils, to cultivate a greater proportion of green crops than of grain. By this means, also, a constant succession of large products may be secured.—I have given a number of different modes and rotations of cropping land, both in Scotland and England; and likewise, there are many rotations that farmers are bound in their lease to fulfil, which are entirely against the farmer; and what is against the farmer, is likewise against the landlord. I know farmers, and not a few of them, who are bound to rotations that are perfectly against both farmer and landlord—the farmer being bound, as it were, to a stake, and hemmed in by some unreasonable rules, which are seen to be against the farmer and landlord too; and yet the factor has got so much power over the laird, that he will not let the farmer go an inch beyond his proper rules.

Stirlingshire is bounded on the west by Dumbartonshire; on the east, by Clackmannan and the river Forth; on the south-east, by West Lothian, or Linlithgow; and on the north-west, by that division of Perthshire called Monteath. The country is variegated with hills and plains, shaded with many woods and plantations, and in general is fertile, both in corn and pasturage. The principal towns are Stirling and Falkirk. It extends in length thirty-six miles, and in breadth about thirteen miles. The features of this country, as viewed from Stirling Castle, are rich and

beautiful. An extended plain stretches to the north-west, terminating with the majestic Benlomond, and finely watered by the rivers Forth and Teath. Numbers of gentlemen's seats, and extensive plantations interspersed through the whole, enrich the prospect. Towards the east, the windings of the Forth, the rich carse and plains of Carron, loaded with the most luxuriant crops, gladden the heart, and delight the eye. The majestic Grampian Mountains terminate the prospect on the north, and the green hills of Campsie on the south. This county abounds with coal and stone; in some places there is lime: and more valuable minerals have been discovered, and in part wrought, viz. silver, copper, and lead; so that at some future period, and that perhaps, not far distant, Stirlingshire may become the Peru of Great Britain. In what are called the low grounds, beds of sea shell, and stumps of trees are frequently met with. As a considerable part of the low grounds are covered with moss, to the thickness of several feet, the gentlemen in different parts of the county have followed the example of the late Lord Kames, of letting small parcels out to people, at a small rent, for a number of years, who clear off the moss, and bring in the ground. These have got the appellation of Moss Lairds. Situated in ancient times, upon no less than four kingdoms, having the Northumbrian and Cumbrian dominions on the south, and those of the Scots on the north, this county was the field of much conten-

tion and bloodshed. It was here the Romans found the greatest difficulty in subjecting the ancient inhabitants, who poured down upon them like torrents from the hills. To stop their progress, Agricola built a chain of forts, about the year 80, between the friths of Forth and Clyde, which was afterwards connected by the famous wall of Antoninus, called Graham's Dyke, erected about the year 140. In this county, many of the battles of Ossian are likewise said to have been fought. At Stirling our kings frequently resided, particularly James VI. The castle of Stirling has withstood some of the closest and most lengthened sieges which are recorded in the history of Scotland. On a field near Bannockburn, was fought the famous battle between Robert Bruce, and Edward II. of England. Contiguous to this is Torwood, famous for being the retreat of the renowned Sir William Wallace. The root of Wallace Tree is still pointed out near the toll bar. Near Falkirk two famous battles were fought, one wherein Wallace and the Scots were defeated: the other is the well known engagement in the year 1745. The banks of the river Carron have been the stage of many memorable transactions. The two hills, Dunipace, are noticed in history, as being the place where many national causes have been decided; and oftener than once, by great monarchs in person; and where many treaties of peace have been signed. On the banks of Carron, stood Arthur's Oven; whether intended for a temple or a trophy

is uncertain. In place of gloomy castles, and fields of blood, happily now the scene is changed. The wall of Antoninus, that barrier of Roman usurpation, is almost entirely demolished by the plough-shares. Here we see the Caledonian trampling on the ruins of Roman ambition, and unfettered commerce occupying the seats of imperious usurpation.

The great canal which unites the eastern with the western ocean, has its entrance from the Carron, and runs parallel to it for many miles. The Carron works, erected about the year 1760, where the manufactory of iron, and all sorts of iron utensils, is carried on to a very great extent, gives employment to many hundreds. Stirling is the only royal burgh in this county; but there are several towns and villages of considerable consequence in it, such as Falkirk, St Ninians, Larbert, Kippen, Kilsyth, Airth, Bochlyvie, Campsie, and Killearn. It is watered by the Forth and Teath. Entering this county, we first come to the parish of Slamannan. The river Avon runs through it; the banks of which are light and of a fertile soil. Part of it is clay, and the high ground black and moorish.

Muiravonside is also situated upon the Avon, and the surface on the whole is flat. The soil on the east is light and gravelly; towards the west clayey; but is on the whole productive. Coal and iron stone are found here.

Polmont lies on the banks of the Forth and Avon. The surface is flat and productive.

There are considerable coal works here, belonging to the Duke of Hamilton. In the united parishes of Larbert and Dunipace, the soil is not naturally fertile, although bearing good crops in many places, from culture. The Carron works, employing about 1000 hands, surpass every thing of the kind in the world. The famous cattle trysts are held in this parish; and at the great one in the month of October, between 30,000 and 40,000 cattle are annually collected. Coals and ironstone abound here.

On the banks of the river Carron, lies the parish of Denny, and the great canal passes through it. The soil is in general, a thin clay, and very unproductive. The parish of St Ninians, like other parishes in this county in a similar situation, is divided into carse land, dryfield land, and moorland. It is enriched by a great many seats, and thriving plantations; and the cultivation is well managed. Coal is plenty. The only branches of business carried on here, are the manufacture of tartan, chiefly for the army, cotton cloths, tanning of leather, and making of nails.

It would swell the size of this book, beyond what is intended, to mention all the parishes in this county. On that account, we will omit a few of them.

Buchannan lies on the banks of Loch Lomond, and the Grampian Hills run through it. Loch Lomond, and Buchannan House, the residence of the Duke of Montrose, with its woods and

plantations, are the ornaments of the quarter of Kippin which borders with Perthshire. The soil of this parish, and Gargunnock, owing to the rising ground, causes three divisions; 1st, Carse-ground; 2d, Dry-field; 3d, The moor, consisting of about 3000 acres. This is at the head of the strath which comes next Stirling. Gartmore House, the residence of Mr Graham, stands at the top, commanding an extensive view of the plain below. The minerals are lime-stone, and free-stone. The parish of Stirling is confined to the town, and a small portion of land between it and the Forth. The approach to Stirling is delightful. The town and castle at a distance, strike every traveller with their resemblance to Edinburgh, particularly from the south-east side. Stirling holds the fifth rank among the Scotch royal burghs, and was one of the court which gave rise to convention of royal burghs. The castle was a favourite residence of James I., and was the birth place of James II. In it too, he perpetrated that atrocious deed upon the Earl of Douglas which stains his memory. The room still goes by the name of Douglas' room.

Logie is situated about two miles north from Stirling. It lies in three shires, but chiefly in this. The surface is partly rich carse ground, and partly hilly; but very fit for pasture, being part of the Ochill Hills.

Alva is situated at the foot of the Ochill Hills, and is totally disjoined from the county of Stirling, though it belongs to it. It is almost sur-

rounded by Clackmannanshire. The greater part is hilly, affording excellent pasture for sheep.

Airth stretches along the south side of the Forth, except two small risings called the hills of Airth and Dunmore. The parish is flat, and consists mostly of rich carse ground. Bothkennor is a small parish situated in the carse of Falkirk. The surface is flat, and the soil a deep rich clay, which produces every kind of grain.

Falkirk is situated on the north road between Edinburgh and Glasgow, and nearly at an equal distance from both. The road to Stirling and the West Highlands, also passes through it. The greater part of the parish is enclosed and subdivided. It has a rich and fertile appearance, from the number of gentlemen's seats and villas. The Carron works, so well known, as well as several thriving villages, lie in this parish, such as Grangemouth, Laurieston, &c. Several fairs and weekly markets are held in it. There are three cattle trysts, where, exclusive of horses and sheep, it is computed that no less than 70,000 Highland cattle are sold annually.

Kinross has Perthshire on the west and north; Fife on the east and south. The south part of this county is fertile in grain, but on the north it abounds with fine pasture. Kinross is the only town in the county, pleasantly situated on the west side of Loch Leven, which is three miles long, and two and a half broad.

Fifeshire lies between the Friths of Forth and Tay; is bounded on the north by the Frith of

Tay; on the south by that of Forth, which divides it from the Lothians; on the west by Perth, Kinross, and Clackmannan; and on the east by the German Ocean. The face of the country is diversified with mountains, woods, and plains. It is the most populous county in Scotland, and has a great number of fine seats in it. The principal towns are St Andrews, Cupar, Kirkaldy, Falkland, Inverkeithing, Ely, Burntisland, Dunfermline, Dysart, Anstruther, and Aberdour. Fifeshire, taken in general, is of as good a soil as any in Scotland, if not the best. When King James travelled in it, he had looked at it most perfectly, and had made a proper observation upon it. He said, "Fifeshire was like a linen garment, with a gold selvidge." Round the coast it is uncommonly fine land; and what I remark of it is, that even to the tops of the hills it is good. I saw a plough going and turning down one; for it was impossible to turn a furrow otherwise. Before I went up to the plough, I imagined the soil would scarcely cover the rock; but I was much disappointed. One could have put a spade down a whole foot, and met with no stop. It is a most excellent loamy soil; and the crop looked well in the month of August last. The people seem to be more refined in their manners, than in some other counties in Scotland.

There is probably nothing that could in so many various respects, be rendered so useful to agriculture, as salt. 1. It operates as manure to arable land. 2. It may be of use in pro-

moting the fertility of waste lands. 3. It is an effectual remedy against the smut. 4. It preserves the seed when sown, from vermin. 5. It promotes the vegetation of oily seeds. 6. It increases the produce of pasture land, and meadows. 7. It improves the quality of hay. 8. It renders coarse food more nourishing, and moist food less injurious to cattle and horses. 9. It preserves stock from disease, and improves their condition; and, 10. It has a tendency to prevent the rust or blight in wheat.

1*st. On salt as a manure for arable land.* Though salt, if employed in large quantities in its natural state, is hostile to vegetation, yet it operates advantageously in various ways, when judiciously applied to arable land. In large quantities, it has a tendency, like every excessive stimulus, to disorganize and destroy the vegetable substance with which it comes in contact; but in moderate quantities, it promotes the growth of vegetables, by enabling them to take up more nourishment in a given space of time, and to perform the circulations and secretions with greater energy. The following are modes in which it has been successfully made useful for the improvement of arable lands. In preparing the soil under the following process, it is recommended to sow from thirty to forty bushels of salt per statute acre, for the purpose of destroying the roots, and insects in the soil: Break all the tough and hard clods, which are found to be so troublesome in working the ground. This

should be done in autumn, sometime before the land is ploughed. The salt being thoroughly incorporated with the soil, during the spring and summer following, the strength of the salt would be so much reduced, when the seed is sown, that instead of injuring, it will promote vegetation, and the land, it is said, will be found to produce a crop superior to those under any other mode of cultivation; the advantage of which will be experienced for several succeeding years. It would be extremely important to compare the produce and expence of a fallow, treated in this manner, or manured with lime. Salt has been advantageously applied to crops. R. Legrand, Esq. tried it twice on a barley field, sowing the salt at the rate of sixteen bushels per acre, immediately after the crop was covered by the harrow: the verdure in spring exceeded every thing he had ever seen. Mr Hollinshed also recommends sowing sixteen bushels of salt per acre, on a crop of potatoes, as soon as they are covered with the harrow and earth; and he maintains, that by the adoption of that system, alternate crops of wheat and potatoes might be permanently produced on the same soil. These are modes of application, however, the utility of which ought to be tried by repeated experiments, before they can be confidently relied on. It has been proven, by Pringle and Macbride, that although salt will, in large quantities, prevent putrefaction, owing to its antiseptic properties, yet it has an evident tendency to promote the process,

when used in small quantities. Hence the advantage of mixing it in moderate quantities, with farm-yard dung, and other animal and vegetable substances. An experiment was tried in Cheshire, of mixing grass root, and other roots, or rubbish harrowed off the land, with foul grass. It was then incorporated with other manures; and the effects of this manure, or compost, on a crop of barley and grass seeds, is said greatly to have exceeded the most sanguine expectation that had been formed of it. Salt, when applied in compost, is said to have been found to be a more beneficial manure, even than lime. A farmer mixed up a quantity of refuse salt, with the earth taken out of the water Torrans, and another portion of the same earth with lime. The vegetation of that part of the field which had the salt compost laid upon it, was by far the healthiest, and most vigorous. In those parts of Cornwall where the fisheries prevail, considerable quantities of old or condemned salt, are used as manure, mixed with earth, broken fish, sea sand, and stable dung. The quantity of salt allotted to an acre, thus mixed in compost, is about a ton, which may cost about ten shillings. The broken fish is considered to be the best article. But the salt is accounted friendly to vegetation, in cases where it is thus used in a mild and modified state. The most extraordinary circumstance connected with the effects of salt on vegetation, takes place in the southern provinces of France. The surface ground on the sea coast of those provinces, con-

tains a quantity of saline particles. If a great quantity of rain fall from the month of April to that of June, the wheat prospers, the salt being washed down below the roots of the plants, leaving saline particles remaining near the surface of the soil, in that state of equilibrium which is favourable to the vegetation of grain.

2. *Of salt as promoting the fertility of waste land.* The right honourable Sir John Sinclair, that celebrated writer on agriculture, gives the following account in his code of agriculture, of salt as promoting the fertility of waste lands; having, at the desire of the Board of Agriculture, written to an intelligent correspondent in the Netherlands, M. Gillet of Brussels, to know whether the farmers there derived any agricultural advantages from the use of salt. "I received," says he, "for answer, the following information, which explains how salt, when judiciously applied in compost, may promote the improvement of waste land. The abbey of St Pierre at Ghent, before the revolution, broke up about 150 English acres, 50 Flemish bonners of moor land, near Owdenarde; and in order to procure manure, they adopted the plan of collecting all the heath, clods or lumps which the ground produced, into piles, and intermixed them with strata of salt. These piles were turned over once a-year, for three years successively, and were then spread upon the land; which, by means of that manure, produced good crops for two years. The land being let to farmers, the plan of using salt was

given up; and the soil becoming unproductive, was planted with brush wood or coppice. It was then, however, ascertained, that salt thus dissolved the coarse heathy substance to be found in such soils, and converted it into manure. The effects of salt applied in the same way to peat, in alternate strata, is a most important subject of experiment, which, if successful, would greatly promote the improvement of waste land. It would probably act more rapidly on peat than on heath, and would thus furnish an immediate manure for a crop of turnips, so well calculated for bringing such soils into a state of fertility.

3. It is an effectual remedy against *smut*. It is well known, that seed wheat, if immersed in water, so impregnated with saline particles that an egg will float on it, and frequently stirred, so that all the unsound grains will rise to the top, which are then skimmed off, will be exempted from smut; provided, after the wheat is separated from the pickle, it is spread upon the floor, and a sufficient quantity of new slacked lime, to dry the whole, is sifted upon it.

4. It preserves the seed when sown, from *vermin*. In some parts of Scotland, where the oat crops were frequently destroyed by grubs, it has long been a practice to mix salt with the seed, in the proportion of one to thirty-two, but sometimes one to sixteen. Every means has been taken to ascertain the utility of the practice, which has been attended with uniform success.

Salt destroys vermin in the ground, by making them void the contents of their bodies—the stimulus being too powerful for them to withstand. It has this additional advantage, that the vermin thus become food for those very plants which otherwise they would have destroyed.

5. It promotes the *vegetation of oily seeds.* This was first discovered in America, in the culture of flax; and it has since been ascertained in this country, by the experience of Mr Lee of Old Ford, near Bow, in Middlesex. The quantity of salt should be the same as that of the seed sown, viz. about three bushels per English acre. It is strewed on the surface after the seed has been sown. It improves greatly the quantity and quality of the flax; and in particular, the quantity of the seed from the new crop. Though the experiments have hitherto been confined to the flax, it would probably answer equally well with other seeds of an oily quality. It is supposed, indeed, that salt is most useful when it is mixed with a substance containing oil—the union of the two being converted into a species of saponaceous matter, which is favourable to vegetation.

6. It increases the *produce of pasture land* and *meadows.* It has been found by experience in Cheshire, that after draining sour land, if salt is spread upon the surface in the month of October, its effects on the crops next year, will be in the highest degree satisfactory. In one spot, where eight bushels were spread, a most flourishing crop of rich grass appeared in the month of

May; but a still stronger crop in the month of July, where sixteen bushels had been applied. It is stated upon the most respectable authority, that salt sown thinly by the hand, will destroy the moss with which meadows and pasture land are so apt to be infested. In the Netherlands, Dutch turf ashes, which are strongly impregnated with saline particles, are applied to the second, as well as to the first crop of clover, with great success; and Mr Hollinshed strongly recommends sowing six bushels per acre, on meadows, after the hay is got in, particularly in dry and hot summers; and upon limestone and sandy soils. The moisture which the salt attracts, and retains powerfully, assists vegetation, and produces a crop greatly superior in quality, to that obtained by the application of dung. For meadows it is found to be an advantageous practice, to mix sixteen bushels of salt, with twenty loads of earth per acre, turning the heaps two or three times, that the substance in it may be thoroughly incorporated, and spreading it upon the surface, either in summer or in spring.

7. It improves the *quality of hay.* The practice of salting hay at the time of stalking it, has been practised in Derbyshire, and in the North-Riding of Yorkshire. Salt, particularly when applied to the second crop of clover, or when the crop has received much rain, checks the fermentation, and prevents moulding. If straw be mixed with hay, the heating of the stack is still farther prevented, by the straw imbibing the mois-

ture. Cattle will eat not only such salted hay, but even the straw mixed with it, more eagerly than better hay not salted, and will thrive better upon it. Dr Paris likewise contends strongly for improving bad hay with salt, applying it in the proportion of about one hundred weight of foul fishery salt to three tons of hay; but of pure salt, one-third of that quantity may be sufficient. It should be sprinkled between the layers. It prevents mildew, and renders the hay more grateful and more beneficial to cattle.

8. It renders coarse food more nourishing, and moist food less injurious to cattle and horses. The ancients were accustomed to prepare their straw for feeding stock, by keeping it for a considerable time sprinkled with brine; it was then dried and rolled up in bundles, and given to oxen instead of hay. Mr Curwen finds, that if salt is given to cows, with steamed chaff and other inferior food, it makes them eat it up completely, and that, in a certain degree, it corrects the taste of milk, when cows are fed on turnips, and increases the quantity they produce. In Cheshire they give their cows a little salt when they are falling off from their milk. In Flanders it has been found that a small quantity of powdered salt is very beneficial for horses, when new oats are given them, if the oats are at all moist; and there can be no doubt that moist food in general might be rendered less injurious by the same means, for instance, when raw potatoes are first given to horses. Mr Curwen is convinced by

experience, that chaff and straw might be rendered available to a much greater extent than at present, by the use of salt.

9. It preserves stock from diseases, and likewise improves their condition. In several countries, as in America, the East Indies, Flanders, Sweden, and Spain, it has been found that salt given to domestic animals is advantageous to them in various respects. It may be proper, however, to consider the best mode of applying it to the different sorts of stock under distinct heads.

Horses.—Mr Birkreck, in his "Notes of a Journey in America," recently published, mentions that the horses he saw in the interior of that country were of an excellent description, and were in high condition, even when travelling at the rate of forty-five miles each day. On long journeys they are fed well, getting from four to five gallons of oats per day, besides hay, with a good handful of salt about twice a-week. It appears from an experiment tried at Mr Alderman Fairley's salt work, at Droitwich, that salt is of great use to horses. The quantity given was about four ounces, three days in the week alternately, mixed with chaff. The whole four ounces should not be given them at once, but at several times in the day, about a table-spoonful each time; it makes the animals eat their food and do their work better. Mr Curwen gives his horses employed in the farm, the colliery, &c., at the rate of four ounces per day, with their steam-

ed potatoes twice a-day. It makes them clean out their cribs, and is a great benefit to their health and condition. Salt given to horses, cures the batts; and, it is said, might be given with great advantage to race horses, and would prevent the necessity of applying those severe purges to which they are at present subjected.

Cattle.—The uses of salt to cattle are various; besides increasing the quantity and improving the quality of their milk, as already stated, it prevents their heaving when fed on clover, or on turnips, the tops of which have the same effects as clover, both on cattle and sheep, when eaten in any quantity. Mr Curwen's experiments on this head are most important. From the 19th of November 1817 to the 3d of February 1818, he gave salt to his cattle in the following proportions:

Sort.	No.	Ounces per Day.
Cows and breeding Heifers	40	4
Young and fat Cattle -	43	3
Working Oxen - -	18	4
Heifers and young Oxen	21	2
Young Calves - -	20	1
	142	14

The cattle are said to be in the highest state of health, ever since the use of salt was commenced; no objections nor inflammations occurring as formerly, and not a single animal out of order.

In some parts of America, they give salt to their cows at the rate of about two bushels per

annum. In the East Indies they give salt to their bullocks in general daily, to the amount of two or three ounces, mixed with the seed of pulse. A due proportion of salt they consider to be essential for their health, and almost as necessary as food.

Sheep.—The advantages of salt to sheep are very great. It improves the wool considerably, as is experienced both in Spain and in the Shetland Islands, where the pastures are so much impregnated with sea spray. It likewise prevents the rot, and destroys the different sorts of worms which are to be found in the bodies of sheep,—in particular, liver worms. It is said to protect them likewise from the scab.

In Spain 128 lbs. of salt may be given to 1000 sheep in five months; but in a wetter climate, like that of Great Britain, Lord Sommerville thinks that a ton of salt for every thousand sheep would be requisite. It should be given them in the morning, to counteract the bad effects of the dew. In dry weather, a small handful may be put on a flat stone or slate, and ten or fifteen of these slates or stones, set a few yards apart, are enough for a hundred sheep. If the sheep are brought to the place where the salt is put, they will lick it up quickly, if they find a craving for it; but if they don't want it, the salt may be taken up, and reserved for future use. This may be done twice a-week: but in particular cases it may be offered thrice.

Mr Curwen finds, that salt prevents what is

called the *sickness* in the northern parts of England, or the *braxy* in Scotland, by which so many thousands young sheep are annually lost. This is a discovery of the greatest importance for many parts of the kingdom of Scotland.

On the general uses of salt to stock.—This article is useful or serviceable in restoring the tone of the stomach, when impaired by any excess, either of food or of labour. It improves the quality of their dung, and renders the sprinkling of it unnecessary. It renders stock tamer. Mr Curwen finds that the sheep gather round the shepherd, and will hardly suffer the salt to be deposited on the stones; it overcomes all their fear and timidity of disposition. And as to the cattle, it brings the wildest of them to feed out of the hand. In America, milk cows are so fond of salt, after they are a little accustomed with it, that if tempted to wander in the woods, they are sure to return, in order to receive their ordinary allowance. But, above all, it preserves the health of stock. Mr Mosselman, an intelligent farmer in the Netherlands, who keeps above a hundred milk cows, oxen, and calves, twenty-three working horses, and two hundred and fifty sheep, has used salt for five years, during which time his whole stock have been perfectly free from disorders.

10. It has a tendency to prevent *rust or blight in wheat.* In the course of a most extensive enquiry into the causes of the rust or blight on wheat, and the means of its prevention, it ap-

peared that Mr Sikler, a farmer in Cornwall, was accustomed to manure his turnip land, with the refuse salt from the Pilchard fishery, and that any ground thus treated was never liable to the rust or blight, while it infested all the neighbourhood. This important circumstance is confirmed in a recent communication, dated 15th May 1818, to the author, from the Rev. Robert Hoblyn, whose wheat tillage on a farm in Cornwall, was increased from twenty to fifty acres per annum. He used one ton of old salt with one ton of fresh fish, mixed with earth, and from twenty to thirty tons of sea sand; and his crops, he states, were always good, and never infested with rust. It is probable, that the salt is the only article in this compost, that could be of material service in preventing the rust, by its checking putrefaction,—a result, of too frequent occurrence, of corrupted manures. It is well known, that the rust does not attack plants in a state of perfect health. Its general cause is the over fulness or over luxuriancy of the plant, from it being glutted with rank or unwholesome food. Hence the advantage of applying smothering crops, as tares, potatoes, hemp, &c. which prevent the growth of rust, &c.; and hence wheat planted in a rich compost of dung, attains such excessive luxuriance as to become rusted, and incapable of bringing its seed to perfection.

Conclusion.—There is every reason to hope, from this enumeration, that important benefits to agriculture will result from the reduction of

the duties on salt. But the anxious endeavours of Parliament to promote the interest of the farmer will be in vain, unless he resolves to avail himself of the boon that has thus been conferred upon him. For that purpose his attention to the various particulars above stated, is most earnestly requested.

The system of farming adopted in some of the districts of Scotland being much celebrated, it may be proper to give the following account of the plan pursued by Mr Hunter of Tynefield, near Dunbar, who is justly accounted one of the most intelligent farmers in East Lothian. It goes upon the principle of converting nearly all the straw of a farm into dung. Mr Hunter's farm consists of nearly 350 Scots or 437 English acres. The horses kept for labour are 16, or about one horse to 27 acres. The other stock varies according to the quantity of green food produced in the course of the season. It is only necessary to observe, that about ten sheep, weighing from twelve to fourteen pounds per quarter, require from thirty to thirty-two tons of turnips, (rather more than the average of the produce of an English acre,) to fatten them for market. Mr Hunter keeps some cattle for winter soiling, if it can be said to be a proper term or expression for it, which are bought in October and November, and sold in March. The sheep are fattened some time sooner, but the above weight of turnip will keep them all that time. The cattle are sold as soon as fattened, if the

market offer, and sooner or later ready in proportion to the condition they may be in, when they are put up to feed.

The feeding of calves for veal, has been long practised in every part of this kingdom; and when properly conducted, it is a branch of industry of considerable importance, and from which an adequate profit may be derived. In Essex the attention of the farmer is chiefly directed to the supplying of the metropolis with so important an article as veal; and the plan in that district is reckoned more profitable than grazing, or even the dairy. The mode of supplying the London market, as described by Dr Dickson, from the various authorities he quotes, is, that the calves are bought at from 20s. to 30s. and kept till they fetch L.4 to L.5, or sometimes from L.7 to L.8. He says, the business of suckling is reckoned to turn to good account, when each calf, in the progress of its fattening, brings a profit to the farmer of 3s. per week. In the report for the county of Middlesex, it is stated, that suckling calves is more profitable than grazing or fattening, but not so profitable as the dairy; and the surveyor of the county of Essex reports, that the suckling of calves for twelve weeks, will pay at the rate of 4s. 6d. each calf per week. But by far the best system of feeding veal, to be met with in this island, is in Lanarkshire, and more especially in Strathaven and its neighbourhood; for there it yields a profit that has never been equalled in any other part of

Britain. Some calves, after being fed from five to six weeks on the milk of their dam, will bring from L.3 to L.4, 10s. each, according as the animal has been of a thriving sort or otherwise, and as veal may happen to be in demand at the time; and as a new dropt calf can be procured at from 6s. to 12s. and brought to this price in five or six weeks upon the milk of one cow, the return made is more than quadruple that mentioned in Essex, notwithstanding its vicinity to London. Many calves are fed in that district to a much greater pitch than can be accomplished with the milk of one cow, which cannot carry on a calf to advantage longer than about five or six weeks. After that age, the calves get the milk of two cows, and in some instances three, divested of the first drawing, which is poor in quality. After being fed for several weeks in this manner, a calf will reach nearly the weight of a cow, and attains a degree of fatness hardly to be credited.

Mr Ayton, in his valuable Treatise on the Dairy, page 90., mentions many instances of calves being sold for veal, as high as L.10 and upwards, when the veal did not sell for more than 5d. or 6d. per pound of 16 ounces. A farmer in that district (Mr Strang of Shawton), fed, some years ago, a calf to the weight of 35 stones avoirdupois, or 16 pounds to the stone; and he was offered 14s. per stone of 16 pounds, and 22½ ounces per pound, which, with the hide, would have brought L.15, or more. Mr Granger in Dikehead fed a calf to the weight of

22 stones 3 pounds, of 22½ ounces to the pound, and 16 pounds to the stone. This calf brought, at 10d. per pound, upwards of L.15, besides the hide; and at the price veal has given sometimes in the Glasgow market, it would have brought L.25. It is certain, that feeding to such a pitch is not so profitable as it is to sell the calves when about five weeks old, and to apply the milk to the feeding of another calf.

The method of feeding calves in Lanarkshire is simple and easy during the first ten or twelve days after they are calved. They do not get the whole milk of a cow; and if they are kept longer than six weeks, they require more than the milk of one cow. They are not allowed to suckle, but the milk is drawn from the cow, and given to the calf from a dish, and an artificial teat is put into the mouth of the calf, to make it draw in the milk slowly, and to promote the secretion of saliva. The calves are fed twice every twenty-four hours, and are kept in a dark place to make them quiet; they have abundance of dry straw for litter in this district. They are neither bled, nor are any drugs given them. If they become costive, they get a little mutton-broth, and a small quantity of rennet; when too lax, they get no other food but milk.

The following plan for carrying on the suckling process, has been adopted in other places: As soon as the calf is dropped, it is put into a box made of coarse boards, about five feet long, and four inches higher in the one end than in

the other, and plenty of straw put into the box to keep the calf warm, soft, and to lie easy. The litter is changed twice a-week. For seven or eight days milk is given it but cautiously; for unless a calf is fed moderately at first, it is apt to take a loathing at its food. It should be bled in about ten days, and afterwards as much milk given it fresh from the cow, either twice or thrice a-day, as it will take. The bleeding should be repeated once a-week; and at all times when the calf loathes its milk, and does not feed well, bleeding ought to be repeated. The frequent bleedings are said to improve the appearance and quality of the flesh, and to prevent plethora, to which calves are subject, even when not fed so high, and still more so when they are. A large piece of chalk should be given or hung in the box, which the calf will lick occasionally; this contributes nothing to the whiteness of the veal, but it amuses the animal, promotes the secretion of the saliva, and corrects that acidity in the stomach, which might otherwise be engendered, and which often takes place. A cow calf is reckoned the best for veal. If a bull calf is suckled, he ought to be cut when about a week old. This, it is said, retards his growth, but it renders the veal whiter and better on the whole. By this mode of treatment calves are kept clean, quite warm, and dry; the veal they furnish is excellent, and they are soon ready for the market. This plan is certainly preferable to the plan of stupifying them with spirits or with laudanum,

so common in other places where a different system is pursued.

Dairy farms.—The management of the dairy is certainly a most important branch of rural industry; for when land is in pasture, or appropriated for the feeding of cows, a greater revenue can be drawn from it than from any other mode by which the pastures can be consumed. It has been stated on high authority, and on sure data, that the quality of grass that will add 112 pounds to the weight of an ox, will enable a dairy cow to yield 490 gallons, or nearly 900 Scotch pints of milk: that quantity of milk will yield from 22 to 24 stones, or about 385 pounds imperial of full milk cheese; or, if made into butter, it will yield 170 pounds, and the butter milk will bring a penny per pint: this is at the rate of nearly $3\frac{1}{2}$ pounds of cheese, or $1\frac{1}{2}$ pound of butter, besides the value of the sour milk, for each pound of beef raised from an equal quantity of herbage. Another proof of the superior advantages of dairy produce, arises from the much greater advance in its price, in comparison of that of grain, or the ordinary produce of land, and which will probably continue in nearly the same proportion.

The average advance on the price of grain since 1770, does not exceed 50 per cent., while cheese has increased from 200 to nearly 300 per cent., and butter from 300 to more than 500 per cent., above what it gave sixty-five years ago. Even butcher-meat has not advanced nearly in the same ratio as dairy produce.

In Badenoch, near Kingussey, there is a track of haughs, six or seven miles, the levellest ground I ever saw, so much of it in one place. The Spey is all banked in, and there are meadows made to the best advantage. They told me, that some of those meadows gave, or was rouped at, L.14 each acre. There is a meadow at Edinburgh that is let for one year, as high as L.48 per acre; but I consider those at Kingussey still to rent uncommonly high in that part of the country. There are likewise a vast number of acres in that district, that could be turned to good account, both for the inhabitants of the country, and likewise for the proprietor. Were he to employ people, and take in a good quantity of land that is lying completely in a wet state at present, it would be doing good to every class of people; and there is lime most convenient, and of the best quality; and it would keep the people from emigrating into foreign kingdoms; for no person will leave his own country, if he had an ordinary way to keep himself in it; as I mentioned how proprietors should do in Buchan, which would be for their advantage; but it would come to a much better account in Badenoch, for the land is of a better quality, and manure much more convenient; and by so doing there are many thousands of acres could be turned to good advantage to the proprietor. Perhaps the thought may occur to him, that thousands of those uncultivated acres of land will be useful and beneficial both to me and the country,

keeping a number of industrious tradesmen, labourers, and mechanics, independent of the higher class. Every one in the country would find it beneficial. Experience, the best of arguments, will justify the assertion, that if extensive highland proprietors would make the experiment of appropriating or disposing of certain portions of waste, or even mere pasture ground, and likewise of the worst quality, to such families and individuals as may be found of settled and industrious habits, but who possess neither means nor inclination to speculate upon a higher scale, the proprietors would doubtless find their advantage in it; and the rage for emigration to the wilds of America, &c. and the inducements to it, would thus in a great measure be done away; while the strength of the nation, which is the people, would live at home contented and comfortable, and be no longer necessitated to flock in multitudes to the towns and cities, already more than sufficiently crowded.

Above Buckie, that country called the Engie, there are two Romish chapels, a bishop, and two priests. The chapels are well filled with catholics, and they are considered to be good neighbours, and hospitable; and the priests are quiet peaceable men. There are likewise two catholic chapels in Glenlevit, and two priests; but I did not see any more chapels in the north of Scotland. I believe they are good quiet neighbours, and meddle with no person, nor with their neighbour's religion. I was in one of their chapels;

but it is needless to trouble people reading about all their manœuvres: their way of worship is most stupid; but still they are good moralists, and that was all I had to do with.

There is an error in farmers keeping their cattle long off the grass in spring, especially where the grass is young, and the first crop. It should be eat early in the spring, not to let it spindle; for when it spindles up, or shoots, the cattle will not eat it; and besides, it is wasting for the ground. The first crop of grass ought to be eat early, and it will grow more thick, and keep more sappy, and be more feeding for the cattle. Where mossy ground is, I know no grass so good for growing as that called Timothy-grass seed. Mossy ground always throws out the rye grass seed, and likewise the clover; but Timothy seed answers it well, and has great crops, and the horses eat it better than rye grass hay. If it be cut when the blade is on the stalk, one may preserve seed himself, by letting it be properly ripe. However, it is about 8d. or 9d. per pound. Some seasons there are great crops of it, where it is well managed; and it is much esteemed for horses feeding; and the horses will eat it sooner than rye grass hay; and it feeds better.

Some men have been farmers for forty years, and know not how to manage even a single cow, far less a numerous stock. I was passing on my way in Perthshire, and as I was entering into a hollow near the water of Anon, a number

of men were standing and looking to a cow, and the cow was sore pained, and going round and round, being held by a man with a rope round her head, and another twisted round her middle, and the cow was groaning and uncommonly pained. I went off the road to see what was going on; but had not been told what was the matter with the cow, when she dropt down and never made a spall. Some of the onlookers said, She is riven; others said, She is bursted; the owner said, What devil for will she burst, and that good rope twisted about her middle? Another man said, I doubt, John, the cow is bursted, although that strong cable-rope be about her middle. The owner said, The rope is still whole. Rive; rive; what devil for will she rive, and the hide still whole! I learned the farmer was in the same farm above forty years, and had kept five or six milk cows, and never knew what effect clover had on cattle when green. This must be considered great ignorance in the farmer, not knowing that while the hide was whole, a cow might burst, or rive as he called it.

Some centuries ago, the people observed frets, or omens, as they were called. Some of them were good and some bad. In my tour, I saw they were still observed. In the north of Scotland, if the tongs happen to fall with the head of them into the fire, then some of the family will say, There is a stranger; now get up Janet, and sweep in the house, and make it clean; for there will be somebody here soon. Likewise, when

the cock crows before the door, the mistress will cause one of the inmates to go to the door, and look what airth the cock's head is when he crows, and whatever airth the cock's head is, it is from that airth that the stranger will come. If the cock continues long crowing in the same position, it is presently conjectured the stranger will be here soon, and wait long when he comes. Then there is such a fuss for a clean cap for the good-wife, and a clean check apron; and then she fancies herself ready, come when or who will. I was surprised at their observation, and put some questions to them anent the cock-crowing; and they said they scarcely ever saw it fail, but some person came to the house immediately after, and not only a neighbour, but a stranger from some distance. I told them it was but a popish notion; but could not prevail on any of them to think so; for some of the old wives were perfectly head-strong, and would not be persuaded of it being a stupid notion; and to convince me of the certainty of it, they would count back and reckon a number of times that they had a certain proof of it, and told me it was as sure as any thing could be. So I was at last obliged to leave them as I got them.

Clackmannan, the smallest county in Scotland, is bounded on the north by the Ochil hills; on the south by the frith of Forth; on the east by Perthshire; and on the west by Stirling. That part which lies nearest the Forth is plain and fertile, and produces abundance of corn as well

as pasture. The principal towns are Alloa and Clackmannan. On entering this county from Stirlingshire, we find ourselves in the parish of Alloa: the situation of the town is pleasant; it has a good harbour; in it stands the tower of Alloa, the residence of Mr Erskine. A considerable coal trade is carried on here. Coal has been long wrought in this quarter; that on the barony of Alloa is thought to be farthest west of any north of the Forth. Clackmannan parish is almost all cultivated; a great part being carse ground, and highly productive. That on the north of the town is clayey and wet; here some large fields have been gained from the Forth. Clackmannan is the county town. Beautifully situated on an eminence, at the west end, stands the old tower of Clackmannan, said to have been built by Robert Bruce, from which there is one of the richest views in Scotland. There is preserved in the tower the great sword and cassock of the celebrated Robert Bruce; also a large two handled sword, said to have belonged to Sir John the Graham, one of the faithful champions of the great Wallace.

Tillicoultry consists of part of the Ochil Hills, and the flat ground below on the Devon. The Ochils here afford fine pasture; the flat ground is generally light, much covered with small round stones. But it is well cultivated, and yields good crops. The banks of the Devon here are extremely beautiful, and they are very temperate.

Dollar consists cheifly of an inclined plain at

the foot of the Ochil hills, beautifully smooth, and spread out by the hand of Nature. The hills here afford most excellent pasture, and the low ground is of a light and gravelly soil, but on the banks of the Devon, which nearly divides the parish, a clay soil prevails. At the corn glen, specimens of silver ore have been found; and at the White Wisp, pebbles remarkable for size and beauty are often to be met with. The greatest natural beauty are the glens and wood around the ancient tower of Castle Campbell; it was once the property of the Duke of Argyle, and was the original of that family.

I see in many parts of Scotland farmers' gardens almost entirely unfenced; some of them only a slab or stake, some of them tied with a rope. Farmers certainly would need to breed up their cattle in a complete honest practice, or undoubtedly they would be stealing a cabbage stock at a time. A garden, under a proper system, is a most valuable acquisition to a farmer with a view both to comfort and advantage. Many beneficial articles may be obtained from a well cultivated and sheltered garden, which cannot be raised in the field, or will not grow in exposed situations, with equal luxuriance and perfection. Attention likewise, should be paid to the sowing of different articles at various seasons, by which an earlier, and a more equal, as well as a more regular supply for the table may be obtained. It is also of use to employ a piece of ground in a garden for raising cabbages, Swedish turnips, and other

plants, to be afterwards transplanted into the fields. The refuse of the garden may be given with advantage to pigs and milk cows. At the same time working in the garden should always be considered as of inferior consideration to the business of the farm; and on no account ought the farmer's attention to be drawn off from his crops of grain or grass. The size of the garden ought to depend, not on the extent of the farm, but the number of the family, and on the mode of cultivation, whether by the spade or the plough. In general, from one-half to about three-fourths of an acre is sufficient, when cultivated by the spade, including a portion kept in grass in rotation for the drying of clothes, whether spread on the grass or hung on lines. If farmers would pay attention to it, they would find considerable advantage by it to the family.

Ayrshire is bounded on the north by Renfrew; on the south by Kirkcudbright and Wigton; on the east by Lanarkshire; on the west by the frith of Clyde. It is a fertile and populous country. The divisions are Kyle, Carrick, and Cunningham; the principal towns, Ayr, Kilmarnock, Irvine, Maybole, Stewarton, and Saltcoats.

Its length along the coast is about eighty miles, and its extreme breadth from west to east, about thirty-two miles. The river Ayr, which rises from glen Buck, on the boundary between this county and Lanarkshire, and flowing about thirty miles westward, falls into the frith of Clyde,

gives its name to this county, which it divides into two parts not very unequal. Besides this natural division, however, it has been long portioned into three districts, formerly denominated the Three Bailieries of Scotland, viz. Carrick, on the south of the river Doon, Cunningham on the north of the Irvine, and Kyle, which occupies the intermediate space, and is subdivided by the river Ayr into the two districts of King's Kyle and Kyle Stuarts.

The general appearance of this county, though not much varied, cannot easily be described. On the coast it is generally rich and fertile, with an agreeable interchange of fine plantations and well cultivated fields. The appearance of the interior is hilly, naked, and forbidding. Cunningham is a very fertile track of country, divided among a few great proprietors, and contains of course a small number of gentlemen's seats. Some of these are extremely beautiful. The whole coast commands delightful views, of which the proprietors have very wisely taken advantage in fixing their places of residence. Kilburn House, the residence of the Earl of Glasgow, can hardly be surpassed for the tasteful elegance of its domain, and the picturesque scenery with which it is surrounded. Almost the whole of Cunningham declines towards the sea, presenting on all sides a rich and extensive prospect, which is finely contrasted with the islands on the frith of Clyde, Cambreas, Bute, and Arran, and the distant mountains of Argyleshire: when pro-

perly cultivated, this district will rank with the finest in Scotland.

With regard to the climate, we may observe, that not only in this county, but through the whole western coast of Scotland, there is in general much more rain than on the eastern coast, particularly in the autumn and winter months. In spring, the wet has greatly the advantage there. The easterly winds are neither so injurious to vegetation, nor so chilly as in the vicinity of the German Ocean; and uncomfortable fogs, so frequent on the frith of Forth, are in Ayrshire, comparatively little known. Alloa, a small village in the neighbourhood of Ayr, was the birth place of the poet, Robert Burns. The house stands on the road side, and is marked to the notice of the traveller, by a sign-board with an inscription. This parish claims also the honour of being the birth place of Joannas Erigna Chevalier Ramsay. It contains about 9000 acres, yielding about L.10,000 of rent.

Dundonald extends along the sea coast about eight miles. The soil is various, but the general appearance is hilly. The Cleven hills run from south east to north west, about three miles. On the tops of many of these are marks of art. Tradition says that they were occupied by the Norwegians. In the castle of Dundonald, Robert II., the first king of the Stuart line, both lived and died. The prospect from the hills is very grand and extensive. On the western pro-

montory of the parish, Mr Fullerton, the proprietor, has erected an elegant temple.

In the contiguous parish of Dalrymple, the banks of the river Doon, and the flat grounds, are beautiful and rich. The hills are green, and of a great height.

The parish of *Kilmarnock*. The country is pretty flat and level, declining gently to the south. In this town, which is the largest in the district of Cunningham, extensive manufacture of carpets, woollen cloths, leather shoes, and gloves, has been long carried on.

South west from Kilmarnock, is the parish of Galston, in which the highest ground is light and gravelly. The low grounds are loamy, and pretty rich in general, upon a red or blue bottom. The Irwin is the only river that waters the parish. There is a considerable quantity of wood here, some of which is grown to a very great size. Patie's Mill in this parish, claims the honour of being the place referred to in that beautiful song, "the Lass of Patie's Mill."

Inverkeithing, on the sea coast. The greater part of the soil is light and sandy. In this small town, imports of corn from Ireland are very great. No less than ten thousand quarters are imported annually. Its population is about five thousand. The sect called Buchanites took its rise in this parish in the year 1784.

To the north-west of Irvine, lies the parish of Stewartown. The general appearance is flat, though in some places it rises to hills. The soil

in the low places is a stiff clay. There is lime, but no coal wrought in this parish. The manufacture of bonnets has been carried on here for upwards of a century. This parish has been long famous for its breed of milk cows.

South from Stewarton, we find Dreghorn parish. The surface upon the whole is flat. The soil nearest the sea is light and sandy. On the banks of the river Irvine and Annock, it is a deep loam, and towards the east it is loam, and some heavy clay; but the whole is arable. The country upon the whole, is in a thriving state.

To the north of Irvine and Saltcoats, is the parish of Kilwinning, extending along the shore. The face of the parish is beautifully diversified with natural swells and risings. The heights are generally planted, which gives the whole a beautiful appearance. Kilwinning is famous for giving rise to that respectable society called Freemasons. A number of masons came from the continent in the twelfth century, to build a monastery here. They instituted meetings, and formed themselves into a corporate body. They afterwards met with the countenance and patronage of their sovereigns, James I., and James II. From this, the mother lodge, and all other lodges in Scotland have sprung. Archery is performed annually by a number of gentlemen formed into a society, erected in the year 1688. Nearly in the centre of the county, lies the parish of Mauchline. This parish is all inclosed and subdivided, and

improvements are done to perfection. The tenants are all thriving well.

Linlithgowshire, or West Lothian, is bounded on the north by the frith of Forth; on the west by Clydesdale; on the north-west by Stirlingshire; and on the south-east and east by Mid-Lothian. The county is rich in corn and pasture. The principal towns are Linlithgow, Borrowstownness, and Queensferry.

This is one of the richest counties in Scotland. It is finely diversified by hill and dale—by gentle swells, and fertile plains. The number of gentlemen's seats, surrounded with wood, and adorned with extensive plantations, give it a very pleasant and rich appearance. The country between Queensferry and Stirling, says Mr Pennant, is not to be paralleled for the elegance and variety of its prospects. The whole is a composition of all that is great and beautiful—towns, villages, seats, and ancient towers, decorating the banks of that fine expanse of water, the river Forth; while the busy scenes of commerce and rural economy, are no small additions to the beauties of nature. The lofty mountains of the Highlands, form a distant but august object towards the north-west; and the eastern view is enlivened with ships perpetually appearing or vanishing amid the numerous islands. The small streams of Avon and Almond are the only waters worth noticing. The southern angle, next to Lanarkshire, is the least fertile. Here are situate the villages of Whitburn and Bathgate. The

greater part of the inhabitants of Whitburn, gain their livelihood by flowering muslins manufactured in the place. Near the village of Torphichen, anciently stood the principal residence of the knights of St John of Jerusalem, founded by David I. The town of Queensferry lies low, and is rendered disagreeable by the smoke of the soap works. Opposite to this, stands the island of Inchgarvie, about half way across the frith, and a little below the north Ferry. The ruins of Rosythe Castle, where it is said the mother of Oliver Cromwell was born, with the extensive pleasure grounds, have a fine appearance. To give a description of the parishes in all the counties or shires, would swell the book to a greater size than is intended; but a short description may be given of the parishes nearest to Mid-Lothian ; and the first we meet with is Dalmeny, eight miles west from Edinburgh. The beauty of the grounds, diversified with hill and dale, wood and water, is remarkable. The views from the rising ground are very extensive, and the Forth affords endless variety. Indeed, the scenery here is perhaps unequalled in the island. The land in general is not of the best quality. In the high parts, a stiff shallow clay lies on till ; but towards the sea it is very rich. There are about 4500 acres in this parish, 1700 of which are in tillage; the rest are occupied with pasture and plantations. It is remarkable, that the family of Dundas have possessed these lands in the male line, upwards of seven hundred years. The

parish gave birth to David Wilkie, the author of the Epigoniad. In his youth he cultivated a small farm, and struggled hard with penury. He was afterwards minister of Ratho, and lastly, professor of natural philosophy in the university of St Andrews, where he died at the age of 52, in the year 1773. The grounds around Barnboogle Castle, the seat of the Earl of Roseberry, on the eastern angle of this county, are scarcely surpassed in beauty and variety of prospect, by any perhaps in Scotland. From different circumstances, the ground has been overlooked; but a finer, or a more complete retreat, is not to be seen almost any where. The beautiful seat of Hope of Cragiehall, Dundas Castle, and Duddingstone, the residence of Mr Dundas, are also in this parish. The Queensferry parish lies about nine miles north from the capital, and is much frequented as a passage to the north country—the frith here being only two miles broad. In this parish there is a fine free-stone quarry, from which the finest part of the Earl of Fife's house at Banff was taken. It is said also to have furnished stones for the harbour of Dunkirk.

On the banks of the Forth lies the parish of Abercorn. The natural beauty of this corner, is greatly heightened by the quantity of growing wood, which covers about the sixth part of the parish. Below lies Blackness Castle, situated on a neck of land which runs into the Forth. This, with the fortification on Inchgarvey, seems to have been intended to command the passage

from Leith to Stirling. The garrison of Blackness is one of the four in Scotland, agreed, by articles of union, to be kept in repair. It has a governor, lieutenant-governor, twelve gunners, one sergeant, three corporals, and fifteen privates.

The next parish is Carradin. There is extensive coal mines in this parish. Here, Colonel James Gardiner was born, who fell in the unfortunate battle of Prestonpans, in 1745.

Linlithgow, a parish about sixteen miles west from Edinburgh. The land is of a superior quality, and seems to be well farmed. Linlithgow barley measure was the standing measure of Perthshire, before the late alteration of all measures in Scotland. Here was born on the 8th of December 1542, the unfortunate Queen Mary. Her father, James V. then dying at Falkland of a broken heart, for his misfortunes at Solway Moss, foretold the evils that hung over her and Scotland. Here too, is shown the aisle where James IV. saw the apparition that warned him of the impending fate of the battle of Flodden. The palace is a majestic ruin. It was burnt by accident in 1745; but great parts of the walls are standing. The church is a noble piece of Gothic architecture. The steeple, adorned with an imperial crown, adds much to the beauty of the distant prospect of the town. The time of erection is not ascertained. Opposite to the town house, which is a handsome building, stands the cross well, built anno 1620, and from which issues about a dozen of streams of water, from a

variety of grotesque figures. On the east is Benny Craig, which though not high, is very conspicuous from the east. On the whole, the parish is well cultivated. Linlithgow is also famous for being the place where the solemn league and covenant was burnt in 1662. At Linlithgow bridge, the famous battle between the Earls of Lennox and Arran was fought, during the minority of James V.

Torphichen is situated about seventeen miles west from Edinburgh. The west part of this parish is moorish; the east is pretty fertile, excepting the hilly part. Both coal and limestone are found here.

The parish of *Bathgate* is hilly towards the north-east; but in the other quarters it is flat. The Bathgate hills are covered with grass, and afford good pasture. On the flat ground, the soil is in general a loamy clay. Robert Gibb, of facetious memory, was connected with this parish. He acted as buffoon to James V.; and being allowed on a particular occasion, to personate the sovereign, gave a pointed reproof to the courtiers. His Majesty conferred on him the property of West Canibar, in this parish, which was enjoyed by his descendants, even in the course of last century. The original charter is still extant.

Whitburn parish has a very uneven surface. Towards the west, is a high ridge of considerable extent, of moor ground. The soil in general, has an over proportion of clay. There are both coal and lime in this quarter.

Adjoining to this, is the parish of *Livingstone.* The soil is various, but in general inclined to clay. The Almond waters this parish.

Uphall parish lies twelve miles west from Edinburgh. The new road by Bathgate to Glasgow passes through it. The soil is in general a mouldering clay, upon a tilley bottom.

The parish of *Kirkliston* lies partly in Mid-Lothian, and partly in the shire of Linlithgow. The river Almond divides it about a mile west from the village. On the south side of the road lies Newliston. The soil is either strong clay, or black mould; the whole being well cultivated, and yielding good crops. It was in this parish that Lord Stair first introduced the culture of turnips and cabbages in the open fields. There is here a remarkable stone called the Cat-stone, erected at a very distant period, measuring four and a half feet above the ground, and about eleven and a half in circumference, on which there is an inscription which has not been deciphered by any antiquary.

Edinburgh or *Mid Lothian,* is bounded on the west by Linlithgowshire; on the east, by East Lothian, or Haddingtonshire; on the south, by Tweedale; and on the north, by the Frith of Forth, and part of Linlithgowshire. It is in general, a pleasant and fertile country, and in a state of high cultivation. The principal towns are Edinburgh, Dalkeith, Musselburgh, and Leith. I can give little or no account of Edinburgh, as it was not my intention, when it was proposed

to me to publish remarks on the country; and this small book will not contain much upon many more places than Edinburgh. Besides, many people of late have visited this part of the country, and have judged of it for themselves, which renders a particular notice unnecessary. But I shall mention a few of the parishes in this county.—The river Almond, and Water of Leith, run through the parish of Kirknewton. There is good limestone wrought here, but no coal. The ground is various, but mostly of stiff clay. There being no manufactures, the population is on the decrease. Below the east end of the Pentland Hills, lies Libberton, about three miles distant from the capital. There are three villages in the parish that have the name of Libberton, and one called Gilmerton, which is by far the largest in this parish. It contains extensive coal and lime works, which is the chief cause of the great population. At Gilmerton, there are above twenty seams of coal. Besides other lime works, those at Gilmerton alone yield 72,000 bolls annually. Here is the celebrated cave dug out of the rock, by George Paterson, a blacksmith. It was finished in the year 1727, after five years' hard labour. In this cave are several apartments, with beds, a table, and a large punch bowl, all cut out of the solid rock. There is also a smith's forge, with a well and washing house. Paterson lived in this mansion for several years, and died in it about 1737. Near St Catherine's there is a spring, the water of which is covered

with film, or mineral oil. Adjoining to Duddingstone, lies the parish of Newton. The surface of the country here is flat; but the soil in general is indifferent, although there are several rich spots. This district also abounds in coal.

Duddingstone has long been famous for sheep heads as a dish for dinner. It was here that sheep used to be slaughtered for the Edinburgh markets. The heads are thought barely worth carrying to town; hence the practice of dressing them on the spot. Upon the banks of the river Esk, the soil to the north, on the sea coast, is light and sandy, and remarkable for producing garden stuffs. The fields to the south, on the banks of the river Esk, are a rich loam, and very fertile.

Dalkeith. The low ground here is good in some places, but inclining to sand. The high grounds are a pretty strong clay. Dalkeith is one of the greatest markets for corn in Scotland.

A little upwards, on the same river, stands Newbattle. The soil here is a rich mould, upon a stratum of gravel.

Lasswade includes the eastern extremity of the Pentland Hills, and stretches along the north Esk. In the lower grounds, the soil is rich; but there is a great deal of the ground not so good, but all well cultivated. Upon the South Esk lies the small parish of Cockpen. The prevailing soil here is a strong clay, which, when properly cultivated, is very fertile. About twelve miles from Edinburgh, on the Carlisle road, lies Borth-

wick. The country here has a very uneven surface—hill and dale alternately succeeding each other, giving to the country the appearance of the waves of the sea. The soil is very varied. In the lower parts it is rich and loamy; in the higher parts it is wet and clayey.

The small parish of Primrose, or Carrington, gives the title of Primrose to the eldest son of the Earl of Roseberry. The soil is good and dry around the village, but cold and wet towards the extremity of the parish. Wheat, and all the usual kinds of grain, are cultivated; but the soil is peculiarly well suited to potatoes and green crop.

At the Lammermoor Hills lie Falla and Soutra, which extend east and west about four miles, north and south three miles, being partly situated in East Lothian. The lower parts are pretty level. Soutra Hill rises to a great height. On this hill the traveller from the south is transported by one of the most extensive and luxuriant prospects any where to be met with. The three Lothians, with the Frith of Forth lie before him, and the Fife hills make a fine termination to the landscape.

The large parish of Stow extends from the head of Galla Water, to the banks of the Tweed, below Innerleithen. It, however, lies chiefly in Mid Lothian. The face of the whole is hilly; but the hills are mostly covered with good pasture for sheep.

In West Calder the soil is indifferent; the

whole lies upon a tilley bottom, and is composed either of clay, or a mossy earth. It lies from about 450 to 470 feet above the level of the sea, and is cold and bleak.

The soil of Mid Calder is in general light, and when properly croped, makes good returns. The town of Mid Calder is pleasantly situated, and surrounded with beautiful scenery. The river Almond runs a little to the north; and Calder-wood, which is of considerable extent, overlooks it.

In Mid-Lothian, where the metropolis of Scotland is built, the soil is not equal to East-Lothian. But the deficiency of the soil is counter-balanced by the quantity of excellent dung, which is so plenty that many thousand tons are carried to West-Lothian, by that useful conveyance the Edinburgh and Glasgow Canal; and by this means the neighbouring county is enriched, and the soil of both counties has been greatly improved, and made capable to produce large and weighty crops. There are large tracks of land in Scotland of a much better soil than Mid-Lothian, which will not rent at much more than 30s. and L.2 per acre; whereas around Edinburgh, I know a number of farms let at L.7 per acre; but they are all complaining, and many of them trying to get their rents reduced. But I know some of them that can as easily pay L.6 or L.7, as others can pay only 30s. per acre.

Haddington or *East-Lothian*, is bounded on the north by the frith of Forth; on the south by

the hills of Lammermoor; and on the west by the shire of Mid-Lothian. It is one of the most fruitful and most populous counties in Scotland. The principal towns are Haddington, Dunbar, and North Berwick. The parish of Athelstonford, in Haddingtonshire, is about four miles long, and two and a half broad. Its beauty and fertility, is perhaps inferior to none in Scotland. The soil is of a light loam, but part is gravelly, and part inclining to clay. The land in this parish is fit for any kind of crops; and the farmers are cultivating it to great perfection, and raising great crops. If they were not industrious, they could not pay their extravagant rents.

North Berwick, a royal burgh in the county of Haddington, is very ancient; but its original charter being lost or destroyed, it obtained a new one from King James VI. The land is generally rich, fertile, and well cultivated.

Adjoining to Ormiston lies Salton; the soil is upon the whole fertile, consisting of loam or rich clay, though in many places this varies to a sand or thin clay bottom; but in general the whole is well cultivated.

Next to Salton, on the north, lies the parish of Pencaitland, having a branch of the Tyne running through it. The soil is in general wet and clayey; still the people do well. In going south-east we meet with Bolton parish; the ground is not naturally fertile, except on the bank of the Tyne. The greater part is clay.

Eastward from Carvald lies Whittingham,

which also runs into the Lammermoor hills. The moor here is bleak and barren, but the low ground is fertile and well cultivated.

Adjoining is Stenton; the soil of which is in general good, being partly clay, and partly light and sandy, and mostly all covering gravel or sandstone, of which there is great abundance here. The country is open and beautiful.

Going south-east we find the parish of Spott, extending to the Lammermoor hills; the lower part of this parish is a rich loamy soil, and is well cultivated. The country here is beautifully variegated with wood and water.

Dunbar parish extends along the coast: the soil is a rich dry mould, perhaps the most fertile in Scotland, and in general it is also the earliest, having the advantage of abundance of lime and sea weed for manure.

North Berwick, situated near the mouth of the frith of Forth, extends along the coast: it is well cultivated, being a rich loamy soil.

To the west lies Aberfeldy parish, also on the sea shore. The flat part is in general light and sandy, but where the ground rises it is rich and fertile. The Earl of Wemyss has built an elegant house at Gifford in this parish.

Prestonpans extends along the coast about three miles. Ravenshaugh burn, the west boundary of the parish, divides the counties of East and Mid-Lothian. The soil here is of a rich loamy nature, partly on clay and partly on gravel. The enclosures are mostly dikes of stone and

lime. In this neighbourhood there are the largest and most thriving manufacturies of stone and earthen ware in Scotland.

Dumbartonshire is bounded on the south by the river and frith of Clyde; on the west by Argyleshire; on the north by the Grampian mountains; on the east by Stirling; and on the south-east by Lanarkshire. The country in general is full of hills covered with heath, and is more fit for pasturage than for corn, but is agreeably deversified, and well inhabited. Dumbarton is the principal town, and lies beautifully along the bank of the frith of Clyde, and the river Leven. The greater part is flat, with a southern exposure; the soil is thin and gravelly, but pretty fertile. The river Leven is navigable as far as the tide reaches, which is about three miles. The town is a royal borough, and a presbytery seat: it has a good harbour, where about two thousand tons of shipping are employed. The rock and castle, one of the most ancient fortresses in Scotland, are very striking objects: the view from the top is exquisite.

Cardross stretches along the frith of Clyde, where the soil is light and gravelly. On the banks of the Leven it is a pretty deep loam.

Dalkyburn was the birth place of Dr Tobias Smollet, author of Roderick Random, &c. There is a neat monument, with a suitable inscription, erected to his memory, near the village of Renton.

The parish of Low lies also on the frith of

Clyde; the greater part is hilly and mountainous; the east part, however, is pretty flat, and the soil light and not unproductive.

Roseneath is the most westerly parish of this county, in the form of a peninsula. It is a continued ridge of high ground; and being on the coast it is well situated for fishing. There is a fine seat here, the property of the Duke of Argyle, which gives its name to the parish. The castle of Roseneath was burnt down in 1802: a modern house is now built after a very elegant form.

Arrohar is the most northerly parish of the county: the whole is mountainous; but since the introduction of sheep husbandry, the hills have put on a beautiful verdure, in place of heath and coppicewood.

The parish of Luss extends along the banks of Loch Lomond: in some places the soil bears good crops, but by far the greater part is hill. The house of Sir John Colquhoun, bart., is an excellent modern building, situated on a promontory, and commanding some noble views of the lake.

On the opposite side of the loch lies Kilmarnock. The windings of the river, Buchanan House, the seat of the Duke of Montrose, with its extensive lands and forests, present the traveller with a most beautifully picturesque landscape. There are also remains of some ancient castles still to be seen.

On the banks of the Leven lies the parish of

Bonhill: the soil is partly loam and partly gravelly: the whole is enclosed and well cultivated. The purity and softness of the water of the Leven giving it a decided superiority in bleaching; at an early period it attracted notice. About the year 1768, a print-field was set down; which, with more recent improvements, has been of great benefit to the place.

The adjacent parish of Kirkintulloch is of a triangular form: the surface is finely varied, and on the whole is well cultivated. The Kelvin, which is a considerable stream, waters the parish; it has also the benefit of the great canal passing through it. Several vestiges of Graham's Dike may be traced here. In Cumbernauld, the surface is beautifully variegated by hill and dale; almost the whole is arable; being partly a stiff clay, and partly a light gravelly soil. Coal and limestone abound here; the new road from Glasgow to Edinburgh passes through it, as does also the great canal. Cumbernauld House is the residence of Lord Elphinston. At the Castle Cairey some remains of Roman art are pointed out, and vestiges of Graham's dike may be traced in various places.

Lanark or *Clydesdale* is bounded on the south by Kirkcudbright and Dumfrieshire; on the north-west and north by Renfrew and Dumbarton; on the east and north-east by Linlithgow and Stirlingshire; and on the west by Peebles. Its divisions are the upper and nether wards; the former being properly the shire of Lanark, the latter the

barony of Glasgow. The principal towns are Lanark, Hamilton, Glasgow, and Rutherglen. The country in general is heathy and mountainous; but agreeably diversified, and affording plenty both of arable and pasture ground. The river Clyde rises in the south-east part of the country, and runs through the whole of it, dividing it nearly into two equal parts; hence the shire is sometimes called Clydesdale. From nearly the same source rises also the rivers Tweed and Annan; they all take opposite courses, which shews this to be the highest ground on the south-west division of Scotland. From the general outline, and the figure which the Clyde, with the collateral branches and other streams running into it, make, this county, upon the whole, may be said to resemble very much the leaf of a tree, whereof Clyde is the stem. This county has long been divided into three wards or jurisdictions, called the upper, middle, and lower wards: over each of these wards there is appointed a Sheriff-substitute; one at Lanark for the upper ward, one at Hamilton for the middle ward, and one at Glasgow for the lower ward. In general, the surface of this district is mountainous, excepting the valley of Clyde: the south-west quarter rises to the mountains called Lowthers, where we find Lead Hills, said to be the highest inhabited ground in the island. "Nothing," to use the words of Mr Pennant, "can equal the gloomy appearance of the country around; neither tree, nor shrub, nor verdure, appear to

amuse the eye; the spectator must plunge into the bowels of the earth for entertainment." Towards the Clyde, the surface is agreeably diversified, exhibiting pleasant and picturesque landscapes, enlivened by woods and water, and varied by hill and dale. About Lanark, the scenery is peculiarly interesting, from the Falls of Clyde, and many other natural beauties. Lanarkshire contains three royal burghs.

On entering Lanarkshire from Mid-Lothian, we first come to Carnwath, a populous and extensive parish; the soil is very different in different parts: on the low grounds it is very productive; the high grounds are very barren. The Clyde, with the waters of Dippool and Haugh run through it.

In the adjoining parish of Carstairs, the high ground is a mixture of clay and peat earth; the low ground is a sharp gravelly soil.

Lismehago is a very large parish, extending in length about fourteen miles, nine or ten of which lie on the banks of the Clyde, and take in the Falls of Bonnington, Corra House, and Stonebyres: the soil is various; in some places clay prevails, and in others a rich mould. On the west quarter it rises and becomes rather moorish and mountainous.

On the east bank of the river Clyde is situated Lamington, comprehending nine thousand acres: the arable land in this parish will not amount to much above four thousand acres in tillage; the remainder is chiefly in sheep pasture.

No minerals have been discovered in this parish; only the vestiges of several Roman camps.

Libberton is of a triangular form: the surface is various. On the banks of the Clyde, the soil is deep and fertile, owing to the inundations and flowings of the river. Towards the east the country rises: there is coal in this parish. The surface of Lanark is in general pretty flat; but the banks from Bonnington Fall, on both sides of the Clyde, rocky: they are well fringed, however, with natural wood. The south and east parts of the parish are in general a light gravelly soil: on the north and west the prevailing soil is clay.

Lanark, which is a royal burgh, is pleasantly situated on the top of a rising ground, and may be considered a pretty neat country town. As this parish contains, perhaps, as much curious, beautiful, and romantic scenery as any in Scotland, we shall transcribe what is said of it, from the accurate and well written report of Mr William Lockhart, published in Sir John Sinclair's Statistical Account:

"The falls of Clyde principally interest the stranger, and we shall begin with the uppermost one, although to come at it, we are obliged to come to the second fall, or Corra Lin. The uppermost one is somewhat above two and a half miles from Lanark, and from the estate in which it is situated, is called the Bonnington Fall or Lin, from Bonnington House, a neat and elegant modern building. You arrive at the lin by a

most romantic walk along the Clyde, leaving the pavilion and Corra Lin on your right hand. At some little distance from the fall, the walk, leading to a rock which juts out and overhangs the river, brings you all at once within sight of this beautiful sheet of water. But no stranger rests satisfied with this view; he still presses onwards along the walk; till from the rock, immediately above the lin, he sees the whole body of the river precipitate itself into the chasm below. The rocks over which it falls are upwards of twelve feet of perpendicular height, from which the Clyde makes one precipitate tumble or leap into a hollow den, whence some of it recoils with froth and smoking mist above. The river exhibits a broad plain appearance, beautifully environed with plantations of forest trees: this appearance is suddenly changed at the fall; and below it the river is narrow, contracted, and angrily boils and thunders among the rocks and precipices. The same beautiful and romantic walk conducts you back again along the precipice that overhangs the river; both sides of which are environed by huge rocks, which form a piece of stupendous natural masonry, from whose crevices daws and other wild birds are incessantly springing. You descend along the river for about half a mile, till you arrive at Corra Lin, so called from an old castle and estate upon the opposite bank. The old castle, with Corra House, and the rocky and woody banks of the Clyde, form of them-

selves a beautiful and grand coup d'œil; but nothing can equal the striking and stupendous appearance of the Fall itself.

Kirkcudbrightshire is bounded on the west by Wigtoun; on the north-west by Ayr; on the north and east by Dumfriesshire; and on the south by St George's channel. The north and north-west parts are very mountainous, and abound with pasturage: the other parts of the shire are well cultivated, and produce grain of all kinds in abundance. The principal towns are Kirkcudbright, Dalry, and Ferrytown.

Terreagle parish: the surface is flat and fertile, producing all kinds of grain: here stands, pleasantly situated, the ancient castle of Terreagles, once the seat of the Earls Nithsdale.

West from this lies the parish of Kirkpatrick and Irongray; the ground rises gradually from the east for about three miles, and declines again; the highest ground is the Bishop's Forest; the soil is generally dry, and in the low ground is pretty rich. The Rolling Bridge, erected on two perpendicular rocks, about five miles from Dumfries, generally attracts the notice of travellers, as being picturesque and romantic.

Bordering on this parish is Loch Button: There is a gradual rise of the country from the town of Dumfries to this. The soil, though flat, is of a light loam, generally on a gravelly bottom. The loch, from which the parish derives its name, is a pretty sheet of water, one mile in length, and half a mile in breadth, having a

small island in the middle, which appears to be artificial. Though limestone has been found here, none is wrought, but marl has been used for manure for upwards of fifty years. On a hill at the eastern extremity, are the Seven Stones, supposed to be the vestige of a druidical temple. Here also there appear to have been several tours: one yet remains pretty entire, called the Castle of Hilley; on a corner stone is inscribed the year 1398.

To the south of this is the parish of Kirkebean, which stretches along the western shore of the county of Nith; a ridge of hills runs from west to north, the highest of which is the Griffel. A considerable track lies upon limestone, and the soil is in general very fertile. The late Admiral John Campbell was a native of Kirkebean; as was also John Paul, or Paul Jones, of famous memory.

The neighbouring parish of Newabbey is watered to a considerable extent by the Nith, the banks of which are inclosed and well cultivated; the soil being a light loam upon gravel. There is a chain of hills that runs from south-west to south-east; these hills are in general steep and rocky.

Kirkpatrick is a very extensive parish; to the north the ground rises considerably, and is mostly moor; the south part, comprehending about one half of the parish, is well cultivated; and though the soil is naturally thin, it produces good crops. There is an annual fair and horse races

in the village; the races are well attended by the neighbouring gentry, who have built a ball-room for the evening's entertainment. In different parts of the parish there are visible remains of walls and mounds which are supposed to have been Danish encampments.

The united parishes of Colvin and Southwick extend along the coast of the Solway Frith: the surface is very rough and irregular, much broken and interrupted with rocks and stones, and impenetrable copses of thorns and brambles, insomuch, that what is arable, consists only of small spots and patches. In the north-east extremity, the chain of the Griffel mountains comes in; the sea coast is remarkably bold and rocky, forming high and tremendous precipices which terrify and astonish the beholder.

West from this lies the parish of Urr or Orr: Though the parish is high ground, yet most of it is in culture. The vestiges of many military stations may be traced hear. The minerals are limestone and marl.

Kirkgunyeon parish lies to the eastward of the Nith, immediately north of Colvin and Southwick: though the surface is hilly, it affords good sheep pasture, and the low grounds are very fertile. The principal proprietor is Mr Maxwell, constable of Nithsdale. There are three remarkable ancient buildings in this parish, Barclosh, Corra, and the Tower of Drumcultran.

South-west from Terreagles, lies the parish of Troquire. The surface is partly flat and partly

hilly, and in general covered with heath and coarse grass. The flat arable part comprehends about three-fourths of the parish, and is well cultivated; and the people have all a thriving appearance.

The parish of Balmaghie lies on the banks of the Dee. A considerable part is rugged hills, black heath, and moor, a little natural wood, and some plantations.

Crossmichael lies almost in the centre of the county: the north parts are hilly, and in general rocky: the lower grounds on the rivers Dee and Orr are rich; and since the modern improvements in agriculture were introduced, are made to produce good crops. When travelling in Galloway, Dr Johnstone was not a little surprised to find all the black cattle without horns; but upon enquiry, he says, he could not find the cause. The reason seems to be, that this breed of cows are esteemed the best milkers, and of course will be preserved in preference to the others. But I am of opinion, that it is not from horns in a cow's head, nor from the want of them, that one cow has more milk and another less.

North from Crossmichael is the parish of Parton: the arable ground is light and sandy. There are no less than seven lakes in this parish, all well stored with trout.

Carrick is situated on the sea coast, near the mouth of the Orr: the face of the country is

rugged and uneven, and towards the north rises to pretty high hills.

Renfrewshire, called by way of eminence, the Barony, on account of its having been the ancient inheritance of the Stuarts, is bounded on the west by the frith of Clyde; on the east by Lanarkshire, called Cunningham.

It is an agreeable, fertile, and populous country, producing great plenty both of corn and pasture. The principal towns are Renfrew, Paisley, Greenock, and Port-Glasgow. The face of this county is varied with hill and dale, wood and water, though the greater part is high and barren, and rather inclining to moor; but along the Clyde the soil is more fertile.

Tracing the parishes of this county from its western limit, we come first to Innerkip, situated on the frith of Clyde: though the greater part be hilly and moorish, yet the low ground is light and gravelly, and very productive.

North-east from this lies the parish of Greenock. This was formerly a country parish, till about the year 1745, when the town increased so much, that a new parish was erected in it. The country, except a stripe along the coast, is all hilly, though not of great height.

Port-Glasgow is a small parish, about an English mile square; it lies a little farther up the frith than Greenock; has a good harbour, and carries on a good trade, and extensive. It is built on a spot originally feued by the magistrates of Glasgow, for the purpose of forming a

harbour to accommodate the shipping. It was erected into a parish in the year 1695, and has increased daily ever since.

To the east of Port Glasgow, lies the parish of Kilmalcom. The Clyde washes it on the north. The soil is generally light and sandy, and very productive in grass. The four communion cups used by John Knox, when he first dispensed the sacrament in Scotland, are kept at Finlayson by the Glencairn family, and are annually used in the parish church. The united parishes of Houston and Kilallan, extend about three miles in length. The surface is very unequal, as well as the soil. In the low grounds the crops are good.

In Erskine the surface is in general flat, with some rising grounds. The soil is light and gravelly. The river Clyde waters this parish. The first fine thread manufactured in Scotland, was by a lady of the Bargarron family, about the beginning of last century; and the manufactory has been carried on here ever since.

In Eaglesham the surface is in general flat, with some rising ground. The soil is light and gravelly. The village of Eaglesham is beautifully situated, and built according to a plan of the late Lord Egerston. The road to Glasgow and Ayr passes through it.

Cathcart lies within two miles of Glasgow, and is partly in Lanarkshire. It has a rich appearance, being well cultivated, and beautifully diversified with hill and dale. It is watered by the river Cart. Near the old castle of Cathcart,

is the field memorable for being the scene of the last, but ineffectual effort of Queen Mary to regain her crown and authority.

South from this lies the parish of Mearns. Though at some distance from the sea, the surface is pretty level. The soil is light, and very fit for cultivation. The old castle of Mearns, is still a respectable ruin.

West from Mearns is Nielston. The lower part of it is pretty well cultivated. The Loch Libo, and Faraness hills, which run for several miles through the parish, afford good sheep pasture.

North from this parish and town is Paisley, one of the most considerable manufacturing towns in the kingdom. The old town of Paisley is situated on the west bank of the Cart, upon the slope of a ridge of hills, occupying about one mile and a half square. The new town stands on the opposite side of the river, communicating with the old town by three bridges. Near the centre of one of the principal streets, the late Marquis of Abercorn built one of the largest and most commodious inns in the country. The town house is a handsome building, with a spire and clock. The market place is one of the neatest and most commodious in Scotland. Paisley has very extensive establishments for the manufacture of cotton goods.

Of Killbarchan the eastern division is flat and level; the western, hilly and rocky. The level part is in general loamy clay, and very fertile.

John Knox, the celebrated reformer, was descended from an ancient and respectable family in this parish.

Renfrew lies almost due-north from Paisley. The figure of this parish is irregular; but it does not exceed four miles either way. Renfrew is a royal burgh, and the county town. The principal street, from which some lanes issue, is long and narrow. The river Clyde ran once by the town; but having left its course many years since, Renfrew has yielded its commerce to Port Glasgow. The principal branches of trade carried on here, are the making of thread, soap, and candles. About one hundred and twenty looms are also employed, chiefly on account of the Paisley manufactory, in the parish of Lochwinnoch. The hilly part is moorish and loamy. Considerable improvements have been made of late in this parish. A magnetic rock has been discovered two miles from Castle Semple.

The parish of Dunsinan lies north-west from Renfrew. The aspect is pleasant, and the ground is generally fertile. There are considerable risings, but none that deserve to be called hills, being all arable to the top. The road from Glasgow to Greenock runs through the parish, crossing a fine bridge of ten arches.

In the Code of Agriculture, written by the right honourable Sir John Sinclair, bart. founder of the Board of Agriculture, he says, One of the great perfections of an animal, is when the dead

weight of all the eatable parts, approaches the nearest to the weight of the animal when alive. The following statement of the live and dead weight of a Devonshire ox, aged three years and ten months, will explain the manner in which these accounts are drawn up :—

Live weight, 117 stones.

Offal.	Stones.	Lbs.	
Tallo - - - -	10	6	
Hide - - - -	6	3	
Head and tongue - -	2	9	
Heart, liver, and lungs -	2	7	
Feet - - - - -	1	7	
Entrails and blood - -	11	13	
			35
Butcher's meat, the carcase, or four quarters			79
			114

This proved to be a fine ox, as his beef weighed three stones more than two thirds of the live weight. It likewise appears in this case, that 10 stones of live weight, produced 6 stones 13 pounds of dead weight, or butcher meat.—*Durham Report*, p. 239. The average of other experiments, is from 6 stones 10 pounds, to 6 stones $13\frac{1}{2}$ pounds of dead weight, to 10 stones of live weight. When an ox is fed for two years in succession, a much higher proportion of dead weight is the result, though it hardly ever exceeds three-fourths of the live weight, or as fifteen is to twenty. In sheep, from 10 pounds

of swing weight, 6 pounds 7 ounces of dead weight, convertible into food, may be obtained. —*Durham Report*, p. 251. Consequently, in this respect, cattle are superior to sheep, with a view of increasing the available food. Mr Cline strongly recommends breeding of sheep and cattle without horns, which, he observes, are useless to the animals themselves, and often a cause of accidents to others. Where a ram is horned, his skull is extremely thick, and with the horns often weighs five times more than another skull that is not horned. Animals without horns, are in general tamer, and less vicious, and would produce more meat, and other valuable substances, if that apparently useless appendage did not exist. But when the properties essential in forming a perfect breed are full ascertained, the separation of occupations above alluded to, will become useful, as one farm may be better calculated for breeding, another for fattening.

All breeding proceeds on the presumption, that the tendency of any individual animal, is to transmit to its offspring the form, constitution, and quality, which it possesses ; and as two animals are concerned in the production of one offspring, that one is expected to inherit a form and constitution, compounded of the joint qualities of its two parents. Thus it is found in numerous breeds of animals, as in deer in the West Highlands, cattle in the north, and in the wild cattle of Chillingham Park, the offspring, for an indefinite number of generations, have born the same

general characters.—*Sir John S. Sebright's Essay*, p. 7. Unceasing care and attention, however, are necessary, to keep them up to the mark; and this is rather fortunate than otherwise, since it perpetuates the merit of breeders, and the competition of stock.

It having been found, that this system produced animals quite deficient in vigour, those who are now possessed of a capital stock, keep two or three streams of blood quite distinct, that they may avoid consanguinity. These dwarfish males, however, may not have an injurious effect on the stock of another person, especially the first cross, if the females be of a coarser quality; and on Mr Cline's principle, if they are of a larger size than the males put to them.—*Husbandry of Scotland*, vol. ii. Appendix, p. 109. The same rule holds good regarding the human species. By a train of unfortunate circumstances, a brother and sister german, ignorant of their consanguinity, were married; they had ten children, all of whom died before their parents. This appears to be an important rule. A single cross, without breeding from either the males or the females thus produced, is often more profitable than the pure breed. If the crossing is continued, many inferior animals will be found in a flock. Hence it is, that improving a breed already established by judicious selection, is to be preferred, with a view to permanent advantage. Mr Cline's doctrine has been much misunderstood. He does not require that the female should be larger than the male,

but larger in size than usual. Where the female is too small, or the male too large, the offspring is often ill shaped. A gentleman in Forfarshire, rears an excellent breed, by crossing the large cows with a small Highland bull from Lochabber. In Coventry, it is hardly to be credited, what pains are taken to keep animals in a fat state. A farmer who wished to excel, had purchased an extraordinary bull from one of those fancy breeders, and complained to his former owner that the animal was fast declining, although he had plenty of grass, hay, &c., on which his former proprietor explained to the farmer, that grass and hay were not sufficient; for besides these, he had been fed on grain, and had also been indulged with a pail of milk every day, from the time of his quitting his mother. This was certainly purchasing good condition at a heavy price.

Perhaps the Herefordshire cattle approach the nearest to that perfect state, of any of the larger breeds. They soon arrive at maturity, and are soon fit for labouring. But it is a different variety of the same breed, that is preferred for the dairy feeder. Mr Cock of Holkholm, has chosen the North Devons in preference; and with the care he has bestowed on the breed, he has already arrived at considerable success. The Ayrshire are perhaps the best milkers of their size in Great Britain; and at the same time are excellent feeders, for they fatten faster, and to as great an extent as any of the other breeds in

Scotland. They have scarcely been tried in either plough or cart; but as they travel well, and are strong and alert, they would probably do as well in the cart or plough, as any other cattle of the same weight.

Tiviotdale, or *Roxburghshire*, is bounded on the east and south-east, by Northumberland and Cumberland; on the south and south-west, by Dumfries; on the west, by Selkirk; on the north, by Merse, or Berwick. It abounds with hills and mosses, which are interspersed with many delightful valleys; and the whole is full of gentlemen's seats, who in general are very opulent. It is divided into Tiviotdale, Liddesdale, and Eisdale. The principal towns are Jedburgh, Kelso, Hawick, and Melrose.

Kelso parish is of an irregular triangular figure. The soil is in general a deep loam, upon a gravelly bottom, and very fertile. Its situation is highly favourable, on the banks of the Tweed and Tiviot. Kelso is a handsome town, pleasantly situated on the confluence of these two rivers. It is a burgh of barony, governed by a baron bailie, and seven stent masters, appointed by the family of Roxburgh, and six by the inhabitants.

On the opposite side is Mackerston, which forms an oblong square, extending along the north bank of the Tweed. The general appearance is flat, with a gentle declivity to the river. The family residence of Sir H. Hay M'Dougal is pleasantly situated on the banks of the river.

Going upwards we come to Smailholm. The aspect is rather bleak. There is, however, a mixture of rising and flat grounds, which produce good crops of barley, oats, peas, and wheat, —clay being the prevailing soil.

Maxton parish lies on the south bank of the Tweed. The soil inclines to clay, and is not productive. On the farm of Little Dean, about two miles east from the church, formerly the residence of the Kerrs, near which there is a deep hollow, called Scotts' Hole, the Scottish army lay hid, while the English army was crossing the Tweed a little below. The Scots attacked them unawares, and routed them with great slaughter. The place was afterwards called Rutherford—Rue-the-ford.

Adjoining is the parish of St Boswell's, on the banks of the Tweed. The soil is in general good. On St Boswell's Green, is held an annual fair, formerly the best frequented of any in the south of Scotland.

A little farther up the river lies Melrose; the soil of which is various in quality. On the banks of the Tweed it is light and gravelly; in other places it is a stiff clay, and a great part is hill and moor. What is worth notice here, is the sight of old Melrose, already mentioned, said to be the first abbey of the Culdees, founded anno 667, now reduced to a single house, standing on a sort of promontory peninsulated by the Tweed.

In going up the river we meet with Galashiels, lying partly in Roxburghshire, and partly in Sel-

kirkshire. It is of an irregular triangular figure. The face of the country is hilly, but covered with good sheep pasture. The rocks here are whin stone.

To the south of Eildon hills lies Bowden. The surface is broken and uneven. The greater part of the soil is of a whitish clay, upon a tilley bottom, but of various fertility. The remains of a Roman causeway, and Roman camp, are traced here; and the ruins of Halydean, a strong fortification, once the residence of the family of Roxburgh, lies here.

Lilliesleaf lies partly in Selkirkshire, and partly in Roxburghshire. The soil varies. In the low ground it is loamy, and on a gravelly bottom; on the high grounds it is chiefly clay. The family seat of Riddle of that Ilk, one of the most ancient families in Scotland, stands in this parish.

The parish of Ancrum, which comprehends Long Newton, lies nearly in the centre of the county. The ground is uneven, and often rugged. The soil on the banks of the river is in general rich loam, on clay or sand. In the higher grounds, it is more or less a cold clay.

Betwixt Ancrum and Maxton is Hilliard Edge, so named from a battle fought here in 1346, or 1347, where a woman of that name signalized herself in opposing the English army; in memory of which, a tomb stone was erected on her grave, the remains of which are still shewn, bearing the following inscription:—

Fair maiden Hilliard lies under the stane;
Little was her stature, but great was her fame;
On the English lads she laid many thumps,
And when her legs were off, she fought upon her stumps.

The whole of the extensive parish of Hawick is hilly; but the hills are not of a great height. They afford excellent pasture for sheep, being almost all covered with grass. It enjoys all the privileges of a royal burgh. The first winnowing machine, or corn fanner, was invented and made by Andrew Rodger, a farmer in this parish. We must not omit mentioning, that Gavin Douglas, the Scotch poet, was rector of Hawick.

Jedburgh is partly hilly. On the flat ground, on the banks of the river Jed, which runs through the parish, the soil is of a light loam, and very productive. Jedburgh is a royal burgh, and the county town is pleasantly situated in a glen.

Hownam parish has a hilly and mountainous aspect, affording excellent sheep pasture. Hownam Law is the highest among the border hills, Cheviot excepted.

Roxburgh is irregular, but the general appearance is flat—having a gradual slope to the rivers Tiviot or the Tweed, which water it. The soil is in general a rich loam, highly cultivated.

Buteshire and Island, situated in the Frith of Clyde, four and a half miles west of the shire of Renfrew. On the north it is separated from Argyleshire by a narrow strait, three quarters of a mile broad. The north part is rocky and barren. From the middle, southward, the ground is

cultivated, and produces oats, barley, and pease, yet not in sufficient quantities to supply the inhabitants. Three miles south lies the island of Arran. Here the climate in winter is very severe. In summer the air is remarkably salubrious, and many valetudinarians resort there on that account.

Rothsay, in the island of Bute, is the head town of the shire.

In Arran, the inhabitants speak the Earse langnage, but the ancient habit is entirely laid aside; the diet is chiefly potatoes and meal; and during winter some dried goat mutton is added to their hard fair. The women manufacture the wool for the clothing of their families. They plant the potatoes, and dress and spin the flax. They make butter for exportation, and cheese for their own use. There are two parishes on the island, Kilbride and Kilmainey. The Duke of Hamilton is proprietor of this island, excepting a few small farms.

Inchmornoch lies a few miles south west of the Isle of Bute. It is a beautiful little island, about a mile long.

On my travels in the north country, I got a recipe for the *Red Water*, from a very intelligent farmer; and some of his neighbours told me that his cures have been of great advantage to the country and neighbourhood where he dwelt; for many of the people have had proofs of them.

Take five ounces Castor Oil; one ounce Alum; one half ounce Sulphur; two ounces Salt Petre; one ounce Ginger, with a good quantity of Brochan.

The farmer's cure seems to be agreeable, and likely to have effect. Another of my travelling cures is as follows:

A bottle of Porter; one pound Molasses; half pound of Butter; two pounds of Lint Seeds, well boiled in a pot with two pints of water, and boiled into one pint; and two bottles of Broachan, and a few drops of Peppermint.

It is agreed upon, and recommended by the most part of old and experienced shepherds, that Butter of Antimony is the most speedy, easy, and most effectual of any prescribed as yet, for foul-of-the-foot in sheep.

MAGGOTS.

There are few, if any, flocks of sheep, which are not subject to this kind of vermin, during the summer. As soon as the maggots begin to make their appearance on any part of the body, it is easily observed by the appearance of the sheep. The wool becomes wet where the maggots are, and the sheep are quite uneasy, running from one place to another, and holding down their heads, and running into all hollows and ditches where they think to get a little peace. A number of cures have been applied, and many of them have been of no use. A number of them

have been recommended by the shepherds, such as,

The Spirit of Turpentine, and the Mercurial Sublimate, in powder, one ounce; and Spirit of Salt, one ounce; one pint of boiling water. Put them all together in a bottle, and when cold, add Spirit of Turpentine, one mutchkin, then shake them all together; and shake well when used.

Dumfriesshire is bounded on the east by Solway Frith; on the west, by Kirkcudbrightshire; on the north, by part of Clydesdale, Tweedale, and Tiviotdale; and on the south, by the Irish Sea. It is a rich and mountainous country, producing vast numbers of cattle and sheep, which are annually exported to England. The divisions are Annandale, Wauchopdale, and Nithsdale. The principal towns are Dumfries and Annan.

Climate, Soil, and Produce of Scotland. The climate of Scotland, though various in different parts of the kingdoms, is in general much more mild than could have been expected from its northern situation; though in some of those places where high mountains abound, it is exceedingly sharp for almost three-fourths of the year. The vicinity of the sea, however, has a tendency to soften the asperity of the climate; and therefore, the whole island of Britain is much more temperate, both in respect to the heat of summer, and cold of winter, than those parts of the continent which lie under the same parallels of lati-

tude. In some places, the fertility of the soil is by no means inferior to that of any part of England, though in general the latter is preferable: and many garden vegetables are found to take a considerably longer time in coming to perfection in Scotland, than in England. In almost all parts of this kingdom, however, as much grain is raised as is sufficient for the consumption of the inhabitants, and in many places more. Cattle and sheep also, are reared in such abundance, in many places, as to form a very considerable article of exportation. The water throughout this kingdom is in general soft, which may be supposed owing to its running over sand and gravel. But this property is adduced as an argument to prove the poverty of the soil in general. It is certain, however, that in many parts of Scotland, the value of estates is greater than those of an equal extent in England; which, perhaps may be owing to the ground being less exhausted.

The great inequalities of the land in this kingdom, are unfavourable to agriculture; but they afford the most delightful situations for country houses, of which the gentlemen do not fail to take advantage, and which makes the seats deservedly admired by every traveller.

Mountains. The principal of these are the Grampian Mountains, extending almost the whole breadth of the island, rising in a direction from N.E. to S.W. from the neighbourhood of the city of Aberdeen, to Cowal in Argyleshire. In some

of the northerly divisions, indeed, particularly that part of Ross-shire, called Ardross, the country is in a manner full of mountains. The southern promontory of Caithness, called the Ord, is a steep mountain, round which the high road circles, and in some places overhangs the sea in a frightful manner. In the lower part, adjoining to the sea, are immense caves, in which vast numbers of seals take up their residence. Near the town of Inverness, is a little hill so strangely shaped, that it might be taken for a work of art. It is of an oblong form, sloping on all sides to the top, in such a manner, that it is like a great ship with the keel upwards. Its sides, and part of the neighbouring plains, are planted, and make an agreeable walk. That part of Inverness-shire called Lochabber, is very mountainous and barren; and the shire of Argyle abounds with mountains, piled upon one another in a tremendous manner. The mountains of Breadalbane in Perthshire, are remarkable for being the source of the river Tay, the largest in Scotland. In the shire of Angus, too, the Binshinnin Hills are very considerable. To these we may add the Ochil Hills, which separate Stirling from Perthshire; the Pentland Hills, which run through Mid-Lothian, and join those of Lammermuir, &c. There are likewise many detached mountains throughout the kingdom, which are generally of a conical figure, and make a beautiful appearance at a distance. Some of these are called *Laws*, as particularly that near North Berwick,

commonly called North Berwick Law, which is of a considerable height, and may be seen at a great distance. About the middle of the county of Peebles, is a high mountain called Braidal, from the top of which, the sea on both sides of the island may be seen.

Lakes, Rivers, and Forests. The Lakes in Scotland, commonly called lochs, are very numerous, though the name is not applied only to lakes, properly so called, but sometimes to an arm of the sea running up a good way into the country, so as to form a deep bay; as, for example, Loch Fine, remarkable for its herrings, forty-six miles in length, though only four in breadth. Of the same kind is Lochabber, in Inverness-shire; by means of which, it is supposed, that the ancient Celtic inhabitants of Scotland were enabled to preserve themselves independent of the lowlanders. The largest fresh water lake in Scotland, is in Dumbartonshire. It is a vast body of water, twenty-one miles long, and four and a half where broadest, supported by subterraneous springs, as well as rivulets. It is very deep, and has twenty-four verdant islands, some of which are inhabited, and well stocked with deer. It affords a magnificent and delightful prospect at a distance, the grandeur of which is heightened by the high mountains with which it is surrounded. Loch Ness is about twenty-two miles in length, generally one or two in breadth, and excessively deep, in some places not less than one hundred and forty fathoms. It

runs in a straight line from north-east to south-west; and from an eminence near Fort Augustus, which is situated near the south-west end of it, one may have a full view of the whole. This lake, either by reason of its depth, or from some natural warmth in the water, is never known to freeze; and in cold weather, emits a steam like boiling water. But the water of the lake, when separated from the main body, will freeze as readily as any other. The people in the neighbouring country have a prodigious opinion of its salubrity, so much so, that some will send thirty miles for the water of it.

Kincardine is bounded on the north by the river Dee, and Aberdeenshire; on the south, by the river South Esk; and on the west, by Angus-shire. It is a plain, level country, fertile in corn and pasturage, producing a great quantity of fir wood, and plantations of other kinds of wood. The principal towns are Bervie, Stonehaven, and Kincardine. A part of the Grampian ridge runs through the county, forming the north-east side of the How or hollow of the Mearns; the north-east extremity of Strathmore, that great vale which extends from Stonehaven, on the north-east, to the district of Cowal in Argyleshire, on the south-west, directly across the kingdom, south of the Grampians. The surface in general is fertile. The north-west part of the shire is mountainous, and chiefly adapted for pasture. There are several populous towns and villages in Kincardineshire, of which Stone-

haven, Johnstonehaven, and Laurencekirk are the chief. The latter is particularly distinguished for its snuff boxes of wood, constructed and painted with the greatest ingenuity and taste. The county is divided into nineteen parochial districts. The soil in general is wet and clayey. It is watered by the North Esk, which separates it from Montrose.

The soil of Benholm, upon the shore, is light and gravelly; farther up it is somewhat deep and loamy; but from the want of planting, the whole has a bleak and naked appearance. The trade of Johnshaven consists in exporting grain, and importing coals and lime. Benholm Castle, a square tower, is still kept in repair, though not inhabited.

Through the parish of Bervie, or Inverbervie, flows Bervie Water. Bervie is a royal burgh. It got its charter from king David, who, in the year 1342, was forced into this port by stress of weather, on his return from England.

Of Arbuthnot the surface is unequal, presenting two ridges with valleys betwixt them. In one of these valleys runs the river Bervie, the scenery of whose banks is highly beautiful. The mountains of Arbuthnot and Allardice, add to the richness of the landscape. In the south quarter the land is a strong clay; in the north, where the ground rises, the soil is light and dry. Dr Arbuthnot, the companion of Pope and Swift, and physician to Queen Anne, was a native of this parish.

Dunnottar is of a triangular form. The strath called the Hollow of the Mearns, begins here; and running through the parish, divides it nearly into two equal parts. The surface is generally uneven, but there are no risings that deserve the name of hills, except the Grampians, which are the boundaries on the west. There is a sort of gradation in the nature of the soil. On the coast it is light and sandy, gradually tending to loam inwards; in the middle it is wet and mossy; towards the west it is gravelly and moorish. Carron is the only stream that deserves to be noticed. The coast is bold and rocky, formed chiefly of coarse plumb-pudding stone, which is hard and durable. At the mouth of the river Carron, stands the sea port of Stonehaven. The harbour is well sheltered, and has a great depth of water at all times; but there is little trade. The people in this county in general, receive much commendation from strangers.

The parish of Fetteresso. There is part of it arable, and a good part of it moor and moss. From the nature of the soil, the crops cannot be weighty. The people seem to be industrious.

Kinneff Caterline extends along the sea coast. The soil along the coast is rich, producing grain of all kinds; inward it rises to hills, which are in general covered with heath. The shore is bold and rocky, composed mostly of a coarse plumb-pudding stone. Fowl's Heugh is a stupendous rock of about one mile long, and three hundred feet high, washed by the sea.

Maryculter is of an oblong form. In general it is rugged and stoney; but the soil on the banks of the river is light and productive.

Negg forms the north-east corner of the county. The Dee, a clear, rapid stream, well stored with salmon, falls into the sea here. The shore is bold and rocky.

Darris or Durries is an oblong square; part of the Grampian Hills, runs along the south side of the parish, of which Cairn Monearn is the highest. The grounds on the banks of the Dee are pretty level, and of a light soil. Strachan is situated on the north side of the Grampians, and is of a black appearance. Mount Cattock, the highest hill, is used as a land mark.

Garvock is situated at the top of the vale called the How of the Mearns: it is chiefly high ground covered with heath and whins.

Fordown is of considerable extent, comprehending part of the How of the Mearns and part of the valley of Strathmore; it is flat and fertile, the soil being deep clay: it rises to the north, terminating in the Grampian Hills which is the boundary on the west of the parish; the vestige of a Roman camp may be traced here.

Fettercairn is well improved with planting and enclosing, which is greatly in favour of any country, and especially where the land is not fit for rearing crops of another kind.

Marykirk is situated at the south extremity of the How of Mearns; the aspect is rich and luxuriant, formed of level fields interspersed with a

number of gentlemen's seats. The village is small, but pleasantly situated on the banks of the North Esk, about half way between Montrose and Laurencekirk.

The parish of Laurencekirk stands on one large ridge, extending from east to west, and sloping gently on both sides; the bottom is clay; it is watered by the Lowther. The village of Laurencekirk, by the exertions, and under the patronage of the late Lord Gardenson, rose from a paltry village to be a place of consequence. Every traveller feels the effects of his Lordship's generosity in the comforts of a good inn, with a well chosen library.

Wigtonshire is bounded on the north by Ayrshire; on the west by the Irish Sea; aud on the east by Kirkcudbright. It comprehends the west part of Galloway, and the regality of Glenluce; is a hilly country; and that part of it which projects into the sea, between the two bays of Loch Rain and Glenluce, is called the Kennes of Galloway, and is one of the most barren and rugged parts of Scotland. The principal towns are Wigtoun, Stranraer, and Whithorn. There are several old buildings within the county, now mostly in ruins, but well worth the attention of travellers, viz. *Castle Stuart*, three miles from Newton-Stuart, on the west of the road leading to Ayrshire; *Sorby Palace* near Galloway house, an old castellated building formerly the residence of a branch of the family of Galloway. *Merton-Laws*, in the immediate neighbourhood of Mon-

reith. *Old Palace of Mochrum*, eight miles west of Wigtoun; a very large building in ruins, formerly the residence of Dunbars of Mochrum, barts. *Luce Abbey*, a mile west from Glenluce, mostly in ruins, but the chapter house remains almost entire, and deserves the attention of the curious for its exquisite architecture.—The people of this county are hospitable and kind to all civil travellers. But it cannot be said that the people of the Lothians are hospitable and kind; they are a stubborn, haughty people. I heard a supervisor of the excise saying, he would rather speak to the Duke of Buccleugh before he would speak to some of his tenants. But we must not report a country, or the whole of a country, on the opinion of an excise officer; we generally do not think their word worth the noticing; only I remarked it here, as I knew the Lothian farmers were a little tinctured with that poisonous matter which floweth from the adversary of mankind, and because I am convinced that pride is likely to chock that grand principle of humility which is more befitting man than a head uplifted with pride.

After the miserable year 1782, some attempts were made in Scotland to fix, if possible, on some decided marks by which good seed might be distinguished from such as was injured by frost. It was soon found by experience, that no stress at all was to be laid on the appearance of the grain in its natural state: In regard to oats, it was found, 1. That the clearest and best looking

oats, when sown, often produced the worst crops; 2. That the grain which yielded, when milled, the greater quantity of meal, was far from having the best vegetative powers; and, 3. Although the grain sprung readily when put into a pot of earth, it could not therefore be depended upon as good seed; for it often sprung up readily through the ground, without having strength enough to bring the plant to maturity. On the whole, it is found that the best mark by which sound seed oats can be distinguished from such as are injured by the frost, was to examine the grain stripped of the outer husk, and to consider that as the best seed which, in that state, is plump and clear, and free from rinkles, and dark of colour, more especially at the two ends or extremities.—*Statistical Account of Scotland*, vol. iv. p. 550. It has been found, that seed, when it has been much exposed to frost, will often never vegetate; that above double the quantity is necessary; that it will not yield one-third of the produce of good seed; and that the quality is much inferior.—*Coventry Discourses*, p. 82.

I am certain that no damaged seed ought to be sown, for it cannot produce a good crop. But farmers will never be losers, but gainers, by changing seeds of every kind, that they sow on their farms. Three years are long enough to sow seed oats without being changed. Still the annual change of seeds is better; and the farmer who uses that practice, will find it profitable; and in seven years will find most considerable

advantage by such prudent practice; as the same seed sown successively for years in the same soil becomes gradually small and unproductive.

It was said, some years ago, that English grain sown in Ireland, generally comes to maturity ten days, or even a fortnight earlier than the native seed, under similar circumstances. To ascertain these points, an intelligent farmer in the Lothians sowed English seed wheat from London, with some of his own, and it was always earlier by several days. He has likewise tried sowing seed wheat equal in quality to his own, from a situation where the climate produces crops ten days later than the one he occupies, and it was nearly a week later than his own seed sown at the same time.

The utility of Whale Oil.—It is a medicine for live stock; it is a most excellent manure, and protects the seed from vermin till the crop comes to maturity, for the use of man and beast. For three seasons, the plan of steeping turnip seed in train oil, prevented the attack of the fly. The evening before the seed was to be used, as much as would be required the next day was first steeped in train oil, and then kept in salt pickle during the night. Seven gallons of oil are sufficient to prepare seed for two hundred acres of turnips. There was a partial failure of this process to the amount of thirty acres, which was attributed to an excessive rain having fallen, by which the noxious quality of the oil was destroy-

ed. Farmers ought to make a proper trial, to ascertain the proof of this experiment. It is an old proverb, that an early sowing some times deceives; but a late sowing never, for the crop from it is always bad.

Berwickshire, or Merse, is bounded on the south and east by the river Tweed and the German Ocean; on the west by Mid-Lothian and Roxburghshire; on the south by Tiviotdale; and on the north by East Lothian. The country is rough and irregular, exhibiting a variety of hills, moors, and mosses, intermixed with pleasant and fertile valleys. It is divided into three districts, Merse, Lammermoor, and Lauderdale. The principal towns are Lauder, Dunse, and Berwick-upon-Tweed, anciently the capital of the country, being now erected into a country by itself, and politically speaking, distinct both from Scotland and England. Lammermoor Hills, from Soutra Hills to the sea, occupy the north line of the county: they are bleak and barren, with little or no wood upon them. The ground southward from this ridge is in general flat and fertile. This rich and well cultivated strath, scarcely forty years ago, had a very bleak and naked appearance; now it is rich and highly cultivated, well inclosed, and is one of the finest districts in the island. In no quarter has the use of lime been of more service, or more generally employed as manure. In almost the whole of the county, agriculture is carried on with much spirit, industry, and success.

In the parish of Fouldin, the soil in general is good, and on the south a clay soil prevails: in the centre of the parish it is loamy, but lighter towards the north.

In the neighbouring parish of Hutton, the ground is flat, and all inclosed; it is very fertile, being situated on the banks of the Tweed and Whitadder: the soil in general is what is called a deep loam, a proof of the rapid state of improvement. Here there is one farm, which, little more than forty years ago let at L.50 per annum, is now worth above L.1000.

Ladykirk parish; in general the soil is of a deep loam, sometimes with a clay, and sometimes with a gravelly bottom, producing all kinds of crops. The improvement of sheep stock has been much attended to in this quarter.

In Eagles, which is a very extensive and highly cultivated parish, the soil is various; in some places a deep clay, in others loam, and in others it is gravelly; in general the surface is flat, and the grounds are all inclosed.

Dunse parish: the flat ground is in some places a rich deep loam, in others a strong clay, and is in general inclosed.

To the south lies Earlston, on the banks of the Leader. The famous Thomas the rhymer, who lived in the thirteenth century, was born in the village of Earlstown; there is a stone built in the front wall of the church, having this inscription: "Old Rhymer's race lies in this place, —his real name was Sir Thomas Lermond."

Mertown parish: the soil on the banks of the Tweed is light and gravelly; the higher grounds are in general clay, upon a tilly bottom.

Peebles, or Tweedale, is bounded on the east by Selkirkshire; on the south by Dumfries; on the west by Lanark; and on the north by Mid-Lothian. It is a hilly country; and its streams abound with fish more than those of any other in Scotland. Its hills are generally green to the top, and afford pasture to vast numbers of sheep. The principal town is Peebles: it is well watered with several beautiful rivers, besides the Tweed, which runs upwards of thirty miles through the county, dividing it nearly into two equal parts; hence it is named Tweed's-dale, or Tweedale. This county is famous for good sheep, and likewise Selkirk and Dumfries. In no part of Scotland are sheep and cattle better managed than in those counties; but still they are thought to be inferior to Ayrshire for good milk cows. Passing through Pennycuick we enter this county at Newhall, in the parish of Linton, the greater part of which is hilly and bleak: the river Lyne runs through this parish, as does the north Esk: there is great plenty of peat in this quarter, and abundance of sandstone, both of a white and red colour; limestone is also plenty, and shell marl on the Carlops hill, a stratum of stone marl above the limestone, and a small seam of fuller's earth near Bridge House: over the Lyne, on the east side of the water, there is a

good spring, which resembles the Tunbridge water.

Adjoining also to Pennycuick in Mid-Lothian, is the parish of Newlands, which is pretty well diversified with hill and dale; there is little or no heath, the hills being mostly green; the arable land is mostly clay loam upon till.

Drummelzier extends chiefly along the banks of the Tweed: the soil in general is light and gravelly, but fertile.

Tweedsmuir is an extensive parish; it is very hilly, and mountainous, but the hills in general carry fine grass to the top.

Lyne and Megget are united, though they do not lie together. Megget is situated in the southern extremity of the county: together they do not contain many inhabitants. The water of Lyne runs from one extremity of the parish to the other. On the low grounds the soil is a sharp gravel. The pasture on the hills about Lyne is good; on the low ground it is bleaker, and the grass much coarser. Near the church of Lyne there is a famous Roman camp, which occupies nearly six acres. In ploughing, many Roman camps were formerly turned up.

Selkirkshire, or the sheriffdom of Ettrick Forest, is bounded on the north by part of Tweedale and Mid-Lothian; on the south and east by Tweedale; and on the west by part of Annandale. It is a hilly county, but fertile both in corn and pasture. The principal town is Selkirk; although only two parishes lie entirely

within the bounds of this county, yet it contains part of five or six more.

Ashkirk is partly in Roxburgh and partly in Selkirkshire: the surface is partly hilly, but the hills are not high; they are covered with grass to the top. The soil upon the whole is light and gravelly.

Selkirk parish also lies partly in Roxburghshire: the whole parish is hilly; but the soil near the town, and on the banks of the river, is light and well fitted for green crops.

Yarrow is a most extensive parish in the south of Scotland: the face of the whole is rugged and hilly; the hills covered with grass without any rocks visible; the highest, Black House, is said to be 2370 feet above the level of the sea. The rivers Ettrick and Yarrow run through the parish. This parish claims the honour of being the birth place of Mary Scott, the Flower of Yarrow. She was daughter to Walter Scott of Dryhope, and married to Scott of Harden. From her is descended Elliot of Stobs and the late Lord Hethfield.

Ettrick is said to be about sixteen miles from Selkirk, and is also a very large parish; it is likewise mountainous; the hills are however mostly covered with grass; the most remarkable are Wardlaw and Ettrick Penn.

THE QUALITIES AND DISEASES OF LIVE STOCK.

LIVE stock is a most valuable benefit provided by the all-wise Governor of all things for man; part of them are for clothes for man, and the flesh for food. Bakewell has very well described them as instruments for converting herbage and other food for animals into money. But money, in fact, is only the sign of wealth, while live stock are real riches. It may be proper to begin with remarking, that by far the largest proportion of the territory of almost every country, is devoted to the breeding and support of live stock. In the early ages, this formed the only criterion of wealth. They became of less consequence, when the culture of grain was first introduced; but their importance, afterwards, as the instruments of cultivation, as the means of supplying a large proportion of our food, and as furnishing a variety of our most essential accommodations, tends to render this branch of enquiry peculiarly interesting. It is impossible, in such a small work as this, to give a proper description of the kind and size of animals that would be of most advantage for the farmers; and likewise, I am very unfit for a description of the kind, and therefore offer only a few general remarks, 1. On the most desirable properties of live stock;

2. On the origin of improved breeding, and the principles on which it depends; and, 3. On the proper management of stock intended for consumption; to which shall be added, 4. Some observations on the size and most beneficial mode of feeding horses. It would take a book of a large size to go into a right discussion of each kind, and the respective modes of management; but a description from the works of the Right Honourable Sir John Sinclair, bart., on the most desirable properties of live stock intended for consumption, may be of use. The most desirable properties of stock intended for the purpose of food, may be considered under the following heads:—1. Size; 2. Form; 3. Tendency to grow; 4. Early maturity; 5. Hardiness and vigorous constitution; 6. Prolific properties; 7. Quality of flesh; 8. Disposition to fatten; 9. Lightness of offal; and, 10. Milking properties.

The following observations are the result of much careful enquiry regarding these important particulars. 1. *Size.* Before the improvements introduced by Bakewell, the value of cattle, sheep, and hogs, was entirely judged by their bulk; and if a great size could be obtained, more regard was paid to the price the animal ultimately fetched, than to the cost of the food. Of late, since breeders began to calculate with more precision, small animals have been preferred for the following reasons:—1. Small sized animals are more easily kept; they thrive on shorter pasture; they collect food where a large

animal would hardly exist, and hence are more profitable; 2. Their meat is finer grained, produces richer gravy, has often a superior flavour, and is commonly more nicely marbled, or blended with fat, especially when they have been fed for two years; 3. Large animals poach pastures more than small ones; 4. They are not so active, require more rest, collect their food with more labour, and will only consume the nicer and delicate sorts of plants; 5. Small cows of the true dairy breed, give proportionally more milk than the larger ones; 6. Small cattle may be fed solely on grass of even moderate quality; whereas the large require the richest pasture, or to be stall fed, the expense of which exhausts the profit of the farmer; 7. It is much easier to procure well shaped and kindly feeding stock of a small than of a large size; 8. Small sized cattle may be kept by many persons who cannot either afford to purchase or to maintain large ones, and by whom the loss, if any accident were to happen to them, can be easily borne; 9. The small sized sell better; for a butcher, from the conviction, that in proportion to their respective dimensions, there is a greater superfices of valuable parts in a small than in a large animal, will give more money for two oxen of twelve stones each per quarter than for one of twenty-four stone. In favour of the large sized, it is, on the other hand, contended, 1. That, without debating whether, from their birth till they are slaughtered, the large or the small one eats most to its size, yet

upon the whole, the large one will pay the grazier or farmer who fattens him, as well for his food; 2. That though some large oxen are coarse grained, yet where attention is paid to the breed, the large ox is as delicate food as the small one; 3. That if the small sized are better calculated for consumption in private families of villages or small towns, yet the large cattle are better fitted for the markets of great towns, and in particular for the metropolis; 4. That were flesh of the small sized ox superior when fresh, yet the meat of the large sized, unquestionably is more calculated for salting—a most essential object in a maritime and commercial country; for the thicker the beef the better it will retain its juice when salted, and the fitter it is for long voyages; 5. That the hide of the large ox is of very great consequence in various manufactures; 6. That large stock are in general distinguished by a greater quietness of disposition; 7. That where pastures are good, cattle and sheep will increase in size, without any particular attention on the part of the breeder; large animals are, therefore, the proper stock for such pastures; 8. That the art of feeding cattle, and even sheep, with oil cake, would be of less consequence unless large oxen were bred, as small oxen can be fattened with grass and turnip as well as with oil cake. And, lastly, That large oxen are better calculated for working than small ones; two large ones being equal to four small ones in the plough or cart. Such are the arguments used on both sides of the ques-

tion; from which it appears that much must depend upon pastures, taste, mode of consumption, markets, &c., and that both sides have their peculiar advantages. The intelligent breeder, however, unless his pastures are of a nature peculiarly forcing, will naturally prefer a moderate size in the stock, which he rears. 2. *Form.* Though it is extremely desirable to bring the shape of cattle to as much perfection as possible, yet profit and utility ought not to be sacrificed for mere beauty, which may please the eye, but will not fill the purse, and which, much depending on caprice, must be often changing. In regard to form, the most experienced breeders seem to concur in the following particulars:—1. That the form or shape should be compact, so that no part of the animal should be disproportioned to the other parts, and the whole distinguished by a general full round shape. 2. That the chest should be broad; for no animal whose chest is narrow can easily be made fat. 3. That the carcase should be deep and streight. 4. That the belly should be of a moderate size; for when it is more spacious than common in young animals, it shews a diseased state, and in older ones it is considered a proof that the animal will not return, in flesh, in milk, or in labour, the value of the extra quantity of food which it consumes. 5. That the legs should be short: for the long limbed individuals of the same race, are found to be the least hardy, and the most difficult to rear or fatten. And, 6. That the head, the

bones, and parts of inferior value, should be as small as is consistent with strength, and with the other properties which the animal ought to possess. In animals bred for the shambles, the form must likewise be such as to contain the greatest possible proportion of the finer compared to the coarser and less valuable parts of the animal. This, by selection, may be attained, and thus the wishes of the consumer may be gratified. As to the broad loins and full hips which are considered a point of excellency in particular breeds, it is evident, that the old narrow and thin make, required improvement; but the alteration is now carried to faulty excess, and often occasions great danger and difficulty in calving. The form of animals has fortunately attracted the attention of an eminent surgeon, Henry Cline, Esq. of London; the substance of whose doctrine is, 1. That the external form is only an indication of the internal structure. 2. That the first object to be attended to is the lungs; for on their size and soundness, the health and strength of the animal principally depends. 3. That the external indications of the size of the lungs are the form and size of the chest, and its breadth in particular. 4. That the head should be small, as by this the birth is facilitated, and affords other advantages in breeding, &c., and as it generally indicates that the animal is of a good breed. 5. That the length of the neck ought to be in proportion to the size of the animal, that it may collect its food with ease. And, 6. That the

muscles and tendons should be large, by which an animal is enabled to travel with greater facility. It was formerly the practice to estimate the value of animals by the size of their bones; a large bone was considered to be a great merit. It is now known that this doctrine was caried too far; the strength of the animal does not depend on the bones, but on the muscles; and when the bones are disproportionably large, it indicates, in Mr Cline's opinion, an imperfection in the organs of nutrition. Bakewell insists strongly on the advantage of small bones; and the celebrated John Hunter declared that small bones were generally attended with corpulence, in all the various subjects he had an opportunity of examining. A small bone, however, being heavier and more substantial, it requires as much nourishment as one with a larger circumference.

3. *A tendency to grow.* Among the other qualities for which thorough bred cattle and sheep are distinguished, that of being good growers is not the least essential; the meaning of which is, that the animal should not only be of a strong and healthy constitution, but should grow speedily to a proper size. As specimens of rapid growth, a stirk of three years old, when well fed, will weigh from eighty to ninety or one hundred stone, fourteen pounds to the stone; and a two year old Liecester wedder, from twenty-three to twenty-eight pounds per quarter, immediately after his second fleece is taken off him. Animals having the property of early growing,

are usually streight in the back and belly, their shoulders well thrown back, and their belly rather light than otherways. Being too light of the bone, as it is termed, is also a great fault: a good grower has always a good middling size of bone.

4. *Early maturity.*—Arriving soon at perfection, not only in point of growth or size, but in respect of fatness, is a material object for the farmer, as his profit must in a great measure depend upon it. When animals, bred for the butcher become fat at an early age, they not only return sooner the price of their food, with profit to the feeder, but in general are also of greater value to the consumers, than slow feeding animals. This desirable property greatly depends on a quiet docile disposition: and as this docility of temper is much owing to the manner in which animals are brought up, attention to accustom them early to be familiar, cannot be too much recommended. A tame breed also has other advantages; it is not so apt to injure the fences or to break into adjacent fields; consequently it is not so liable to accidents, and can be reared, supported, and fattened, at less expence. The property of early maturity, in a populous country, where the consumption of meat is great, is extremely beneficial for the public, as it evidentdently tends to furnish great supplies to the market; and this propensity to fatten at an early age, is a sure proof, that an animal will fatten speedily at a late period of its life; for that pur-

pose it is of the utmost importance to feed the animal well when it is young; for it does not easily recover the injury it sustains, when, in that respect, there is any material deficiency.

5. *Hardiness and Vigour of Constitution.*—In the wilder and bleaker parts of a country, the possession of a hardy and healthy constitution is of peculiar importance. Where the surface is barren, and the climate rigorous, it is essential that the stock bred and maintained there, should be able to endure the vicissitudes of the weather, as well as scarcity or coarseness of food, or any other circumstance in its treatment that might subject a more delicate breed to injury. In this respect, different kinds of stock greatly vary; and it is a matter of much consequence to select, for different situations, cattle with constitutions suitable for the place where they are to be kept. It is a popular belief, that dark colours are indications of hardiness. In mountain breeds of cattle a rough pile is reckoned a desirable property, more especially when they are to be kept out all winter; it enables them to face the storm, instead of shrinking from it. But without being hardy, when distinguished only by the excellency of their shape, cattle may possess vigorous constitutions: with that advantage, they are not subject to various disorders to which ill-shaped cattle are liable, such as having yellow fat, also being black-fleshed,—defects so injurious to stock as to render them unsaleable.

6. *Prolific property.*—By this is meant, that

the females of a breed shall not bear too frequently, but shall also occasionally have more than one at a birth. This property is partly owing to something in the habits of animals, and partly to their good or bad treatment; yet, in some degree it seems to depend on the seasons, some years being more distinguished for twins than others. In breeding, not only the numbers, but the sex of the offspring in some cases, seems to depend on the female parent: Two cows produced fourteen females each, in fifteen years, though the bull was changed every year. It is singular, that when they produced a bull calf, it was in the same year. Under similar circumstances, a great number of males have been produced by the same cow in succession, but not to the same extent.

7. *Quality of flesh.*—Breeds are likewise distinguished by the quality of their flesh. In some breeds it is coarse, hard, and fibrous; in others, a finer grain or texture. In some breeds also, the flavour of the meat is superior; the gravy they produce, instead of being white and insipid, is high coloured, well flavoured, and rich; and the fat is intermixed among the fibres of the muscles, giving the meat a streaked or marbled appearance. Breeds whose flesh has these properties, are peculiarly valuable: hence two animals of nearly the same degree of fatness and weight, and which could be fed nearly at the same expence, the husbandman will sell at very

different prices, merely from the known character of their meat.

8. *A Disposition to Fatten.*—This is a great object in animals designed for the shambles. Some animals possess this property during the whole of their lives, while in others it only takes place at a more advanced period, or when they have attained their full growth, and as furnished at the same time with a suitable supply of food. There are in this respect other distinctions: 1. Most sorts of cattle and sheep which have been bred in hilly countries will become fat on low-land pasture, where the more refined breeds would barely live; and, 2. Some animals take on the fat very quickly when the proper food has been applied, and some individuals have been found, even in the same breed, which have, in a given time, consumed the least proportional weight of the same kind of food, and yet have become fat at the quickest rate. Even in the human race, with little food, some will grow immoderately corpulent. It is probably from internal conformation, that this property of rapid fattening is derived. The advantages and disadvantages of fattening cattle and sheep, at least to the extent frequently practised at present, are points that have of late attracted much public attention; but any controversy on that subject can only arise from want of proper discrimination. Fat meat is unquestionably more nourishing than lean, though to digest this oily matter there is required a strong stomach and good bile. Con-

sequently none but those who are in the most vigorous state of health, or who are employed in hard labour, can properly digest it. Though fat meat, however, is unfit for general consumption, yet experiments in the arts of fattening animals, are likely to promote useful discoveries; and though, in the course of trying a number of experiments, errors and excesses may be committed, yet, on the whole, advantage may be derived from the knowledge thus to be obtained. It has been found, that to kill even hogs till they are thoroughly fat, is exceedingly bad economy. An ox or a cow, though the little flesh it has may be of good quality, yet presents, when lean, little but skin and bone; and if slaughtered in that state, would neither indemnify the owner for the expence of breeding and maintaining it, nor benefit the public. A coarse and heavy-fleshed ox, which would require a very long time and much good food to fatten, may be slaughtered with most advantage while rather lean. It is not, however, so much the extent of fat, as the want of a sufficient quantity of lean flesh, of which the consumer complains; for it cannot be doubted, that the lean flesh of fat animals is superior in quality, and contains more nourishment, than any other meat. Here it may be proper to mention, that indication of tendency to fatten which is technically called *handling well.* The graziers and the butchers, in many parts of the kingdom, had recourse to the hand and feeling of the skin, or cellular membrane, for ascertaining a disposi-

tion to fatten. But since Bakewell directed the public attention so much to breeding, that practice has become more generally known. Handling cannot easily be defined, and can only be learned by experience. The skin and flesh of cattle, when handled, should feel soft, somewhat resembling those of a moleskin, but with a little more resistance to the finger; a soft and mellow skin must be more pliable and more easily stretched out to receive an extraordinary quantity of fat and muscles, than a thick or tough one. The ridged skinned animal must therefore be most difficult to fatten. In a good sheep, the skin is not only soft and mellow, but in some degree elastic. Neither cattle nor sheep can be reckoned good, whatever their shape may be, unless they are first rate handlers. The improved short horned breed, besides their mellowness of skin, are likewise distinguished by softness and silkiness of hair.

9. *Lightness of Offal.*—It is likewise of much importance that an animal solely bred for the shambles, should have, consistently with its health, as little offal, or parts of inferior value, as possible, and consequently a greater proportion of meat applicable as food for man.

10. *Milking properties.*—It cannot be doubted, in regard to cattle, that the production of milk is an object of peculiar importance; and in the more populous districts must be considered as even indispensible. It is most desirable therefore to have a breed which, when young, pro-

duces milk in great perfection and abundance, and when they get old are easily fattened. These advantages are possessed in an eminent degree by the Herefordshire, the Ayrshire, and the short-horned; and it gives these breeds a great pre-eminence over other stocks.

II. *On the Origin of improved Breeding, and the principlss on which it depends.*—It is not to be wondered at that the management of our stock should have been defective, when cattle in general were bred by one set of men, fattened and prepared for the market by a second, and killed by a third. Whilst these three occupations continued distinct, with only occasional communications or intercourse with each other, no great improvement could be effected. Division of labour, or separation of professions, so useful in manufacture, was pernicious to this important branch of agriculture, by preventing the principles on which the improvement of our domestic animals depend, from being ascertained. A person of strong natural sagacity, Robert Bakewell of Dishly, in the county of Leicester, though he did not unite to the extent that his disciple Culley did, the two occupations of breeder and grazier, yet had acquired great skill in grazing, by which he was enabled to preserve his breeding stock in the highest possible condition; and having called in to his aid, all the skill and experience which the butcher had acquired, was thus enabled to ascertain the principles, not only of breeding do-

mestic animals, so as to answer the common expectations of the farmer, but also of bringing them to a degree of perfection, of which, before his time, they were scarcely supposed capable; and by directing the public attention in general, and that of the farmers in particular, to the art of breeding, he has in various respects most essentially benefited the country. By his example, that most important system was very generally established, of certain breeders directing their whole attention to rearing of males, and letting them for the season, at such prices as would amply indemnify the breeder for all the care and expence he had bestowed on them, a practice originally adopted in Lincolnshire, but which had never been carried to great extent, till adopted by Bakewell.

The art of improved breeding consists in making a careful selection of males and females, for the purpose of producing a stock with fewer defects, and more valuable properties, than their parents; by which their mutual perfections shall be preserved, and their mutual faults corrected. Its objects, therefore, are to obviate defects, and to acquire and perpetuate desirable properties. Hence, when a race of animals have possessed in a great degree, through several generations, the properties which it is our object to obtain, and when any tendency to produce unwished-for properties has been extirpated, their progeny are said to be well bred—they possess what is technically called *blood*, and their stock may be confidently

relied on. It was on this principle of selection that Bakewell formed his celebrated stock of sheep, having spared no expence in obtaining the choicest individuals, from all the best kinds of long or combing-wooled sheep, wherever they were to be met with. Nor did he depend on such selections alone; for he also never spared either pains or expence, in giving his stock every advantage that could be derived from attention to their food, protection from any thing that could annoy them, and shelter from the inclemency of the weather. After a superior breed, however, has been obtained and perfected, by putting the best males to the finest females, it is a point that has been much disputed, whether it is proper to raise a stock, 1. From the same family; or, 2. From the same race, but of different families; or, 3. From races entirely different.

1. Breeding from the same family. This method is called breeding-in-and-in, or putting animals of the nearest relationship to each other. Though this plan was for sometime in fashion, under the sanction of Bakewell's authority, yet experience has now proved, that it cannot be successfully persevered in; and that beyond a certain point of perfection, nature cannot be forced. It may, indeed, prove beneficial, if not carried too far, in fixing any variety that may be thought valuable; but on the whole, it is so only in appearance. Under this system, the young animal comes into the world, on comparatively a very small scale. By keeping it fat from the very first

moment of its existence, it is made to attain a greater size than would have naturally taken place, and its weight in consequence will be very great, in proportion to the size of its bones. Thus a generation of two animals of an extraordinary form, and saleable at enormous prices, may be obtained; but that does not prove that the practice is eligible, if long persisted in. On the contrary, if the system be followed up, the stock get tender and delicate, they become bad feeders, require expensive articles of food, and though they retain their shape and beauty, they will decrease in vigour and activity, will become lean and dwarfish, and ultimately incapable of continuing the race. The instances of this are numerous. The celebrated breeder, Princep, found that decrease of size was unavoidable, in spite of all his endeavours to prevent it, by keeping his young stock well. Sir John Sebright tried many experiments by breeding-in-and-in, with dogs, fowls, and pigeons, and found the breed uniformly decreasing and degenerate. A gentleman who tried the system with pigs, brought them at last into such a state, that the females gave over breeding, almost entirely, and when they did breed, their produce was so small and delicate, that they died as soon as they were born. Nay, Mr Knight's experiment with plants, fully convinced him, that in the vegetable, as well as in the animal kingdom, that offspring of male and female not related, will possess more strength and vigour, than where they are both of the same

family. This proves how unprofitable such connections are. That is no reason, however, why breeders may not manage a particular family of animals to great advantage, by shifting or changing, instead of breeding directly from parents to offspring. Hence the propriety of procuring males from the flocks or herds of those who have the same or a similar breed. It has been remarked, that those farmers in general have the worst flocks, who breed from rams produced on their own farms, and that an interchange of males is mutually beneficial.

With respect to the doctrine, that when you can no longer find better males than your own, then, by all means, breed from them, for that best can only beget best. This is ably refuted by an intelligent author, who has devoted much attention to the art of breeding. He observes, that there never did exist an animal without some defect in constitution, in form, or in some other essential quality; and such, however small it may be at first, will increase in every succeeding generation, and at last predominate in such a degree, as to render the breed of little value. Breeding-in-and-in would only tend to encrease and to perpetuate that defect, which might be eradicated by a judicious selection from a different family of the same race. The breeding from different families of the same race, is therefore a preferable system. When these have been for some time established in different situations, and have had some shades of difference impressed

upon them, by the influence of different climates or soils, and treatment, it is found advantageous to interchange the males, for the purpose of strengthening the excellencies, and remedying the defects of each family. On this principle, the celebrated Culley continued for many years to hire his rams from Bakewell, at the very time that other breeders were paying him a liberal price for the use of his own; and the very same practice is still followed by the most skilful breeders at present.

Any attempt at improvement, by crossing two distinct breeds or races, one of which possesses the properties which it is wished to obtain, or is free from defects which it is desirable to remove, requires a degree of judgment and perseverance to render such a plan successful, as is very rarely to be met with. Indeed, though such crosses may by great attention, answer at first, it is in general found, that great singularities attend such mixtures; and in breeding bulls, although some of them may apparently answer, yet their breed is not to be trusted. The first cross between a good short-horned bull, and a good Kyloe cow, will make a good grazing animal; but by proceeding farther, disappointment will ensue, if a regular stock be wanted. If such a cross is to be persevered in, the male should always be of the same breed with the first.

Crossing with larger males from another country, is sometimes attempted, with a view of enlarging the size of the stock; but such attempts

should be made with the greatest caution, for by a mistaken practice, extensively pursued, irreparable mischief may be effected. Where a particular race of animals has continued for centuries, it may be presumed that their constitution is adapted to the soil and climate: any attempt therefore, to increase the size of a native race of animals, with improving the food, by which their size is regulated, is a fruitless effort to counteract the laws of nature. In proportion to their increase of size by crossing, they become worse in form, less hardy, and more liable to disease. The only satisfactory and judicious mode of enlarging the size of any race of animals, is by maintaining the original stock of the country, more especially during the time of their youth. In every case where the enlargement of the carcase is the object, the cross breed must be better fed than the native parent. Hence, if a good stock can be otherwise obtained, crossing ought to be avoided, for it produces a species of mongrel, and it is more difficult to get rid of the imperfections thus introduced into a breed, than is commonly imagined. The eminent surgeon already alluded to, Henry Cline, Esq. is of opinion, that any improvement of form by crossing, must entirely depend on selecting a well formed female, larger in size than the usual proportion between females and males. The fœtus will thus be better nourished, which is so essential to the production of an animal with the most perfect form,—abundant nourishment being neces-

sary from the earliest period of its existence, until its growth is completed. Upon this principle, the breed of English horses have reached their present state of perfection, by crossing them by diminutive stallions. And our hogs have been improved by the use of small Chinese boars. Other experiments on the same principle have also succeeded. Mr Spearman, a farmer in Northumberland, tried a cross between the Kyloe or highland bull, and the large short-horned cow; and during the experience of twenty years, found it to answer. The plan recommended by Mr Cline, has likewise been most successfully practised by Mr Van De Poes, near the Hague, who, perhaps, has the best dairy stock of cows in Holland. The excellence of his breed he entirely attributes to his using none but young bulls who have not attained their growth or size, and which he always parts with when they are three years of age. The improvement of the fleece depends, however, on the male, it being proved, that by always using the merino lamb, fleece rivalling the Spanish, may be obtained from ewes of British stock, in the course of four or five generations. In regard to the period of commencing breeding, a cow in general, should not produce a calf at an earlier period than three years old. A bull at first may be used at fourteen or eighteen months; he then shews most vigour, and more energy may be expected in his offspring. At two or three years old, bulls frequently become ungovernable, and are killed. Many contend, that

the offspring of a bull, if well bred, becomes generally better, till he reaches seven or eight years, and indeed till his constitution be impaired by age. This doctrine does not agree with the practice of that intelligent breeder, Mr Van De Poes, in Holland; nor can the question be finally decided by a regular course of experiments. In breeding sheep, the age of rams is considered to be a point of less importance. Some breeders maintain, that the offspring take considerably more after the male than the female parent, and that the male possesses an independent quality of conferring peculiar properties on his offspring. The correctness of that opinion is disputed in a recent essay, by an author who has paid much attention to that particular point, and has discussed it with considerable ability. He admits that the male animal affords advantages superior to the female, for the improvement of the species; in as much as the female is in general restricted to a single production, whereas the services of the male are available to a great number. Of the other it is admitted, that well bred females will produce good stock with inferior bulls, as well as that well bred bulls will produce good stock with inferior females. But the excellencies of the male are in general the accumulated acquisitions of many ancestors: they are positive, and in comparison fixed, whereas cows frequently possess little or no character, and have been bred without regard to any particular object, but the production of animals. To increase the stock

of the farms, no stock can be depended upon for excellency, unless where both parents have acquired from their progenitors, by great perseverance, those important requisites which are considered to be essential for the formation of a perfect breed. Where those requisites are not confirmed by great attention for a number of years, an animal will breed back in point of merit. It is necessary, therefore, in order to retain excellence in stock, that the animals be distinguished by high blood, or have pedigrees as little dubious as possible, for several generations. There is reason, however, to believe, that some parts of the offspring take after the male, and some after the female; and if such a habit be permanent in her family, the length of the legs of the offspring will seldom be influenced by the male, but much by the female parent, while in the womb, and will not subsequently change. The width and depth, and consequently the weight of the carcase, will be greatly influenced by the male; and if it be of a large kind, the offspring will present great weight in a small compass. This has been proved by crossing a west highland cow, with a Herefordshire bull, not with a view of continuing the breed, but to dispose of all the animals produced by the cross. The offspring have the short legs of the west highland cow, with the increased weight that might be expected from a Hereford bull. They are exceedingly hardy; their flesh is of an excellent quality, and they have at two years old, nearly the proportions of

another stock at six. The females are consequently ready to be fattened at two years old. The males require a year older. The crossing the Hereford heifer, however, with a highland bull, would answer better, were the formation of an entire new breed to be attempted. Among rules of breeding, one is, that the young should be brought forth at the season of the year when there is a full supply of suitable food. This is particularly necessary to be attended to. On high and exposed situations, where there is little or no other provision than common pasture, where this rule has not been adverted to, great loss has been sustained. It is necessary, at the same time, to guard against an opposite extreme, and to take care that the birth shall not be so late in the season, that there shall be any risk of the young animal being unable to bear the cold and severities of the ensuing winter. Another rule in breeding is, never to fix on the ewes to be put to a favourite ram, until the lambs got by him the preceding year be examined. The perfections and defects of his progeny are thus ascertained, and ewes are given him accordingly. By such attention, and careful selection from the lambs, rejecting all doubtful ones, a flock is kept in a constant state of progressive improvement. A third rule is, in selecting a male from a small number, not to choose the weakest male, though it may possess the most delicate form, and approach the nearest to female symmetry; for if the same system were to be continued for a few

years, or generations, it may easily be supposed, that such a breed will dwindle, compared with one left to nature, in which the strongest males driving off the weakest, are exclusively employed for the propagation of the kind.

It is farther necessary to observe, that any defect in a breed will not only be transmitted uncorrected, but will necessarily increase in the progeny. A tendency to that effect being inherited by both parents, and both being immediately descended from its original propagator. The defect may be in size, form, inclination to feed at any early age, to fatten, with a comparitively small consumption of vegetable food; and according to the nature of the original defect, the breed will become bad feeders, or incapable of producing any but unhealthy offspring. On this branch of the subject it may be proper to add, the justly celebrated Bakewell was the founder of the improved system of breeding. He was by nature a strong minded man, and a superior judge of stock for the times in which he lived. Experience, however, has made the art more perfect, though it is of all others the one in which blunders are the most easily committed. The art is eminently useful, and is capable of almost unlimited improvement. But it requires so much attention and expence, that it can never be kept up with spirit without liberal encouragement and good prices.

III. *On the proper management of stock in gen-*

eral. This is a subject which can only in this place be slightly touched upon. It is an object to every husbandman to expend in the most economical and advantageous manner, the vegetable produce allotted for the maintenance of his stock, and to bestow it chiefly on those from whom he is likely to derive the earliest benefits. Notwithstanding many recent and truly valuable improvements, there still prevails, in regard to some particulars, a mixture of profusion on the one hand, and penuriousness on the other. The saving to the public, by careful attention to the feeding of live stock, would at all times be great; but in times of scarcity would be incalculable. For the attainment of the object, it would be necessary to pay regard, 1. To the due preparation and frugal expenditure of their food; 2. The appropriation of that food to different sorts, according to the different species and breeds of stock, there different habits and degrees of hardiness, and the different degrees of exercise and modes of treatment to which they are subjected; and, 3. The requisite attention to the demands of different periods, the relative effects of different seasons, and the state of animals themselves, in regard to age, fatness, &c.

The following general rules as to the feeding and management of stock, may deserve attention:—

1. Animals intended for the butcher should be kept in a state of regular improvement. The finer breeds are higher fed from their birth, and

are almost always fat. With other breeds, and on pastures of inferior quality, this is neither necessary nor is it practicable; but in every case, the same principle of improvement should be adhered to; and such animals ought never to be allowed to lose flesh in the hope of afterwards restoring it, by better feeding.

2. The size should never be above that which pastures can support in a thriving condition. Nor can any thing be more injudicious than to endeavour to increase the size of stock by crossing without improving the pasture. The stock of every kind, and of all the various breeds, should, in respect of size, be proportioned to the quantity and the quality of their intended food.

3. The best pasture should be allotted to that portion of stock which goes first to market; the next in quality to the breeders: and the less valuable pasture to the inferior or grazing stock; without, however, suffering it to be over-stocked. This division is highly advantageous: one hundred acres under this plan would feed more than one hundred and twenty promiscuously pastured.

4. Great care should be taken not to over-stock pastures,—a practice attended with great loss to the farmer, and likewise to the community: this ought to be particularly avoided in regard to young and growing animals; if they are kept poor during one part of the year, they will scarcely thrive during the remainder; and when ill fed, will never attain their proper size and proportion: at the same time, young stock, their

powers of digestion being strong, may be fed on coarser and stronger food than those which are more advanced, and of age capable of being fattened.

5. The kind of food given to animals should be suitable to their ages. In the habit of very young animals there abounds, and seems necessary for their welfare, a great proportion of fluid; and therefore more succulent food may be preferable for them; but when they are more advanced and vigorous, the digestive powers being stronger, and time being requisite for the process of growth, provision less immediately nutritious, or of a coarser quality may suffice, a kind of food which would agree better with all animals in winter when the perspiration is less than in summer, during which season moist provision would seem to be more suitable. When fed on dry food, and more especially if the quality is coarse, the stock should be well supplied with water to promote its digestion in the stomach.

6. In regard to the diseases of stock, it may in general be observed, that the great object of the farmer ought to be to ward them off, by obviating their remote causes; for most of those which affect our domestic animals, when once induced, are not easily cured, partly from their obscure nature, and partly from the difficulty of exhibiting remedies to the large numbers which are frequently seized at the same period, or in the same situation. In particular districts, many herds and flocks are considerably thinned almost

every year, by inflammatory and other diseases, which a little care and good treatment applied in time might easily have prevented.

Lastly, The food, whatever it consists of, should not be too suddenly changed. It is seldom profitable to bring lean animals immediately from coarse to rich pasture, and a change from dry to succulent food; and they should be gradually taken off and put on. A change of pasture, however, of the same quality, tends to produce a greater accumulation of fat. It may be proper to add, that nature seems to have designed different sorts of animals for different purposes. A breed of cattle equally adapted to the butcher, to the dairy, and to the plough, and cart, is no where to be met with; and in so far as experience enables us to judge, these properties are hardly consistent with one another, and belong to animals of different forms and proportions. A large Herefordshire ox, for instance, would starve on a Highland pasture, and heavy Leicestershire sheep were never intended to travel great distances, or to search for their subsistence in a rugged or mountainous country. The judicious breeder, therefore, will fix upon one object to be principally attended to; and he will endeavour to rear the species of stock best qualified to enable him to attain the object he has in view; or in other words, the most likely to pay the most money for the food he gives them: that can only be attained by attention to the principles of breeding in general; to the system best calculat-

ed for his own situation in particular; and to the practice of the most eminent farmers who have excelled in the art.

In regard to live stock in general, it may be observed, that we ought to have in view the keeping up of such a diversity of size and of habit as seems best adapted to answer our principal demands, and is most likely to agree with the situation, climate, produce, and other general circumstances of the country. There might have been some observations given on the dairy, only we pass it by at present.

IV. *Observations on the size of horses, and the most economical mode of feeding them.* 1. Size. The late Mr Davis of Longleat, one of the ablest agriculturalists this country has ever produced, has given some important observations on the size of horses. He laments, that the attempts that have been made to improve the breeds of horses, cows, and sheep, have proceeeded too much upon the principle of enlarging the size of the animal; his objection, indeed, to the using of large heeled horses in preference to the smart, the active, and the really useful breeds, merit particular attention. In some situations, the steepness of the hills, and the heaviness of the soil, require more than ordinary strength; but in such cases, he maintains, it would be better to add to the number of horses, than to increase their size. Great horses not only cost proportionably more at first than small ones, but re-

quire much more food, and of a better quality, to keep up their flesh. The Wiltshire carters take a pride in keeping them as fat as possible. Their food in general is barley, given without limit in many instances. Indeed the expence of keeping a fine team of horses, amounts to nearly the rent of the farm on which they are worked. They are purchased when colts, and sold at five or six years of age for the London drays and waggons. The expense of their maintenance is very seldom counterbalanced by the difference of price; more especially, as such horses are but gently worked when young, that they may attain their full size and beauty. In ploughing light soils, the strength of a dray horse is not wanted, and in heavy soils the weight of the animal does injury to the land. It is proper, at the same-time to observe, that in horses of a great size, weight and strength are of much use in war, as was experienced at the battle of Waterloo, when the smaller breeds of the enemy could not resist the attacks of the heavy British cavalry.

It is certainly necessary, that horses which go through such severe labour as those employed by the farmer, should be well fed, and on articles of a substantial description. A pair of horses, fed on potatoes solely, would never be able to run two stages daily in a post chaise, nor plough an acre per day, every day in the year; and all good farmers lay it down as a rule, that horses should be above their labour; at the same time, the heavy expense at which they are usually main-

tained, is extremely injurious to the public interest.

DISEASES OF HORNED CATTLE.

INFLAMMATION.

INFLAMMATION is the most frequent diseased condition to which cattle are subject. This may no doubt be owing to the peculiar organization, in respect to the four stomachs, disposing them to redundancy of blood in the system. It is highly proper to be acquainted with a subject of so much importance as inflammation; and this may be done with a little study and reflection.

External Inflammation is known to exist by the part being swollen, tender, and hotter than natural. In *downfall*, which is an inflammation of one or more quarters of the udder, the affected parts are swollen, tender, and hotter than usual. If the downfall be neglected, it is most likely that it will form, which is a consequence of the inflammation, and may be denominated the suppurative process. Should, however, the downfall be treated well, the swelling woul d fall gradually, and the heat and tenderness will fall away gradually; the inflammation is in this case said to be resolved, which is most to be wished for, and should always be attempted in inflammatory complaints.

Black-leg, a disease peculiar to young cattle. The affected part loses its sensibility, becomes

dark coloured, and is said to be mortified; this state succeeds the inflammation, which was not violent, but quick and weak: it is, however, most commonly the case in the other diseases incident to neat cattle, that mortification is preceded by a high degree of inflammation.—*Cause of inflammation.* The swelling in inflammation is principally to be ascribed to the increased quantity of blood passing through the vessels of the inflamed part, and its course in them being retarded, the tenderness arises in consequence of an augmented degree of energy determined to the nerves.

The heat of inflammation depends upon the increased reaction of the blood, by which there is more heat involved than natural, and consequently the blood more rarefied; this reaction of the blood is owing to the peculiar state of the nerves, in the part affected.

The proximate cause of inflammation, in my opinion, is a peculiar action of the blood-vessels, nerves, and absorbents, of the affected part, differing from that in a state of health.

Internal Inflammation, as to its nature and terminations, is the same as external. If inflammation seizes any of the organs essential to life, as the brain, lungs, intestines, or other internal and important parts, the functions of the affected organs are impaired or deranged, and a fever is produced. In inflammation of the brain, the animal appears wild and terrified, which sufficiently indicates the part attacked; when the lungs are inflamed, there is a difficulty of breathing, and

other symptoms denoting the nature of the complaint. If the bowels are inflamed, the beast is costive, lies down and rises again with great difficulty. When the calf-bed becomes inflamed, or a preternatural quantity of blood flows to that organ, during gestation, the cow in general slips her calf.

All inflammatory diseases are accompanied with fever. Fever is indicated by the beast appearing dull and languid, the eyes are inflamed, the mouth dry, the breath hot, the breathing quicker than ordinary, and the pulse beating to about sixty or seventy in a minute; loss of appetite, and frequently the bowels are disposed to be constipated; the extremities and roots of the horns are commonly cold; and frequently the animal moans.

When cattle are seized with any complaint, the symptoms should be carefully observed; for it is by this that one disease is distinguished from another.

General treatment of Inflammation. Whether inflammation be internal or external, attempts must be made to subdue it.

When inflammation seizes any important organ, such as the brain, lungs, bowels, kidneys, udder, or womb, bleeding is to be immediately had recourse to, in order to resolve the inflammation; and after bleeding, a purging drink is to be administered; and sometimes it is necessary to set a seton in the breast. But for the particular treat-

ment, I must refer to the respective sections on these diseases.

In the blain, sleeping staggers, and downfall in the joints, copious bleeding and purging drinks are the chief remedies to be depended on.

In external inflammation from severe bruises, wounds, and other accidents, fomentation with warm water, poultices made of rye or bean-meal, or flour, when they can be applied, and the purging drink. If external imflammation be considerable, it will be necessary to bleed the beast, lest mortification ensue. If the swelling, from a bruise, or other cause, should increase in size, suppuration is most likely commenced, and the tumor must be opened with a lancet or pen-knife, when matter is fully formed. Bleeding is a most useful and powerful remedy in the cure of inflammatory and other complaints; it lessens the quantity of blood in the blood-vessels, and diminishes nervous action.

If the glands or kernels between the jaws, or of the throat, are perceived to be enlarged, and they are recently affected, immediate recourse should be had to bleeding, else the lungs will probably become diseased, and consumptive hoose will be the consequence.

In violent cold, bleeding is employed, but in slight cases, cordial drinks will restore the animal.

Physic for cattle is one of the principal remedies, when properly administered, towards curing most of their complaints.—The chief purgatives in use for cattle, are Glauber Salts, Epsom Salts,

Barbadoes or Cape Aloes, Castor Oil, and sometimes we add a common purging drink. In obstinate constipation of the bowels, two or three drachms of gambouge in powder. In some of the diseases of calves, calomel, another purgative, is a powerful remedy, particularly in the hoose. One pound of glauber or epsom salts, is commonly sufficient to purge a full grown or sized beast; half an ounce or six drachms of aloes, are added to the salts in particular diseases. One pint and a half of castor oil is a common dose, which is often given in inflammatory diseases, especially when attended with costiveness. The dose of calomel for calves, is from eight to ten grains, or a scruple, according to the size of the beast.

The following are cases in which purgative medicines are found useful:—Some graziers, when feeding old cows during summer, give them a purging drink every six weeks, by way of keeping off the downfall, which in general has had the desired effect.

A purging drink is sometimes given to cows soon after calving, to prevent the milk fever.

When red water is recent, a purging drink or two will frequently remove it.

In yellows, it is generally necessary to give purging drinks, and after that, cordial drinks, to invigorate the digestive organs.

When medicines are given to prevent cows from slipping their calves, we mostly commence with a purging drink.

For cattle that are hardle bound, purging medicines and glysters, are requisite, and sometimes bleeding.

In almost all the inflammatory complaints mentioned, a purging drink is commonly administered after bleeding.

To bulls that are bull burnt, a pound and an half epsom salts is given with the best effect.

If external inflammation, occasioned by wounds, bruises, and other causes, rise high and affect the whole system, purgative medicines are necessary, to lessen the inflammation. When the inflammation is considerable, great bleeding will likewise be requisite to subdue it, or mortification will probably be the consequence.

Indeed, purging drinks are found necessary for a vast proportion of diseases among cattle.

Mr Clater, a man so much esteemed for his skill in the distempers of cattle and sheep, and who has wrote a number of excellent and useful treatises on the diseases of those animals, mentions a gentleman in his neighbourhood who had a cow that fed on turnips, and she licked up a large quantity of sand, in consequence of which she presently became bound in the belly; and before a proper passage could be found, she took six drinks every day; one at last had the desired effect, and she evacuated a large quantity of sand of a dark hue, and shortly after recovered.

The utility of setoning for the prevention and cure of several diseases incident to neat cattle, is undoubtedly great. Mr Clater says, "I know

several situations in our neighbourhood, where, if the farmers did not adopt this precaution, they would lose great numbers of their young cattle with the black leg."

In certain counties, the hoose in calves is very prevalent and fatal; where it so happens, they should be all setoned before it is accustomed to make its attack, which would prevent it, or at least render the complaint milder. In the joint evil, I have frequently set a seton with decided good effect.

Setoning is often prescribed in the course of inflammatory complaints, as inflammation of the lungs, hoose in cows, &c., and acts by diverting the determination of blood from the inflamed part. The discharge of pus or matter produced by setoning, is formed by certain actions of the vessels, without the waste and loss of surrounding parts, and is as much a secretion as the bile, milk,and other fluids of the animal are. Setoning operates as a preventive of disease, not as is commonly supposed, by diverting the matter from the vitals, but by exciting the suppurative process, which prevents the black-leg or hoose in calves, in the same manner as the secretion of milk will preserve cows from those diseases, namely, by preventing an inflammatory disposition in the body, arising from plethora, or a redundancy of blood.

Mode of inserting a Seton.—The seton is commonly made of tow and horse-hair platted together; or tow by itself will do; which should be

about the thickness of the fore-finger, and eight to twelve inches in length. Before inserting the seton, it must be dipped into an ointment composed of equal quantities of hog's-lard and common turpentine previously dissolved. The seton being now prepared, an assistant is to hold the animal, while you plunge the seton needle, with the cord affixed to it, into the upper edge of the dewlap, and bring it out again at its lower edge; the space between the two openings to be six or eight inches. The seton is to be secured by fastening a small piece of wood to both ends of the cord, having previously cut a furrow in the middle of each piece of wood, where the seton is to be tied. Matter will begin to run in a few days; and after that the cord must be drawn backwards and forwards two or three times a-week, for about a minute each time, to irritate the parts, and by this means increase the discharge. The seton, when inserted to prevent the black-leg, or hoose in calves, may stay till it rots out. When setoning is had recourse to in inflammatory complaints, the cord should be dipped in the following blistering ointment:—

TAKE—Yellow basilicon, one ounce;
Cantharides, in powder, two drachms;
Spirit of turpentine, two fluid drachms.

This ointment will be found to act quicker in stimulating the parts to action, and in bringing on

the suppurative process, than the hog's-lard and common turpentine.

FELLON, EPIDEMIC COLD, OR INFLUENZA.

Each of these terms is occasionally made use of to express what is commonly denominated a cold.

Description. The symptoms that are produced by taking cold, are; the beast appears dull and heavy, with weeping eyes; the nose is dry; the hair looks penfeathered or staring, and seems to stand the wrong way on the animal's back; loss of appetite, and, if a milch cow, the secretion of milk is diminished, or she is said to trick of her milk. If the hand be pressed upon the chine, or any part of the back, the animal will in many cases instantly give way; this is for the most part called the *chine fellon*, and is best known by that name in the country. At other times, the joints become more particularly affected than any other part, from which circumstance it is termed in general the *joint fellon*. Old cows are the most subject to this last complaint, a short time before calving. This necessarily occasions much trouble to the owner, which, if proper care had been taken, might have been prevented. When this happens, they generally require some assistance at rising, until the time of calving; in all other respects they appear well, and eat their food as usual.

When the cold is more violent, feverish symp-

toms are induced; respiration is rather accelerated, which is perceived by the working of the flanks; the animal hooses; the pulse is quicker than natural, being from 60 to 70 in a minute; the nose and mouth are dry, and the breath hot; restlessness, the beast moving from one place to another in apparent distress; the bowels are sometimes in these cases costive, or what is best understood in this neighbourhood by the word *saped.*

Causes. Sudden and great changes of the weather, which occur particularly in spring and autumn, are the usual causes of this complaint. At the spring of the year, especially when the easterly winds prevail, great numbers of cattle are seized with it. A warm and moist air, succeeded by a piercing cold and dry wind, will very often produce it. Those cattle are the most liable to be attacked with cold, that have been tenderly managed during the winter. Cows after calving; and such as have been poorly fed, or been driven great distances, and after that have been exposed to a cold piercing wind. These vicissitudes of the weather operate upon the animal frame, by lessening the perspiration, and thus the functions of the body become deranged, particularly those of digestion, and the secretion of milk.

Treatment. The most effectual means of treating colds, when not violent or attended with the feverish symptoms above described, is to give the animal a warm cordial drink, which, acting as a stimulant to the stomach and intestines, assists

the defective digestive energy; if a milk cow, increases the secretion of milk, restores the obstructed perspiration, and enables nature to resume her former course. Either of the following drinks may be found sufficient to answer the desired effect under proper management:

RECIPE (No. 1.)

Cordial Drink.

TAKE—Aniseeds, carraway-seeds, grains of paradise, and fenugreek, fresh powdered, of each two ounces;
Mix them together for one drink.

RECIPE (No. 2.)

Cordial Drink.

TAKE—Sweet fennel-seeds, and cummin-seeds, fresh powdered, of each two ounces;
Long pepper, turmeric, ginger, and elecampane, each one ounce in powder;
Mix for one drink.

The method of giving either of these drinks is as follows: take one and put it into a pitcher, with two ounces of fresh butter, and two tablespoonfuls of treacle or coarse sugar; then pour one pint of boiling ale upon the whole, cover them down till new milk warm, and then give the drink to the beast. By this method the whole virtue of the seeds will be retained, which chiefly consists in the essential oil. By giving a few of these drinks to cattle that have been much reduced from scanty food during a long winter,

the animals have been so much revived, as to resume nearly all their original life and vigour. In cases of this kind, where the system appears debilitated, one of the above drinks may be given every day for three or four days together; but if the animal be in tolerable condition, the drinks may be repeated every other or third day, as may be thought most necessary or requisite.

In two hours after giving the drink, let the animal have a good mash, made of scalded bran or ground malt, with a handful or two of ground oats, or barley-meal, added to it, and warm water that day.

In slight colds during the summer, these drinks may be given to cattle while in their pasture: and, where it can be made convenient, let them fast two hours after, and then graze as usual. It is necessary to examine the sick animals every day, to watch while they both dung and stale, and to see if the body be of a proper heat, and the nose or muzzle of a natural breeze. If these be regular, there is not much danger. If no feverish symptoms appear, the cordial drinks will be found sufficient to restore the animal. In some cases, however, a stiffness and pain remain; when this occurs, add a table-spoonful of laudanum to the drink. If, however, the feverish symptoms mentioned above should appear, which frequently happens, the animal must be housed, or sufficiently sheltered from the inclemency of the weather; and it will in general be necessary to have immediate recourse to bleed-

ing. Three or four pints of blood, according to the strength and size of the animal, should be taken away, and in an hour or two after bleeding, let either of the following purging drinks be given. When the feverish symptoms are but slight, these purging drinks are alone sufficient to effect a cure.

RECIPE (No. 3.)

Purging Drink.

TAKE—Glauber salts, one pound;
Ginger, in powder, two ounces;
Treacle, four ounces.

Put all the ingredients into a pitcher, and pour three pints of boiling water upon them. When new-milk warm, give the whole for one dose.

RECIPE (No. 4.)

Purging Drink.

TAKE—Epsom salts, one pound;
Aniseeds, and ginger in powder, each one ounce;
Treacle, four ounces.

Let this drink be given in the same manner as the above (No. 3.)

Either of these drinks will in most cases be found sufficient to purge a full grown animal. Mr Clater thinks the last frequently works its passage more quickly. If the purging drink should not operate in sixteen or twenty hours,

let one half of either of the above be repeated, and add to it one ounce of Barbadoes aloes powdered, which will no doubt have the desired effect. By strict attention to the above method of treatment, the feverish symptoms will be removed, and the animal speedily restored. In severe cases of cold, it is sometimes necessary to repeat bleeding and the purging drink; when the beast has recovered, it should gradually be restored to the weather again; north-east and easterly winds are to be avoided as much as possible, and two or three cordial drinks may be given, which will recruit the strength of the animal, and restore it to perfect health.

RHEUMATISM, OR JOINT FELLON.

The word *fellon* is of frequent occurrence in the country; it is chiefly applied to diseases proceeding from cold, and is variously used as follows,—*cold fellon*, *joint fellon*, and *chine fellon*.

Description. The following are the symptoms: the animals, for the first two or three days, only appear stiff in the joints; afterwards they begin to tumefy or swell, and are painful, particularly when the beast attempts to move. Sometimes the stiffness extends over all the body to such a degree, as that the beasts are unable to rise when down, without some assistance. Cattle labouring under this disease suffer very much from the severe pains of the parts, as well as from listlessness and inability to stir.

Causes. This is an inflammatory affection of the joints, and chiefly attacks milk cows and young cattle at the spring of the year. It is in general occasioned by the animal being kept in a state of poverty and starving during the winter, and being suddenly exposed in the spring to the vicissitudes of the weather, or the inclemency of the north or north-easterly winds, especially in low situations.

Treatment. As soon as this disease makes its appearance, the cow must be taken to a warm cow-house or stable, or to a situation sheltered from the severity of the weather; this will do in slight cases. Two or three of the following drinks may, in most cases, effect a cure, if given at the commencement of the disease:

RECIPE (No. 5.)

Cordial Drink for Rheumatism.

TAKE—Best flour of mustard, two ounces;
Aniseeds, carraway-seeds, and grains of paradise in powder, of each two ounces;
Treacle, four ounces;
To be given in a pint of warm ale.

Or the following may be given.

RECIPE (No. 6.)

TAKE—Gum guaicum, in powder, one ounce;
Aniseeds, carraway-seeds, and grains of paradise in powder, of each two ounces;
Laudanum, half an ounce;
To be given in a pint of warm ale.

If the ale be poured upon the drink hot, the gum guiacum must be kept out, and afterwards mixed among the drink, when new-milk warm, or at the time of giving it.

It will in general be found necessary to repeat either of these drinks every other day for a few times. At the very commencement of the disease, it will frequently soon be removed by giving two or three of those excellent doses or cordial drinks, as you will see in No. 1. or No. 2. as there directed.

Should, however, the bowels be bound, or there be symptoms of fever, with considerable pain and swelling of the joints, one of the purging drinks as formerly mentioned must be given; and if the fever runs high, three or four pints of blood should be taken from the animal. In obstinate cases, the affected joints should be rubbed twice a-day with the following oils for about a quarter of an hour each time.

RECIPE (No. 7.)

Stimulating Oils.

TAKE—Neat's-foot oil or linseed oil, four ounces;
Spirit of turpentine and water of sal ammoniac, of each two ounces;
Mix; and shake them well together when used.

In some few instances a scaly eruption has broke out on the joints, and other parts of the extremities, after the animal has recovered of the original complaint. When this happens, you

must apply the following lotion to the affected parts morning and evening.

RECIPE (No. 8.)

Lotion.

TAKE—Blue vitriol and alum powdered, of each half an ounce;
Boiling water, one pint and a half;
Shake the bottle just before you use it.

INFLAMMATION OF THE LUNGS.

When inflammation seizes on the lungs, it is hard to get it removed, and especially if the animal has been seized any time before it was observed. Cattle that are drove long distances, and then exposed to the cold and damp air all the night, are particularly liable to it. It can always be traced from cattle being imprudently exposed to the cold, which might have been prevented by good management; and it most frequently attacks those that are feeding, or in excellent condition.

Treatment. Copious bleeding is the remedy most to be depended on for subduing the inflammation, and should be had recourse to as soon as the disease is discovered. The beast must be brought up and put into a cow-house well littered, and let three, or four, or six, or eight pints of blood, according to the size, strength, and condition of the animal, and the violence of the symptoms, be immediately taken away. If the

difficulty of breathing, and other symptoms, are not much relieved in six or eight hours after the first bleeding, it will be proper by that time to repeat it. A third or fourth bleeding, at intervals of six or eight hours, is sometimes requisite; but in small quantities, as two or three pints, being regulated by the urgency of the symptoms. A seton should be set in the dewlap immediately after the first bleeding, and either of the following drinks administered.

RECIPE (No. 9.)

Cooling Purgative Drink.

TAKE—Epsom salts, twelve ounces;
Nitre, one ounce;
Elecampane, one ounce.

Put the ingredients into a pitcher, and pour three pints of boiling water upon them, and give when new-milk warm. Or the following may be given:

RECIPE (No. 10.)

Purgative Drink with Castor Oil.

TAKE—Epsom salts, twelve ounces;
Nitre, one ounce;
Opium, one drachm;
Castor oil, one pound.

Pour one pint and a half of boiling water upon the salts and opium, and when cool, add the castor oil, and give it directly.

One half of either of these drinks, or the whole of them may be repeated every other or every

third day, for two or three times, or oftener if need require. Warm water and mashes must be regularly given two or three times a-day.

When the beast has recovered it will be proper, as much as possible, to avoid all those causes which induced the complaint. You may house the animal during the night for a short time; and if the weather be very unsettled, keep her up altogether, or turn her out only for a few hours in the middle of the day.

YELLOWS, OR JAUNDICE.

This is a common disease amongst neat cattle, and mostly proceeds from a debilitated state of the stomach.

Description. This disease is first observable in the white of the eyes, which appears of a yellow tint; and as it increases, the whole skin becomes impregnated with the same yellow hue, the ears, tail, eyes, and mouth, are the parts where it is most conspicuous. In every stage of the disease, the animals have a weakness and great debility of the nervous system; an aversion to move; and want of appetite. When in the pasture, they wander about by the side of hedges and fences in a dejected like manner; the secretion of milk in a milk cow is lessened; the bowels sometimes costive, and the fore-teeth loose.

Causes. It arises generally from a debilitated state of the stomach; which, being distended with

food, from slow and difficult digestion, presses upon the bile ducts, and prevents the bile from flowing into the intestines. The bile being thus obstructed, is taken up by the lymphatic absorbents, and conveyed into the circulating mass of blood, and gets diffused throughout the body. Milk cows are the most subject to it, in the spring of the year and the latter end of it, although they are not exempt from it at all other times. The fluctuating state of the weather seems frequently to give rise to this disease. Care should therefore be taken to house them when the weather is very changeable, and when they appear not well.

Treatment. As soon as this disease makes its first appearance, it may for the most part be removed by a purging drink, and two or three stomach drinks. The purging drink should be administered.

RECIPE (No. 11.)

Purging Drink.

TAKE—Glauber salts, one pound;
Ginger in powder, two ounces;
Treacle, four ounces.

RECIPE (No. 12.)

Purging Drink.

TAKE—Epsom Salts, one pound;
Aniseeds, and ginger in powder, each one ounce;
Treacle, four ounces.

If it is necessary to repeat a purging drink, we sometimes give the following:

RECIPE (No. 13.)

TAKE—Epsom salts, half a pound;
Barbadoes aloes, six drachms;
Salt of tartar, half an ounce;
Ginger, and aniseeds in powder, of each one ounce;
Treacle, four table-spoonfuls;
Mix for one drink.

Put the above drink into a pitcher; pour a pint of boiling water upon it, and when new-milk warm, give it to the animal. It must be observed, that it will be proper to keep the body sufficiently open throughout the disease. After the purging drink has had the desired effect, let the following be given:

RECIPE (No. 14.)

Stomachic Drink for Yellows.

TAKE—Cummin-seeds, aniseeds, and gentian-root in powder, of each two ounces;
Grains of paradise in powder, and salt of tartar, each one ounce;
Treacle, four table-spoonfuls;
Mix for one drink.

Put the whole into a pitcher, then pour a pint of boiling ale upon the ingredients, and cover them down till new-milk warm; then give the drink.

If the disease does not yield to the above treatment in a few days, and the beast be in a middling condition, it will be proper to take three or

four pints of blood away, and to repeat the stomachic drink for Yellows.

TAKE—Cummin-seeds, and gentian-root in powder, of each two ounces;
Grains of paradise in powder, and salt of tartar, each one ounce;
Treacle, four table-spoonfuls;
Mix for one drink.

Put the whole into a pitcher, then pour a pint of boiling ale upon the ingredients, and cover them down till new milk warm, then give the drink. If the disease does not yield to the above treatment in a few days, and the beast be in middling condition, it will be proper to take three or four pints of blood, and repeat the stomach drink, (No. 14.) The animal should not be turned out that day, nor at night, but the morning following it may go to pasture as usual.

After the disease is removed, two or three of the stomach drinks may be given with great advantage; they will invigorate the system; and if a milk cow, restore it to its former flush of milk.

INDIGESTION.

This disease depends on a state of debility of the stomachs, and is of frequent occurrence, especially among milk cows. The healthy func-

tions of the four stomachs are so important to the well-being of the animals, that when they become disordered, it is soon discovered by the effects produced.

When the weakness of the stomach is considerable, the beast throws up her cud, and drops it, becomes thin and weak, being fatigued with a little exercise; the hair looks pen-feathered or staring, and she wanders about by herself in a dejected manner. As the disease advances, the tongue becomes swollen and white; a ropy fluid flows from the mouth, and frequently the animal is saped, or bound in the body.

Causes. This complaint is brought on by starving cattle during the winter; by poor diet; unwholesome food; change of pasture and situation; stagnant water; want of proper exercise, and sometimes comes on after cows calve, and arises from other causes, easily discovered by a discerning grazier. These produce the disease, by debilitating the stomachs, which renders digestion slow, difficult, and imperfect.

Cure. Indigestion is in most cases easily removed, by giving the affected animal a liberal supply of good nourishing food, and administering such medicines as promote digestion, and invigorate the system. The following drink will be excellent for the purpose:

RECIPE (No. 15.)

Stomach Drink.

TAKE—Aniseeds, carraway seeds, and the best mustard in powder, each two ounces;
Grains of paradise, and salt of tartar, of each one ounce;
Gentian root in powder, one ounce;
Treacle, four table-spoonfuls.

Mix these for one drink, and give it in a pint of warm ale or gruel.

If the beast is much reduced or affected by the complaint, the above drink should be repeated every day for three or four days together; but on slight occasions, every other or third day will do.

Should the bowels be costive at any period of the disease, let the following purgative drink be given:

RECIPE (No. 16.)

TAKE—Castor oil, one pound;
Epsom salts, half a pound;
Aniseeds, and ginger in powder, of each one ounce.

Dissolve the salts in a pint of boiling water, and when new-milk warm, add the castor oil and powders, and then give it immediately.

If the tongue hangs out, is white, and a slimy fluid flows from the mouth, it will be proper to take away three or four pints of blood, and to give the purgative drink formerly mentioned. The treatment here laid down, will effect a cure

in the worst cases, with proper management. Let the animal have good sweet hay, and a sufficient quantity of it; also mashes, with ground oats; and if on poor pasture, remove her to a better.

INFLAMMATION OF THE BRAIN.

This disease is one of the most distressing to which cattle are subject, and is commonly called by the name of frenzy. It is most prevalent during the months of the summer season.

Description. The eyes appear much inflamed, and ready to start from their orbits; the affected animals have a peculiar wildness and anxiety in their looks; stagger when they move, and sometimes fall down of a sudden, and rise again with the same volatility, until nature is quite exhausted; sometimes they are very wild and terrified. Mr Clater has seen them in such a state, as to tear up the turf with their feet, and toss it up in the air with the utmost violence. As the disease proceeds, there comes on a copious flow of saliva, a grinding of the teeth, total want of rest, together with a constant trembling of the limbs; all of which are unfavourable symptoms.

Causes. It proceeds most commonly from a redundancy of blood in the system, which is induced by cattle thriving too fast, when turned on rich pasture grounds, or feeding them too quick, to get them into condition for shew or

sale. Mr Clater has seen it occasioned by the sun; when cattle are pasturing on grass where there is no shed, the sun affects the animal in the head. It may be induced by severe contusions on the head, or by their being harassed or frightened when driving them through large towns.

Cure. A cure is generally effected by copious and repeated bleedings, and the use of purging medicines; but bleeding is the chief remedy to be depended on. If the weather is not hot, it will be best to bleed the beast on the field; from four to eight pints of blood, or even till the animal faints, may be taken away. The bleeding must be repeated in six or seven hours. If the symptoms are not abated, you must still bleed while you can get it; but every time it must be diminished. The following purging drink will be found well adapted for this disease, and should be administered as soon as possible:

RECIPE (No. 17.)

TAKE—Glauber salts, one pound;
Cape aloes, half an ounce;
Nitre, one ounce;
Camphor, one drachm, pulverised with a few drops of spirits of wine.

Mix and put the whole into a pitcher, and pour three pints of boiling water upon them, and give the drink when new-milk warm.

This drink may be repeated if the case require it. The animals, in this complaint, cannot sometimes of themselves take a sufficient quantity of

food to keep them alive; it will, therefore, be found necessary to pour a sufficient quantity of that kind which produces the most nutriment.

The following gruel will be found adequate to the purpose:

TAKE—An equal quantity of linseed in powder, and oat-meal; make them into a stiff gruel, by just giving them a boil in a sufficient quantity of water; and when new milk warm, from two to four pints may be poured into the beast, or more if necessary, three or four times a-day. The gruel may be sweetened with coarse sugar or treacle, and half an ounce of nitre, and a little of common salt added, if thought proper.

This may be reckoned one of the severest diseases to which horned cattle are liable; and after the symptoms disappear, it leaves them in a low, dejected, and debilitated state. The following restorative drink will be found very suitable for such cattle as have been reduced by severe diseases.

RECIPE (No. 18.)

TAKE—Gentian in powder, one ounce;
Nitre, and salt of steel in powder, each half an ounce;
Aniseeds, carraway seeds, and ginger in powder, of each one ounce;
Treacle, four table-spoonfuls.

STAGGERS, OR SWIMMING IN THE HEAD.

Horned cattle are subject to this disease, which is generally known by one or other of these names. The seat of the complaint is in the brain, and arises from a too great quantity of blood being determined to that organ, unaccompanied with inflammation, but sometimes terminating in it, and is then called, *inflammation of the brain*, *phrenzy*, or *sough*.

Description. The symptoms are, heaviness and dullness of the whole frame; a constant disposition to sleep, which is manifest by the beast resting its head upon any convenient place; and the animal reels and staggers when it attempts to walk. If this disease be not checked in its infancy, by bleeding and excavating, and proper treatment, it will probably terminate in inflammation in the brain.

Causes. This disease arises from an increased determination of blood to the brain, which compresses that organ, and thereby disturbs its functions, producing the symptoms just mentioned. It mostly attacks those cattle that have been kept in a state of poverty and starvation during the winter season, and which have, in the spring of the year, been admitted into a fertile pasture. Hence is produced a redundance of blood in the system, which gives rise to the disease. In these cases, also, the animals overload their stomachs, which weakens the digestive powers, and causes

a too great distension of these organs; the free circulation through the lungs is in consequence impeded, which prevents very much the return of blood from the brain.

Cure. The cure must first be attempted by taking three, four, or six pints of blood from the animal, according to size and strength. Two or three hours after, give one of the purging drinks.

RECIPE (No. 19.)

TAKE—Epsom salts, one pound;
Aniseeds, and ginger in powder, each one ounce;
Treacle, one ounce.

These are sufficient to purge a beast of an ordinary size; but if they should not operate in the space of sixteen or twenty hours, let one half of the aforesaid dose be given every eight hours, until the desired effect be obtained. If the heaviness and other symptoms are not much relieved, after the purging drink has done operating, the following drink must be given, which will promote digestion, and act by the kidneys, by which the blood will be diverted from the head.

RECIPE (No. 20.)

TAKE—Resin in powder, two ounces;
Nitre, and cream of tartar in powder, of each one ounce;
Ginger, and aniseeds in powder, of each one ounce;
Treacle, four table-spoonfulls;
Mix and give it in a pint of cold ale.

This drink may be given two or three times in the course of the complaint, if thought requisite. It will be necessary to repeat the bleeding if the disease does not readily give way. Should symptoms of inflammation of the brain come on, the beast must be treated as directed for that complaint. The keeping of the body sufficiently open with purgative medicines, bleeding, and administering the above drink, according to the rules laid down, I have no doubt will be a sufficient cure for the disease. If the disease continues long, the following blistering ointment may be well rubbed on the whole of the head, and on each side of the neck, with the hand.

RECIPE (No. 21.)

Blistering Ointment.

TAKE—Yellow basilicon ointment, three ounces;
Spirits of turpentine, one ounce;
Spanish flies, in powder, half an ounce;
Euphorbium, in powder, two drachms.

Mix them well together on a slab, and put them in a pot for use.

It will be proper to repeat this blister once a-day for several days together; and if it take proper effect, it will, in general, give considerable relief to the head. When the blister has ceased to discharge, the part may be rubbed with elder or marsh-mallow ointment once a-day, for two or three times, and after the symptoms are abated, the animal may be restored by good keeping.

INFLAMMATION OF THE BOWELS WITH COSTIVENESS.

Inflammation of the bowels is by no means an uncommon disease among neat cattle, and frequently proves fatal to them, from injudicious treatment. It is a complaint easily known, by the fever, pain, and costiveness, attending it.

Description. The animal appears remarkably weak and low; lies down frequently, and rises again with much difficulty; and sometimes strikes at the belly with the hind feet. The bowels are costive, and the urine generally voided with difficulty. The pulse is quicker than natural, and the beast breathes faster than usual, which is perceived by the heaving of the flanks.

Causes. It mostly arises from cattle catching severe colds; and is often brought on by their going into rivers or ponds, after being heated and fatigued. It is sometimes produced by change of pasture and error in diet.

Treatment. If this disease continues for a day or two with all the aforesaid symptoms, a mortification of the bowels will ensue, which will soon terminate the animal's existence. This, however, may be prevented by proper treatment. At the onset of the complaint, four, five, or six pints of blood, according to the size and strength of the beast, and the violence of the symptoms, are to be taken away, as soon as the disease is discovered. If the animal is not relieved in the

space of six or eight hours, the bleeding must be repeated; take about three pints, and put a seton in the dewlap. A pint and a half of castor oil should be given immediately after the first bleeding; or the following which is more powerful:

RECIPE (No. 22.)

Purgative Drink.

TAKE—Castor oil, one pound and a half;
Epsom salts, half a pound;
Nitre, one ounce;

Dissolve the salts in two pints of boiling water, and when new-milk warm add the castor oil, and then give the drink. If this drink does not operate in six or eight hours it must be repeated, and the following glyster injected, previously back-raking the animal.

RECIPE (No. 23.)

Glyster.

TAKE—Thin gruel, three pints;
Common salt, half a pound;
Sweet oil, half a pint.

Inject it up the anus when new-milk warm, not warmer.

A third or fourth bleeding is sometimes requisite; but in smaller quantities; being regulated in this respect by the urgency of the symptoms.

The cow-house should be kept moderately warm, and the stall well littered; and the animal should have warm water and bran mashes.

SCOURING ROT.

This disease is met with at every season of the year, but is most prevalent in autumn, particularly in low, wet, swampy situations.

Description. It begins with frequent and painful efforts to expel the dung, which is thin slime, and altered in colour, not appearing like the natural fæces; flatulency and severe grippings of the bowels, as appears from the restless state of the animal, frequently lying down and soon rising again, and a rumbling noise in the intestines, which proceeds from wind generated in them.

If the disease be neglected, or improperly treated, the beast becomes in a short time reduced to a very weak and debilitated state, attended with loss of appetite; the dewlap hangs down, and has a flabby appearance; the dung runs off, with a putrified and offensive smell, and as it falls upon the ground rises up in bubbles, and often a membranous or skinny like substance is seen in it, and the hair all over the body appears pen-feathered or staring; feverish symptoms also accompany the disease; the eyes appear dull and inflamed; working of the flanks, and the pulse quick in some cases; and an old and experienced cow doctor saw lately hardened dung retained in the bowels, and nothing but a slimy or liquid matter ejected; and he had no doubt but many cattle died of this particular distemper, for want of timely bleeding, purging drinks, and glysters.

Causes. Dysentery or slimy flux, most commonly arises from suppressed perspiration, induced by exposure to sudden vicissitudes of the weather, especially when it has been previously fine and warm. Cattle that are over-heated by driving, and turned into pasture at night, where they lie on the wet grass all night, are sometimes attacked with it.

The causes produce the complaint, by occasioning a peculiar inflammation of some parts of the bowels. In examining cattle that have been slaughtered while labouring under this disease, Mr Clater has found the intestines much paler and thicker than natural, which are marks of inflammation. In one case, the inflammation extended to the female organs of generation, and caused barrenness.

Treatment. The animals thus affected should be taken from grass, and put into a large cow-house, or an open yard, where they can be sheltered from the weather and kept on dry meat, such as good hay, ground oats, barley, and beans; take an equal quantity of any of these three articles, and add to them a similar quantity of linseed cake, this will make good food for cattle labouring under this disorder. A proper quantity should be given them two or three times a-day. A strict attention to this method of diet will very much assist in promoting the cure.

If the eyes be inflamed, with heaving of the flanks, and painful twistings of the belly, accompanied with severe grippings in the expulsion of

the excrement, bleeding should be immediately resorted to: three or four pints of blood may be taken from the beast. The following purgative drink must be given as soon as the disease makes its appearance.

RECIPE (No. 24.)

Purgative Drink with Opium.

TAKE—Epsom salts, one pound;
Ginger and aniseeds in powder, each one ounce;
Solid opium, cut in small pieces, one drachm.

Pour three pints of boiling water upon the ingredients, and give the drink when new-milk warm. Let the following drink be administered when the physic has done operating, or in about twenty-four hours after the above drink has been given.

RECIPE (No. 25.)

Drink for Dysentery.

TAKE—Prepared chalk, four ounces;
Bole armenic, and aniseeds in powder, of each two ounces;
Ginger in powder, one ounce;
Solid opium, one drachm;
Mix for one drink.

This drink may be given in a pint of warm ale or gruel, and repeated every other day for three or four times, or oftener if required. In case the

above should fail, it will be necessary to have recourse to others of a more astringent quality.

RECIPE (No. 26.)

TAKE—Prepared oyster-shells, six ounces ;
Pomegranate-shell in powder, two ounces;
Gall in powder, half an ounce ;
Grains of paradise, and carraway-seeds, of each one ounce ;
Solid opium, one drachm.

The mutton suet with opium in it, may be given every evening with advantage; in obstinate cases, the body should be kept warm with a rug or woollen cloth.

INFLAMMATION OF THE KIDNEYS, OR RED WATER.

Inflammatory red water is accompanied with symptoms of fever and pain from its very commencement, which sufficiently distinguishes it from red water. It is almost always confounded with red water, from the urine being bloody; and for want of bleeding it frequently proves fatal. In the inflammatory red water, the kidneys are inflamed; but in the common red water, there is only an increased determination of blood to them; the latter, however, when improperly treated, frequently terminates in the former.

Description. It begins with a shivering, suc-

ceeded by increased heat of the body; the muzzle dry; working of the flanks; urine of a red colour, discharged in small quantities, and sometimes with considerable pain; loss of appetite. As the disease proceeds, the animal loses strength; the bowels become constipated; the urine of a dark colour; and death soon closes the scene; which might have been prevented by a proper treatment.

Causes. The origin of this disease is most generally to be ascribed to cattle taking cold, particularly when turned into low pasture grounds at the spring of the year; it most frequently seizes young beasts that are feeding, or in good condition; a fulness of blood in the system, renders them more liable to the complaint.

Sometimes inflammation of the kidneys proceeds from external injuries, such as a violent bruise, in consequence of other beasts ramping on them, or from a severe blow on the region of the kidneys.

Treatment. Bleeding is uniformly necessary at the onset of this disease; in proportion to the size, strength, and condition of the beast, from three to six pints of blood may be taken away; about two hours after bleeding, let the following drink be administered.

RECIPE (No. 27.)

TAKE—Epsom, or glauber salts, one pound;
Cape aloes, in powder, half an ounce;
Aniseeds, and carraway-seeds in powder, each one ounce.

Pour one pint of boiling water upon the ingredients, and when new-milk warm give it. This drink may be repeated every other or every day, as the circumstances of the case may require. Should the feverish symptoms continue, it will be proper to repeat the bleeding, but in smaller quantities; two or three pints will be sufficient.

If the animal gives way when the hand is rather forcibly pressed on the region of the kidneys, let the loins be fomented two or three times a-day with hot water, for about fifteen or twenty minutes each time.

Sometimes the urine continues of a red colour after the feverish symptoms have disappeared. By the above method of treatment, when this is the case, you must have recourse to the drinks ordered for red water.

RED AND BLACK WATER.

This disease is common among neat cattle of all descriptions; but more frequently attacks milk-cows than any other.

Description. The red and black water seldom occur separately. The former I conceive to be the original disease, and the latter to come on as the disease advances, and is in general an unfavourable symptom, frequently arising from inefficient treatment. When the change takes place from red water to black water, the animal in

general stales free from either for several times. In slight cases, where the blood is passed away with the urine, the beast does not appear to be affected by it: if a cow, she holds to her quantity of milk, and seems no worse; but when the blood so passed away is considerable, and continues for a length of time, it reduces the quantity of milk, and likewise the animal itself to a very low state; and if a strong remedy be not resorted to, the beast must inevitably sink under the pressure of the disease. In these bad cases, the milk sometimes becomes discoloured, and the beast is frequently so weak that she is unable to rise when down, and requires gruel to be horned into her.

RECIPE (No. 28.)

Purging Drink for Red Water.

TAKE—Glauber salts, one pound;
Nitre, and cream of tartar in powder, of each one ounce;
Ginger in powder, two ounces;
Treacle, four table-spoonfuls:
Mix for one drink.

Put these articles into a pitcher, and pour three pints of boiling water upon them; stir the whole, and when new-milk warm give the drink to the beast. This contributes powerfully to remove the cause of the disease; for if it operates sufficiently, it in general cures without any other aid; and if not, it will be necessary to repeat it. Should the disease be accompanied with looseness, or symptoms of pain, or a straining or

holding out of the tail, add a drachm of opium to the above drink, and give the beast two or three of the cordial drinks.

If the purging drink should not have the desired effect, by the time it ceases to operate, it will be necessary to give the following drink:

RECIPE (No. 29.)

Astringent Drink.

TAKE—Resin in powder, four ounces;
Alum in powder, three ounces;
Bole armenic, and red sanders, of each one ounce;
Treacle, four ounces:
Mix for one drink.

The red water is sometimes attended with a lax state of the bowels, and in some instances a considerable quantity of blood is evacuated with the thin dung, and none with the urine.

Causes. The red water and black water arise from a preternatural quantity of blood being determined to the kidneys, and consequent rupture of some of the minute blood-vessels of these organs. This undue determination of blood to the kidneys is very frequently induced by turning cattle at the spring of the year into low pasture grounds, or woodland pastures, where there is moist, which relaxes and debilitates the animal frame, and lessens perspiration, which causes the blood to become too watery, and the balance of circulation is deranged from the perspiration being suppressed, and a too great quantity of blood is in consequence determined to the kidneys,

which gives rise to the disease. Removing cattle thus affected, from this state of atmosphere into a more elevated situation, where the air is dryer, will frequently restore the beast without the aid of medicines; but it is generally better in these cases to give the purging drink. It very often proceeds from cattle being removed from good to bad land, the grass of which disagrees with them, and the vigour of the body is impaired, and they in consequence take cold, which flies to the kidneys and occasions red water.

Cattle that are dried of their milk, and turned into a good pasture, to get them into condition, are sometimes attacked with it, but more commonly with the downfall; these should have a purging drink about every five or six weeks, which would in general prevent the above diseases. I have known some to have been attacked with this complaint once or twice a-year for two or three successive years, and at last literally bleed to death, defying all the powers of medicine and change of diet. The red and black water is most prevalent in the spring and summer. Some cattle are more liable to the red water than others, which may be in a great measure owing to the soil, and the state of the air they have been acccustomed to. These, when removed into pastures where the land is bad and the air moist, are frequently attacked with it.

Treatment. The cure must first be attempted by purging medicines; for which purpose a purging drink will be found suitable.

RECIPE (No. 31.)

Purging Drink for Red Water.

TAKE—Glauber salts, one pound;
Nitre, and cream of tartar in powder, of each one ounce;
Ginger, in powder, two ounces;
Treacle, four ounces:
Mix for one drink.

Put these articles into a pitcher, and pour three pints of boiling water upon them; stir the whole, and when new-milk warm give the drink to the beast. This contributes greatly to remove the cause of the disease; for if it operate sufficiently, it in general cures without any more aid; and if not, it will be necessary to repeat it.

If the purging drink should not have the desired effect, by the time it ceases to operate, it will be necessary to give the following drink:

RECIPE (No. 32.)

Astringent Drink.

TAKE—Resin in powder, four ounces;
Alum in powder, three ounces;
Bole armenic, and red sanders, of each one ounce;
Treacle, four ounces;
Mix for one drink.

Let this drink be given in a pint of decoction of oak-bark; the decoction must be cool when the ingredients are put in; the decoction should be made by boiling for about half an hour three

ounces oak bark coarsely powdered, in three pints water, and when cool strain.

If this drink be given to beasts that are inclining to be costive, it will increase the danger, by reason of its astringent quality; in such a case therefore, it will be most advisable to give the purging drink first, as long as the animal does not appear to be inclined to a costive habit of body. The drink may be given every other day for two or three times; and if the beast is not cured in that time, it will be proper to have recourse to others of a more powerful nature, as follows:

RECIPE (No. 33.)

Astringent Ball.

TAKE—Strained turpentine, four ounces;
American bole, alum, and red sanders in powder, of each two ounces;
Mix them together in a mortar, and beat them into a proper consistency for one ball.

OR,

RECIPE (No. 34.)

TAKE—Venice turpentine, four ounces;
Nitre, bay berries, and Armenian bole in powder, of each two ounces;
Alum in powder, four ounces;
Make into one ball.

Let either of these balls be sliced, and put in a pitcher, and a pint of hot gruel poured upon it,

or otherwise dissolved in the gruel over the fire; put it into a pitcher, let it stand till new-milk warm, then give it. The ball may be repeated every other night. A very able practitioner has frequently found the ball (No. 34.) to have the desired effect, after all other means had failed.

The following drink has been known to cure the disease, after others have been administered without effect:

RECIPE (No. 35.)

TAKE—Strong spirit of vitriol, (that commonly called oil of vitriol) half an ounce;
Tincture of opium, half an ounce;
Treacle, four table-spoonfuls;
Mix, and give in two pints of warm water gruel.

This may be repeated once a-day, if found necessary, until a cure is obtained. There are a great deal of cures made useful in this complaint, but I never could find any to excel the recipe above given. Some instances, indeed, have occurred, where half a pound of common salts, dissolved in two pints of sour butter milk, has completely succeeded in removing this complaint. The animal ought to be kept from food two hours, before any of the preceding drinks or balls be given, and also one or two hours after. They seldom require any particular kind of diet, as they are rarely if ever off their food, except they are attacked with a fever, in which case they are liable to become costive and saped, which is al-

ways attended with danger. When a fever does come on in this complaint, the beast may be bled, have purging medicines and mashes; and great care should be taken, if possible, to prevent inflammation.

TAKE—Epsom or glauber salts, one pound;
Cape aloes in powder, half an ounce;
Aniseeds, and carraway seeds in powder, each one ounce.

BLACK LEG.

This disease is called by a great number of other names; but as they all indicate the same disorder, it would be of no advantage to the reader here to repeat them.

The *symptoms* are in some respects similar to those of the Murrain, or pestilential fever; it is, however, highly necessary to discuss this malady, as it does not appear either infectious or epidemic, but is almost wholly confined to young cattle, from one to two years old.

Description. When this disease is discovered at its commencement, the animal appears dull and heavy, and walks lame as if sprained. In a short time, a swelling takes place in some part of the body, as on the legs, shoulders, under the belly, or on some part of the back: when it appears on the last part, towards the loins, it will be attended with the utmost danger. The swell-

ings are at first soft; but soon a quantity of air is generated in them, in the cellular membrane, situated between the skin and flesh, which produces a crackling noise when they are rubbed or pressed with the hand. The mouth, and under the tongue, is sometimes affected with blisters, which arise from the severity of the fever; the pulse is quicker than natural, being about 50 in a minute.

Causes. When the vegetable creation springs up in all its perfection, the young animals are not able to stand against such luxurious living, particularly those which have been much reduced by bad keeping, and scanty food, during a long and severe winter. A redundancy or overflowing of the blood, is the consequence of the sudden change from bad to good keeping; and it is to this that the disease most commonly owes its origin. It is almost confined to young cattle from one to two years old, and chiefly attacks those that are the most thriving. Milk cows, or lean cattle of all descriptions, are seldom seized with this disease. It is most prevalent in the summer and autumn, and very often at these seasons of the year, proves destructive to great numbers of young cattle, in different parts of the kingdom. It does frequently occur in the winter and spring, when they are feeding on turnips. Some situations are more subject to this disease than others. I have observed it most frequent in low marshy grounds, and in pastures situated by the side of wood. In these parts, the air is

apt to be loaded with moisture, which relaxes the animal frame, and lessens perspiration, thereby deranging the healthy functions of the body, by which means the disease is induced. In examining cattle that die of this complaint, the affected part or parts are found mortified, and emit a peculiarly bad smell; and there is a glutinous or bloody fluid, of a very offensive smell. Between the skin and the flesh, in two instances, I found the membranes of the brain mortified, being here and there of a livid colour, and easily torn.

Treatment. This disease rarely admits of cure; but fortunately it may in general be prevented, if the disease be discovered as soon as it makes its appearance. The young animal should be immediately housed, and then take from one to three pints of blood away, according to age or size; two hours after bleeding, give the following purging drink, which will be found of a proper strength for young cattle from the age of one to two years old:

RECIPE (No. 36.)

TAKE—Glauber salts, from eight to twelve ounces, according to size and strength;
Nitre, half an ounce;
Camphor rubbed into a powder, with a few drops of spirits of wine;
Aniseeds, and ginger fresh powdered, of each one ounce;
Treacle, four table-spoonfuls;
Mix for one drink.

Let the ingredients be put into a pitcher, and then pour a pint of boiling water upon them, and cover the vessel down until new-milk warm; then give it. If the animal be more than two years old, the salts may be increased in proportion, until the quantity shall amount to one pound. The affected part should be fomented at the first appearance of the disease, several times in the course of the day, with hot water, for at least an hour each time. For this purpose, you should have two or three long pieces of flannel in the hot water, and wring one of them out, and apply it to the part affected, and when this gets cold, apply a fresh one. If the above treatment appears to take effect, it will be proper, in about twelve hours after giving the drink (No. 36.) to administer the following:

RECIPE (No. 37.)

Drink for Black Leg.

TAKE—Resin in power, one ounce;
Myrrh, and salt of steel powdered, of each half an ounce;
Gentian root in powder, one ounce;
Aniseeds, and carraway seeds in powder, of each one ounce;
Treacle, two table-spoonfuls.
Mix, and give in a pint and a half of cold ale.

This may be repeated every morning or evening. Should the disease not be discovered until there is a considerable swelling, and a crack-

ling noise in the tumefied part, a cure is seldom effected. Bleeding at this stage of the complaint tends to hasten the death of the animal. If a cure in this case is attempted, the drink above should be given, which will invigorate the system by its cordial and tonic powers, and prevent the mortification from extending. An incision is to be made with a scalpel or pen-knife the whole length of the swollen or tumefied part, and then nitre is to be put into the opening, and pledgets of tow soaked in hot spirits of turpentine, which will encourage the formation of matter, and by this means check the progress of the gangrene, and separate the dead parts from the liver; and the dressings are to be renewed every day in the manner just stated.

Prevention of Black-leg. It will now be proper to lay before the reader a few observations worthy of notice, respecting the preventing of this malady in those districts where it is accustomed to appear. Every possible precaution cannot be too strictly adhered to, in preventing so destructive a disease among young cattle; for if once attacked their cure is extremely doubtful. Such as thrive most are in general first attacked, and in the greatest danger. As soon as this disease makes its appearance upon any one of the herd, while in the pasture, let them be brought in the evening into a fold yard, when from two to three pints of blood may be taken. After bleeding, set a seton in the brisket. Let them be

kept till next morning, then give them the following drink.

RECIPE (No. 38.)

TAKE—Nitre, and madder, of each one ounce;
Salt of steel, half an ounce;
Ginger, aniseeds in powder, of each one ounce:
Mix for one drink.

This drink must be given fasting in the morning, in a pint of warm gruel; two hours after, the beasts may be returned into the pasture; you may repeat every three or four weeks. Such as are feeding on turnips are liable to be attacked with the disease, and when you have reason to dread it, they should be setoned in the breast before you turn them out, but not bled, and the drink No. 37. given to them. In those situations that are particularly subject to the black-leg, the young animals must be setoned before turning them out to pasture, and the drink No. 38. administered to them.

MURRAIN, OR THE PESTILENTIAL FEVER.

This disease is a putrid and malignant fever, which has from time to time destroyed immense numbers of cattle. It has at different periods made great ravages in most parts of Europe, as well as in our own country. There is every reason to suppose that this distemper is contagious,

and is drawn in by the breath, at the nose and mouth of the animal, from others that are infected; and if the latter were timely separated and housed, there is no doubt but that farther progress of the infection would be prevented. This disease is first observed by its effects, in disordering the whole animal frame for a short time, and sometimes for several days, before it makes its outward appearance.

Description. The murrain prevailed in Great Britain from the year 1766 till the year 1770, and is well described by Dr Layard, a physician who wrote a treatise on the disease at the time it was making such great havoc amongst the cattle. The first appearance of this infection, says the Doctor, is a decrease of appetite; a pocking out of the neck implying some difficulty of deglutition; a shaking of the head, as if the ears were tickled; a hanging down of the ears, and deafness; a dullness of the eyes; a moving to and fro; and a constant uneasiness. All these signs except the last increase till the fourth day; then ensues a stupidity and unwillingness to move, great debility, a total loss of the appetite, a running of the eyes and nose, sometimes sickness and throwing up of bile, a husky cough, and shivering. The fever, which was continual the three first days, now rises and increases towards the evening; the pulse is all along quick, contracted, and uneven. If a new milk-cow is thus ill, her milk dries up gradually, her purging is more violent, and on the fourth day she is commonly dry. They groan

much, and they are worse in the evening, and mostly when they lie down, These symptoms continue increasing till the seventh day, on which generally, though sometimes protracted till the ninth, the crisis or turn takes place.

Bulls and oxen are not so violently attacked as cows and calves; and of these, cows with calves, and weakly cow-calves, are in the greatest danger.—Calves receive the infection from the cow, by sucking her milk, and may also, if first seized, infect the cow.

This disease takes place at all times and seasons; but in summer and autumn it will rage most. The fate of the beast is generally determined on the seventh day from the invasion, though it has sometimes been delayed till the ninth.

Favourable Symptoms. If eruptions appear all over the skin, or boils as large as pigeon's eggs in different parts of the body, but especially from the head to the tail, along each side of the back bone, and so ripe as to discharge putrid and stinking matter; if the dung is become more consistent and hard; if the urine is thick and not so high coloured as before; if the beast has had a shivering succeeded by a general glow of heat, upon which the fever has abated, and the pulse beats regular; if the nose be sore or scabbed; if the eyes look bright and brisk; and if the beast pricks up its ears upon a person going into the hovel and will eat a little hay or peas; the symp-

toms will determine that the creature is out of danger.

Appearance after Death. A tumour was met with either across the loins or in some part of the body, which, when pressed with the hand, made a crackling noise, somewhat similar to that of a bladder when dry and full of wind. Upon opening the skin, much stinking gushed out, and sometimes a purulent and sanious discharge. The vessels of the brain were tinged, and filled with blood of a very red colour and loose texture. The membranes of the nose, the glands, the whole extent of the frontal sinus, and the scores of the horn, were highly inflamed. There was the same appearance in the mouth and about the glands of the throat; the lungs were inflamed, with livid spots here and there, loaded with hydatides; the cellular texture was frequently distended with air; the heart was large, flabby, and dark coloured;—the liver was large, its blood and biliary vessels were fully extended with dark fluid blood, and very deep coloured bile; the substance of the liver was so rotten as to separate on the least touch; the gall bladder was stretched to a great size, and full of greenish bile; the honey-comb had no fluid in it, but some pappy fodder; the manifold contained between its plaits a great deal of dried fodder, which clung to its sides; the runet-bag was empty; all the intestines were empty and beset with red and black spots; the kidneys were large, and the bladder without urine; the kidneys were of a loose texture and

easily torn; the flesh of some was livid, in others of a lively red, but it soon turned green. The virulence of the disease appeared to have sometimes fixed itself on the vital part, and sometimes on another, and frequently on more places than one.

Causes. The Doctor's opinion as to the nature of this disease is undoubtedly incorrect. He supposed it to be an eruptive fever of the variolous kind; inocculation was had recourse to, but without the least effect.

The immediate cause of the murrain appears to arise from a putrefactive tendency in the solids and fluids of the body, induced either by contagion or by other means acting in a similar manner on the animal frame. Having stated the immediate cause, I will proceed to give my opinion, says Mr Clater, of the remote cause of the murrain that raged about the last century in this island; it is most likely that the complaint originated in the first instance amongst the herds of cattle, from a pecular state of the air, and then propagated itself by contagion. When it raged with such devastation in this country, it was observed to be most prevalent where the land was very low, flat, and marshy. When it visited France in the year 1779, it chiefly prevailed in the low meadows. When it appeared in Hungary, 1712, the spring, says an author, had been rainy, with great changes in the temperature of the atmosphere; for on the same day the morning was cold and the middle of the day very warm.

The cold began about three o'clock, and the evening became warm. From these and other remarks that might be adduced, we may, I think, conclude that the murrain originates in the first place from the unwholesome state of the air; its being too moist, almost stagnant, and contaminated with putrid exhalations; frequently accompanied with other changes as to its temperature.

Treatment. The murrain, when it made its first appearance in 1777, was in general so malignant that the remedies employed had little or no effect in lessening its fatality. In such cases as were not so violent, bleeding was had recourse to, which with other means, frequently restored the beast. The method of cure recommended by Dr Layard is as follows: The beast, says the Doctor, should be kept in a well-aired house and be plentifully bled; from one to two pints according to age and strength. I should think four or five pints of blood might have been taken away. They should be washed with water and vinegar, to clear the skin of filth, and be frequently rubbed, which affords them much pleasure as well as benefit. The water and vinegar, should be milk warm. A rule should be made as soon as possible in the dewlap, and it should be kept open for some time after the cure. If the dung be hard, a cooling purge should be given, and plenty of antiseptic drinks, such as bran water, vinegar, bitters, and salts.

If purging comes on by the fourth day, it should be checked by warm medicines, proper to throw

the morbid matter off by the skin,—such as snake weed, and other warm plants. Mr Montgomery, one of the doctor's neighbours, cured six beasts out of seven. If the colour of the mouth becomes dark, the creature cold, the dung black and fœtid, and the discharge from the mouth and nose sanious, an ounce of jesuits bark, or oak bark, with snake root or other warm ingredients, should be given every four hours, to prevent mortification. If matter be formed in the horns, or any part of the body, an opening should be made there. If a purging naturally occurs after the crisis, the bowels should be emptied with a smart purge; after which a draught of warm ale may be given at night.

The late murrain generally commenced with a shivering and trembling of the limbs, want of appetite, cough or hoosing, and often shed tears; the mouth was mostly affected with blisters or white spots; and if a milk cow, the secretion was diminished; in a few days the inflammation extended to the lungs, the pulse quicker than natural, being about 60 in a minute; the head, horns, and breath hot; the body and limbs cold; and all the symptoms that first appeared became aggravated.

Treatment. When this milder species of the murrain seizes any of the herd, the affected animal should be housed and bled as soon as possible; four, five, or six pints of blood, according to the size and strength of the animal, should be taken away: and the next day, if the symptoms still

continue, three or four pints more. In general these two bleedings are sufficient to check the progress of the disease; if not, a third or fourth may be employed. A seton should be set in the dewlap, and kept open for some time. The purging drink is to be administered after the first bleeding, and repeated occasionally, if the complaint continues.

RECIPE (No. 39.)

Purging Drink for Milk Fever.

TAKE—Epsom salts one pound;
Nitre, two ounces;
Ginger, and aniseeds in powder, of each one ounce;
Treacle, four ounces.

Dr Layard, as follows;

TAKE—Cape aloes, in powder, three drachms;
Opium, one drachm;
Camphor (rubbed into powder with a few drops of spirits of wine) one drachm;
Nitre, two ounces;
Mix, and give in a pint of linseed gruel.

It may be repeated every evening, or every other, as the circumstances of the case may require. They must be kept clean and well littered, and have mashes of bran or malt, with two or three handfuls of ground corn or barley mixed in them. When the disease is malignant or contagious, the cow-house should occasionally be fumigated with the following

RECIPE (No. 40.)

Fumigation.

TAKE—Common salt, two pounds;
Oil of vitriol, one pound.

The salts should be put into an earthen vessel, and placed in the middle of the cow-house, and gradually pour the oil of vitriol on it, and stir them together with a stick, and immediately leave it, to prevent inhaling the fumes; closing the cow-house door at the same time. When the cattle have recovered, the fumigation should be repeated, and the stalls cleaned, and white-washed. Those cattle that die of the complaint must be buried at the depth of five or six feet, lest an effluvia should arise from the carcase and affect the air.

FOG SICKNESS, HOVEN, OR BLOWN.

This is a common disease among neat cattle, and is attended with symptoms of the most distressing nature. It requires speedy relief, or the animal will be suffocated from the confined air in the two first stomachs, or a rupture of them takes place, which soon terminates the life of the beast. Hoven usually proceeds from a voracious and greedy disposition, incident to neat cattle when permitted to satiate their appetite with food of which they are most fond, such as red

clover, or different kinds of grasses; likewise turnips, potatoes, corn and sometimes chaff.

Description. The complaint scarcely requires any description, as it is well known to cattle keepers. The wind generated in the stomachs causes the beast to swell, and produces a difficulty of breathing, with much apparent distress. If relief is not soon attained, the difficulty of breathing increases, and the animal is unable to stand, and generally dies suffocated.

This complaint is sometimes occasioned by turning cattle into fresh aftermath pasture in autumn, at which time the grass is changed in quality, and the weather wet or foggy; and then is called fog sickness.

Treatment. The digestive organs of neat cattle are not only influenced by the particular kind of food that they have been for some time accustomed to feed upon; but they have also a conformity to almost any kind of diet with little apparent injury to health, if brought about gradually. The greatest caution is necessary in turning cattle into fresh pasture, if the bite of grass be considerable; nor should they be suffered to stop too long at a time in such pastures, before they be removed into a fold yard, or some close where there is but little to eat, in order that the organs of rumination and digestion may have time to discharge their functions. If this be attended to a few times, it will take away that greediness of disposition, and prevent this distressing complaint. Some farmers have made it

their practice to give such cows as are of a greedy disposition a comfortable drink.

RECIPE (No. 41.)

Cordial Drink.

TAKE—Aniseeds, carraway-seeds, grains of paradise, and fenugreek, fresh powdered, of each two ounces;
Mix them together for one drink.

OR,

RECIPE (No. 42.)

TAKE—Sweet fennel-seeds, and cummin-seeds, fresh powdered, of each two ounces;
Long pepper, turmeric, ginger, and elecampane, each one ounce in powder;
Mix for one drink.

About an hour before they are turned into a fresh pasture, which invigorates the digestive organs, and prevents liability to the disease. This, I believe, has had the desired effect; for I never knew any instance of its failure.

As soon as the beast is discovered to be either hoven or blown by eating too great a quantity of succulent grasses, let the following drink be given.

RECIPE (No. 43.)

Drink for Hoven, &c.

TAKE—Epsom salts, one pound;
Salt of tartar, three ounces;
Ginger and aniseeds, in powder, of each two ounces.

Put the ingredients into a pitcher and pour

three pints of boiling water upon them; when new-milk warm add a wine glassful of gin, and give the whole for one drink. When medicine fails to have a speedy effect, recourse must be had to external means, such as the contrivance of Dr Munro, first communicated to the public in the year 1793. It consists of an iron wire formed into a flexible tube, and covered over with soft smooth leather. The distance, found by the doctor from the fore teeth to the first stomach in a large ox, is about six feet. The instrument, therefore, should be full that length, or rather longer, and then gently passed down the beast's throat into the first stomach, when a large quantity of offensive air will be discharged; it may remain there for a short time, as it does not impede respiration. Sometimes the ball of the instrument gets clogged up with food, and the air cannot escape; this must be attended to.

There is another kind of instrument recommended by Mr Eager, which appears to be equally useful with that of Dr Munro. Mr E.'s contrivance is of two sizes; the one adapted for cattle and the other for sheep; for which the London Society for the Encouragement of Arts voted him a premium of fifty guineas in the year 1796. These instruments are constructed as follows: That for cattle is six feet long, with a round knob of wood properly secured to one end of the cane. A man is ordered to lay hold of the horn with one hand, and the nostrils with the other; the assistant must lay fast hold of the tongue with

one hand, while he pushes the cane down the beast's throat with the other As soon as it enters the stomach, a large quantity of fœtid air will be disengaged, which will easily be discerned by the animal's body sinking to its former state again; and nature taking its regular course, the beast will soon be restored to health. If neither of these instruments are at hand, the following may be used; and I have no doubt that it will answer every purpose of the former. Take a knob of wood turned in the form of an egg, with a hole bored through the centre, and out at each end; then take a common cart whip two yards long, and secure one end fast in the knob; dip it in oil or soft grease, and introduce it in the same manner as the former.

After the wind is expelled and the body reduced to its natural size; let the following stomachic drink be given.

RECIPE (No. 44.)

TAKE—Ginger, and aniseeds, in powder, of each two ounces;
Gentian, and cummin seeds, in powder, of each one ounce;
Salt of tartar, one ounce;
Treacle, four table-spoonfuls:
Mix, and give it in a pint of warm ale.

This drink may be repeated every other day, for two or three times; or the following may be given, if thought more advisable.

RECIPE (No. 45.)

TAKE—Aniseeds, grains of paradise, and cummin seeds, of each two ounces, in powder;
Salt of tartar, half an ounce;
Spirit of turpentine, two table spoonfuls;
Treacle, two table spoonfuls:
Mix, and give them in a pint of warm ale or gruel.

This may be repeated once a-day for two or three times. These stomachic drinks will give energy to the digestive organs, and promote the process of digestion; if a milk cow, they will increase the secretion of milk. When you turn cattle into fresh pasture, it is often adviseable to give two or three of these drinks, as they will commonly prevent any ill consequences that might ensue from such a change.

FEVER.

Pure fever is far from being unfrequent in cattle. A beast yesterday in good health, is observed to day dull, the muzzle dry, grazing having quite ceased, at least, lazily performed; the flanks heave a little, the root of the horn is unnaturally hot. The owner, or the practitioner, removes the animal into the shed, and carefully examines him; the animal is evidently not well, but he cannot discover any local affection or disease; he, however, does that which a prudent man would do, he gives a dose of physic; per-

haps he bleeds, places a mash before his patient, and on the following day the beast is considerably better, or well; or perhaps the animal, although apparently better in the morning, becomes worse as the day advances, and about the hour, or a little later, when he was seen on the preceding day; what is this but a slight attack of fever, without local affection, such as is frequently met with in woody and undrained districts; and which goes on from three to four days, returning, or being aggravated at a particular hour, until, by means of his cordial purgatives, the practitioner or the owner has subdued it. At other times, the fever remains without these intermissions; it increases daily notwithstanding the means employed, and at length assumes the form of pleurisy or some local inflammatory complaint. The general irritation has here concentrated itself on some organ, either previously debilitated, or at that time predisposed to take an inflammation. It is pure or idopathic fever, assuming after a while a local determination; this is frequently a fatal case; for the whole system having been previously affected, and probably debilitated, and disposed to take on inflammatory action, the proper remedies cannot be so fearlessly and successfully used. Local means of abating inflammation, must here be pushed to their extent. Symptomatic fever is yet more frequent and dangerous. No one part can be long disordered or inflamed, without the neighbouring parts being disturbed, and the whole system

gradually sharing in the disturbance. By the degree of this general affection, by the heat of the mouth, and a frequency of the pulse, a judgment is formed, not only of the degree of general disturbance, but of the intensity of the local affection. Subsidence of the pulse, and the return of the appetite, are hailed as indications of a diminution of the general irritation, and the local cause of it. Some have denied the existence of this essential fever in horses; but the facts that have been stated, cannot be doubted. Cattle get unwell, and are feverish; a dose of physic is given, they are put on short allowance for a day or two, and they are well; at other times they are feverish, and that fever all at once terminates in hove. In the one case there is fever, not associated with local affection, but in both, there is for a while pure fever. The great object here, is to get rid of the local affection before the system becomes affected.

INFLAMMATORY FEVER.

Cattle are not merely subject to fever of common intensity, whether pure or symptomatic; but thousands of them fall victims every year to a disease, which, from its virulent character, and speedy course, may be termed an inflammatory fever. A disease of this character, but known by a number of strange yet unexpressive terms, is occasionally prevalent, and exceedingly fatal

among cattle in every district; it is termed black quarter, evil joint, murrain, &c. And although it may not at any time have all the symptoms of either of the diseases, according, at least, as they are understood in some parts of the country, there are few cases in which the prevailing symptoms of most of them are not exhibited in some stage. Cattle of all descriptions and ages are occasionally subject to inflammatory fever; but young stock, and those that are thriving most rapidly, are its chief victims. So aware is the proprietor of young cattle of this, that while he is determined to take full advantage of their early maturity, by turning them on more luxuriant pastures than prudence would always dictate, he endeavours to guard himself by periodical bleeding, or by some other means. This disease is sometimes epidemic; that is, the cattle of a certain district having been pushed on too rapidly, they have lurking inflammation about them, or they have a tendency to it; and by and by comes some change in the atmosphere, which acts upon this inflammatory predisposition, and the disease runs through the district.

There are few premonitory symptoms of fever. Sometimes it comes without any, and generally with very slight indications of illness. The animal is found with his neck extended, his head brought as much as he can effect into a horizontal position, eyes protruding and red, the muzzle dry, the nostrils expanded; the breath hot, the rood of the horn considerably so; the mouth

partly open, the tongue partly enlarged, or apparently so; the pulse full, hard, and from 65 to 70; the breathing quick and laborious, the flanks violently heaving, and the animal moaning in a low and particular way.

Sometimes the animal is in full possession of his senses; but generally there is a degree of unconsciousness of surrounding objects; he will stand for an hour or more without the slightest change of posture; he cannot easily be induced to move, or when compelled to do so, he staggers, and the staggering is principally referable to the hind quarters. Rumination has ceased, and the appetite is quite gone; after a while he becomes more uneasy, yet it is oftener a change of posture to ease his limbs; then he commences a pawing, at length he lies down or drops, gets up almost immediately, is soon down again, and debility rapidly increasing, he continues prostrate; sometimes he lies in a comotose state, at other times makes but feeble efforts to rise. The symptoms rapidly increase. There is no intermission; and the animal dies in thirteen or twenty hours. In the majority of cases, and especially if the disease has been properly treated, the animal seems to rally a little, and some of the symptoms appear, from which the common names of the disease derive their origin; the beast attempts to get up; after some attempts he succeeds, but he is sadly lame in one or both of his hind quarters. As he is not fallen, he suddenly becomes lame, so lame as to be scarcely able to move.

Joint Murrain. This is not always an unfavourable symptom; the disease may be leaving the vital parts, for those of less consequence. If the apparent return of strength continues for a day or two, we may encourage some hope; but we must not be sanguine, for it is too often only a temporary and delusive respite. One of the symptoms now most to be dreaded, is the rapid progress of that which has already begun to appear—tenderness upon the loins and back: the patient will not bear even the slightest pressure on these parts. The case is worse, if to these are added, swellings about the shoulders, back, and loins, with a peculiar crackling noise, as if the process of decomposition had commenced during the life of the animal. Worse even than this, is the appearance of sudden, hard, scurfy patches of what seems to be dead skin. It is a kind of dry gangrene. Now we have *black quarter*, with all its fearful characters; the ulcers first about the belly, the quarters, and the teats; but they spread every where, particularly about the mouth and muzzel. The mouth is almost invariably ulcerated, and the tongue is blistered and ulcerated too; and there is either a discharge of offensive or bloody fluid from the nose and mouth, or considerable hæmorrhage from both of them. Now the urine which had before been high coloured, becomes darker or bloody; the dung likewise has streaks of blood over it; and both are exceedingly fœtid. In this state the animal may continue two or three days, until it dies a mass

of putridity, unless there has been an honest, active assistant, who never shrinks from his duty—who has some courage, and a good stomach, and who will properly dress the ulcers, and administer the medicines. Many a beast has been saved even at this extremity of the disease; and the farmer, or the veterinary surgeon, should prize such a servant. The first favourable symptom will be a slight diminution of the fœtor; the ulcers will then speedily heal, and the strength return. The chief appearance after death, will be venous congestion every where; the larger and smaller trunks will be black and distended, almost to bursting. It is a striking illustration of the peculiar vascular system of the animal; and, as will be presently seen, speaks volumes as to the mode of treating this and similar diseases. The congestion is every where; it extends over the peritoneum, and more particularly, over the mucous membrane of the intestines; and patches of inflammation and ulceration are found in every part of the colon. These are the appearances when the animal is carried off during the inflammatory stage of the disease. If the complaint has assumed a putrid type, there is effusion, the smell of which can scarcely be borne, both in the chest and belly, with adhesion and agglutination of all the small intestines, often vomica in the lungs, and effusion in the pericardium. Every stomach is inflamed, and the fourth ulcerated through; the substance of the liver is broken down; there are ulcerations generally of the

smaller, and always of the larger intestines; and in every part of the cellular membrane, there are large patches of inflammation, running fast into gangrene.

There cannot be a doubt respecting either the nature or treatment of such a disease. It is at first of a purely inflammatory character, but the inflammation is so intense, as speedily to destroy the powers of nature. The capillary vessels must have been working with strange activity, in order to fill and to clog every venous canal. The congestion prevails in the cranium, as well as the other parts. There is pressure upon the substance of the brain, and that pressure is propagated to the commencement of the nerves; and hence debility and staggering, and almost perfect insensibility. As the congestion early takes place, the coma, or stupor, is early in its appearance; the nervous energy being thus impeded, the power of locomotion seems first to fail; then general debility succeeds, and at length other parts of the vascular system are involved; the mouths of the excretory ducts can no longer contract on their contents; hence fluid is infused in the chest, and in the belly, and in the cellular membrane; and hence, too, the rapid formation of ulcers. The vital powers are generally weakened, and in consequence of this, there is the speedy tendency of every excretion to putridity, and the actual commencement of decomposition while the animal is yet alive. The blood shares in this abstraction or deficiency of vitality; and

hence the disposition to ulceration, gangrene, and dissolution, by which the latter stages of the disease are characterised.

Inflammatory fever, although not confined to young stock, is far most prevalent among them. It appears principally in the spring and fall of the year; for then we have the early and late flush of grass. On poor ground it is comparatively unknown; but the young and the old stock in a thriving condition, ought to be closely watched when the pasture is good, and the grass springing. If it is at times epidemic, it is only when the season, or the eagerness of the farmer, have exposed the constitution to an excess of otherwise healthy stimulus.

When the early part of the spring has been cold and ungenial, and then the warm weather has suddenly set in, nothing is so common as for inflammatory fever to appear. But the change in the temperature, or other qualities in the atmosphere, has had only an indirect effect in producing this; it is the sudden increase of nutriment which has done the mischief. When cattle are moved from a poor to a more luxuriant pasture, if new grass is sufficiently high, they distend, and paunch almost to bursting, and hove is the result. But if the change is more in the quality, than in the quantity of the food, the evil is more slowly produced, and it is more fatal. A disposition to inflammation is excited, which wants but a slight stimulus to kindle into a flame. It is the penalty which the breeder must pay, or

the evil which he must carefully, and not always successfully endeavour to avoid, when he is endeavouring to obtain all the advantage he can from the richness of his pasture, and aptitude to fatten, and early maturity of his cattle.

A gentleman who speculated, and had very considerable advantage, in the inclosing of a considerable tract of land, newly recovered from the sea, had a dairy of thirty Suffolk cows. They arrived in the very early part of the spring; they were liberally fed on Swedish turnips, and as soon as it was practicable, they were turned on this maiden and luxuriant pasture. In the course of less than three months, twelve of them died. This was rather singular; for milk cows are, generally speaking, exempt from inflammatory fever; and perhaps this circumstance prevented both the owner and the bailiff, from tracing the fearful mortality to its true cause. A veterinary surgeon was sent for from London, to enquire into the nature and cause of the disease. There was not a sick animal in the premises; the only circumstance which could excite attention was, that the cattle looked in much better condition than Suffolk cows usually do, or ought to do. The bailiff was a little jealous of the interference of the veterinarian; and he was in his turn, cautious and guarded. He expressed a wish to see a little of this fine estate: the request could scarce be refused, and indeed was gratified; and soon arriving at a somewhat up land, but still very good pasture, he stopped, and turning to

the bailiff, thus addressed him: "Bleed and physic every one of your remaining cows, and turn them up here, and do not change their pasture, until you are forced to do so; and take care that they shall work a little, in order to obtain their living." This led to a friendly understanding between them. The nature, the cause, and the remedy of the disease were canvassed. The suggestions of the veterinarian were attended to, and not another animal was lost.

We have known inflammatory fever caused by the driving of fat beasts in the beginning of summer, perhaps no very great distance, but with somewhat too much hurry. It has broken out among stall fed cattle, still later in the year, but only when the process of fattening has been injudiciously hastened. In fact, from the peculiar vascular system of cattle, that excitement which would produce pneumonia, pleurisy, or inflammation of the feet, in the horses, is the usual cause of inflammatory fever in them: the weakest parts are attacked; the lungs and the feet suffer most from our mismanagement in the horse. The vascular system is most subject to disease in the ox; for we keep him as nearly as we can, with any rational hope of safety, in a state of plethora.

The very name of the disease, *inflammatory fever*, indicates the mode of treatment, in a case of excessive vascular action. The first and best step, is copious depletion. As much blood must be taken as the animal will bear to lose, and the

stream must flow on, until the beast staggers or threatens to fall. Here, more than in any other disease, there must be no foolish directions about quantities. As much blood must be taken away as can be got; for it is only by the bold and persevering use of depletory measures, that a malady can be subdued that runs its course so rapidly.

Purging must immediately follow. The epsom salts are here, as in most inflammatory diseases, the best purgative. A pound and a half, dissolved in water or gruel, and poured down the throat as gently as possible, should be our first dose; and no aromatic should accompany it. If this does not operate in the course of six hours, until the effect is produced, at the expiration of the first six hours, the patient should be carefully examined: is there any amendment? is the pulse slow or softer? If not, he must be bled a second time, until the circulation is once more affected. If the animal is somewhat better, yet not to the extent that could be wished, the practitioner would be warranted in bleeding again, provided the sinking and faltering of the pulse does not indicate the commencement of debility.

If the pulse is a little quieted, and purging has taken place, and the animal is somewhat more like himself, the treatment should be followed up by the diligent exhibition of sedative medicines; and a drachm and a half of digitalis, and one drachm of emetic tartar, and half an ounce of nitre, should be given three times every day, and setons inserted in the dewlap: those of black

hellebore root are the best, as producing the quickest and most extensive effect. No trouble need to be taken about removing the beast now, although he may be in the pasture which has been the cause of all the mischief, for he will not eat till he is very considerably better; and then he cannot be too quickly moved.

If the animal is not seen till the inflammatory stage of the fever is nearly past, the skill of the practitioner will be put to the test, and yet he will not find much difficulty in deciding how to act. Has the animal been bled at all? If it has not, nothing can excuse the neglect of bleeding now, except debility too palpable to be mistaken. It may, perhaps, be more truly affirmed, that even that should be no excuse. This congestion of blood is a deadly weight on the constitution, which the powers of unassisted nature will not be able to throw off. It must be very great debility indeed, which should frighten the practitioner from this course; and debility, which, in ninety-nine times out of the hundred, would terminate in death. As a general rule in this stage of the disease, the effect of bleeding should certainly be tried, but cautiously—very cautiously, and with the finger constantly on the pulse. If the pulse gets rounder and softer as the blood flows, the abstraction of blood will assuredly be serviceable; and if the pulse becomes weaker, and more indistinct, no harm will have been done, provided that the orifice is immediately closed.

Physic will in this stage of the disease also,

be indispensible; but double the usual quantity of the aromatic should be added, in order to stimulate the rumen, if the drink should get into it, and also to stimulate the fourth stomach, and the whole of the frame. If, fortunately, it should reach so far as this stomach, a pound of epsom salts at first, and half pound doses afterwards, until the bowels are opened, will be sufficient in this stage; and if, after the fourth dose, injections having been given in the meantime, purging is not produced, the quantity of the aromatic, but not of the purgative, may be increased. It is probable that the medicine has found its way into the rumen, where it will remain inert, until that cuticular and comparatively insensible stomach is roused to action, by the stimulus of the aromatic. No other medicine should be given, until the bowels have been opened; and in many cases, very little other medicines will afterwards be required. The bowels having been opened, recourse should be had once more to the pulse. If it indicates any degree of fever, as it sometimes will, the physic must be continued; but the constitution would perhaps be too weak for the direct sedative medicine. On the other hand, however, no tonic medicine must be given; the fire must not be kindled afresh after it has been partially subdued. If, however, the pulse is weak, wavering, or irregular,—giving sufficient intimation that the fever has passed, and debility succeeded,—recourse may be had to tonic medicines. The tonics, however, which in such cases

would be beneficial, are very few. The exhibition of the mineral tonics, has rarely been attended by any satisfactory result. The barks have not always appeared to agree; but in gentian, colomba, and ginger, the practitioner in the diseases of cattle, will find almost every thing that he can wish. The two first are excellent stomachics, as well as tonics; the last is a tonic, simply because it is the very best stomachic in the cattle pharmacopœia. They may be given three times every day, in doses of a drachm each of the two first, and half a drachm of the last. They will be more effectual in these moderate doses, than in the overwhelming quantities in which some administer them, and in which they oppress and cause nausea, rather than stimulate and give appetite. They should always be given in gruel, with half a pint, or even a pint of sour ale.

The practitioner may be called in after the ulcers have broken out, and the sloughing process has commenced. There must be no bleeding then; the system has received a sufficient shock, and various parts of it are actually decomposing. But physic is necessary, with a double dose of the aromatic, in order to rouse the energies of the digestive system, and to get rid of much offensive and dangerous matter, collected in the intestinal canal. Epsom salts will here also constitute the best purgative. The enlargements about the knee, elbow, sifle, and hock, should be fomented with warm water; and any consider-

able indurations, and especially about the joints, embrocated with equal parts of turpentine, hartshorn, and camphorated spirits. The ulcers should be carefully and thoroughly washed several times every day, with a solution of the chloride of lime, of the strength already recommended. The ulcers about the muzzle, mouth, and throat, should be treated in a similar manner; and a pint of the solution may be horned down twice in the course of the first day. If there is hove, this will tend to prevent the continued formation of it, and it will materially correct the fœtor which pervades the whole of the digestive canal. Mashes, and plenty of thick gruel should be offered to the beast, and forced upon him by means of the stomach pump, if he refuses to take it voluntarily; in this case the pump should not be introduced more than half way down, as there will then be greater probability of the liquor flowing into the fourth stomach.

Tonics should on no account be neglected; but they should not be administered with any nonsensical views of the antisceptic nature, or their changing the property of the animal's fluid, but simply as calculated to rouse to action, the languid or almost lifeless powers of the frame. If the stench from the ulcer does not abate, the solution of the chloride should be quickly increased to a double strength; but as soon as this fœtor has ceased, and the wounds begin to have their healthy appearance, the healing ointment, or the tincture of aloes, may be adopted; and the latter

is preferable. When the animal begins to eat, he should be turned into a field close at hand, the grass of which has been cropped pretty closely. A seton should be retained for three or four weeks; but it cannot be too soon discontinued when the animal is once set on his legs. When art has subdued the disease, nature, although slowly, will most successfully resume her wonted functions.

The breeder has much in his power in the way of prevention. His cattle should be carefully examined every day. Any little heavings at the flanks, or inflammations at the eyes or heels, bumps on the back, or rubbing, will be regarded with suspicion, and met by a gentle purgative, or the abstraction of a little blood. But the decided appearance of inflammatory fever will not be misunderstood for one moment; it will convince him that he has been making more haste than good speed; and in the disease of one he will see the danger of all. Those beasts which have been subject to the same predisposing causes of disease, should be bled and physicked, and turned into a field of short and inferior keep.

John Laurence, whose work on cattle has often been mentioned with respect, expresses himself in his somewhat peculiar way, but very much to the purpose, on this point: "Prevention of this malady is the only cure worth notice; because after the attack, the very nature of the case renders all remedy either uncertain, or of very little profit, even if successful, on account of

the expence of time and money. A piece of short and inferior keep should be reserved as a digesting place, into which the cattle may be occasionally turned to empty and exercise themselves. Those observed to advance very fast, may be bled monthly, for several months. Of the efficacy of such practice, I have, however, by no means so good an opinion as of that of giving medicine, which prevents internal obstructions. I am well aware of the difficulty of such measures with a number of cattle in the field; but I am convinced, that occasionally purges or alterative medicines would prevent those diseases which seem to take their rise in over-repletion and accumulation." There is a great deal of sterling good sense and practical knowledge in this quotation. The editor perfectly agrees with him in being somewhat afraid of this periodical bleeding. So far as he has had opportunities of observing, they have increased rather than lessened the disposition to make blood and fat. He does not see so much difficulty, but a great deal of good, in the occasional administration of physic; and he regards the digesting place, and the wearing of a seton, and the frequent careful examination by the owner or the bailiff, as worth the whole veterinary pharmacopœia.

The editor is far from being certain that he has been enabled to give a description of this disease satisfactory to all his readers; for it differs materially in its symptoms, and in different districts, and at different times. In the North Rid-

ing of Yorkshire, the first symptoms are those of quarter ill, the cattle are first seized in one quarter and then in the other; the skin puffed up, and the crackling noise is heard almost from the beginning. The disease is usually fatal when it assumes this form. In the West Riding, where, because of the rapidity with which it runs its course it is called *the speed*, it also begins generally behind inflammation, or rather mortification seizes on one flank; it runs up the quarter, which becomes actually putrid in course of an hour or two, while the other limbs continue sound.

Few, and especially young beasts, survive an attack of this kind. Here the active use of local applications is indicated; and yet they will rarely be of much service. In some parts of Surrey, under the name of the puck, the fore quarter or the side is the part mostly affected, and the animal frequently dies in an hour or two. On skinning the beast, the whole quarter appears black, from the extravasation of blood, and is softened and decomposed, as though it were one universal bruise.

Mr Turner of Rigate puts this in a very clear point of view. He says the name quarter evil, is indicative only of the variety of it, or rather is one of the diseases that connects itself with it: and this disease is generally as completely limited to the quarter attacked, as a fit of hemiplegia is to one side of the human being. The animal is generally in the highest state of fever. But the quarter evil is limited to the quarter, which

feels, as it is popularly expressed, precisely like jelly. There is no remedy; but there are many preventives, in which great confidence is placed, and which agree only in being composed of the most powerful stimulants.

Mr Trayton has a singular notion about it, and containing in it some truth. He says that it is caused by cattle feeding on the buds of trees, or shrubs, and copses, and hedge rows, together with an over indulgence in ruminating while lying down, whereby they acquire a sluggish habit, and the blood becomes torpid. His preventive is very consistent with this theory; but it is rather a singular one. He says that they should be turned into large inclosures of coarse sharp bladed grass, and there should be mixed among them colts of two or three years old, which, by their mischievous gambols, will arouse the calves thoroughly, and by keeping them in action, keep them in health.

None of our readers, we trust, will have recourse to that preventive which Mr J. Laurence describes in his usual happy manner. Some skilful person introduced the following most extraordinary operation as a preventive of the disease, which I apprehend, could have no better effect, than shaving the animal would have, and which I beg to recommend in its stead, as most free from cruelty. The ill fated beast is fast bound to a stake, and then all his four legs are cut open, and the claws upward to the height of several inches, in order to find among the ten-

dons and ligaments a strong blood-vessel of a bluish colour, guilty of the sin of producing joint murrain; and which being caught with a crooked needle, is cut away.

This disease, there called *the hasty*, was once prevalent in Caithness, and many of the Highland straths; and it was traced to the numerous shrubs which grow on some of their wild pastures, and shaded the coarse grass from the sun, till it had attained an enormous growth, and was become of an acrid and stimulating nature. It is added, that when agriculture improved, these shrubs were cut down, and herbage became milder and more wholesome, and the disease rarely appeared. The effect may with greater probability be attributed to the improvement in the general management of cattle, and increase of knowledge of their constitution, and of their diseases. Indeed, more accurate knowledge was required of the nature and treatment of the diseases of cattle, when the following absurd and cruel superstition was had recourse to in Caithness, not merely by the peasants, but by those who ought to have known better. The beast attacked by black quarter was taken into a byre or house, into which cattle were never to enter, the heart was taken out while the animal was alive, and carried into the byre where the farmer kept his cattle, and hung up there; and while it remained there, none of the beasts would be attacked by this malady.

THE FOUL IN THE FOOT.

This proceeds from the habit of the body or redundancy of blood in the system, from being on wet pasture grounds, and from hard driving. Horned cattle of all ages are liable to this complaint; but cows of a gross habit of body, suffer most by it. In general, it first makes its appearance betwixt the parts of the hoof, in the form of a hard crack, attended sometimes with considerable inflammation, and in a short time, will discharge a fœtid and offensive matter, similar to that of the grease in horse's heels; at other times it makes its appearance with swelling upon the cornet, between the hair and the hoof, and about the joint, attended with violent pain and inflammation. This I conceive to be similar to the downfall, and to proceed from the same cause, though not in the same place, one being seated in the udder, and the other in the foot. The pain is often so considerable as to reduce the animal to a mere skeleton.

Treatment. If this disease first make its appearance between the claws; wash the part clean, when dry, take a rope, or even a hair tether, and then draw the rope backwards and forwards, till it all glow; afterwards dress the part with a wood skewer dipped in the butter of antimony, oil of vitriol, or aquafortis, and let them stand dry an hour afterwards, and turn them on a dry pasture. This may be done for two or three days together; but if the fetlock joint swell, and ap-

pear much inflamed, it will be necessary to apply a large poultice made of lintseed powder, bean meal, or rye flour; the poultice is to be continued until the inflammation and the swelling be reduced, and the parts acquire their former state. The cure may be finished, by continuing to dress the wound with

RECIPE.

Take—Egyptiacum, four ounces;
Compound tincture of myrrh, and spirit of turpentine, of each two ounces;
Sublimate, in fine powder, two drachms;
Spirit of salt, two ounces:
Mix, and keep in a bottle for use.

Let the wound be dressed with small pledgets of lint or tow, dipped in this mixture once a-day, and if any superfluous flesh should appear, it will be necessary to keep it down with the above caustic; or instead of this, the wound may be sprinkled all over with blue vitriol, in fine powder, before it be dressed with the mixture. As wounds dressed with the above, seldom fill up in the same manner as those which are dressed with digestives, it may therefore be in some cases advisable, after the wound has been well cleansed, and the acrid discharge has been stoped, to use one part of the liniment.

Purging is sometimes advisable in cases of this kind, and may be administered once a-week for a short time.

RECIPE.

Purging Drink.

TAKE—Epsom salts, one pound;
Aniseeds and ginger in powder, each one ounce;
Treacle, four ounces.

This will have the desired effect of cooling the blood, and of causing the medicine to act more powerfully on the wound. When these hard swellings of the glands first make their appearance, they may frequently be removed by the mercurial ointment.

RECIPE.

TAKE—Quicksilver, half a pound;
Strained turpentine, four ounces;
Spirit of turpentine, two ounces;
Rub them together in a mortar, until all the globules of the silver disappear; then add hogslard, one pound, work them all together till properly incorporated, and keep the mixture in a pot for use.

A sufficient quantity of the ointment must be well rubbed on the parts affected, once a-day, for eight or ten days successively; then leave off the dressing for a month, and if any substance remain after that time, the ointment may be repeated as before; in some cases, perhaps, the following compound mercurial ointment will be more efficacious.

RECIPE.

TAKE—Mercurial ointment, two ounces;
Strong aquafortis, two drachms;
Mix them well together; then add cantharides in powder, two drachms:
Mix the whole together for use.

This must be well rubbed on the part affected every morning, for five or six days together; then leave off for a month or six weeks; and if the tumour be not dispersed in that time, repeat the unction a second time as before; in this manner it may be repeated as often as it is found necessary. There is no danger in the application of either of these ointments on any part of the animal's body, provided they are prevented from licking it.

The most common names in use which are given to cattle, are neat cattle, or black cattle. Under these appellations are included both sexes, as the bull, ox, and cow. Their characters are as follows:—Cloven-footed, with or without horns; eight cutting teeth in the lower jaw, and none in the upper. I have known some farmers that had stocks for many years, and never knew how many teeth a cow had, or even that they were all in the lower jaw, what we call the fore teeth. The all-wise Disposer of events, has thought it good to reduce the animal creation under the power and dominion of man. Neat or black cattle in particular, may be said to rank first in

the creation, especially when we consider their great utility, and the wonderful variety of productions these valuable animals afford towards the support and use of mankind. The milk, for instance, which a single cow will yield in the course of the summer season, or from the time of calving to the time of setting dry, is an amazing quantity: from this are produced butter and cheese, important articles of human sustenance. There is, in fact, scarcely a part about this useful animal, but what is of infinite use. Even the blood is applied to different purposes; butchers use it for the purpose of feeding swine; the chemist employs it in the preparation of Prussian blue, and in the refining of sugar; and the farmer for manuring his land. Farther; the fat or tallow of cattle is made into candles; the hides, tanned and curried, make leather of the best and strongest kind, from which boots and shoes, and numberless other articles are manufactured; the hair is used among plaster lime for the walls of our dwelling houses; and the horns are made into combs, handles for knives, drinking vessels, and a great variety of toys of different descriptions. The bones are a cheap substitute for ivory, from which a great number of useful articles are made; and considerable quantities are used for manuring land: and, lastly, the flesh of this noble animal forms one of the most delicious and substantial dishes at our tables. Again, the age of cattle it is highly requisite should be known by every one who has any thing to do

with them. They, as well as sheep, have no teeth in the upper jaw; the age, therefore, must be determined by those on the lower jaw.

Young cattle are for the most part best understood by the following names: the bull while sucking is called a bull calf; and from one to two years old, a stirk or a yearly bull; every year afterwards he is called a bull. A young cut or libbed calf, after the first year, is called a stot calf, or stot stirk, and then a steer; at four years old he receives the name of a bullock. A female at the first is called a quey calf and a heifer, till the age of four years; she then takes the name of a cow, which is retained as long as she lives.

As soon as neat cattle arrive at the state of maturity, they are called by the appellation of ox, bull, and cow. There is a regular time for gestation amongst the females of different animals; the cow goes nine months in calf, sometimes a week more or a week less; the mear goes eleven months; and sheep five months; the sow one hundred and twenty days; these may all vary a few more or less; they should be attended about that time, regularly day and night, that each life may be preserved. Neat cattle have eight fore teeth in the lower jaw, but none in the upper; ten grinders in the under jaw, and as many corresponding ones in the upper.

DISEASES OF SHEEP.

THE ROT.

This disorder has been more fatal to sheep than any other; and having at different times carried off great numbers,—it has occupied the attention of the learned, who have favoured the public with a variety of opinions. The symptoms however of that fatal disease, cannot be more accurately stated than in the following description of Dr Harrison.

When in warm, sultry, and rainy weather, sheep that are grazing on low and moist lands, feed rapidly and some of them die suddenly, there is reason to fear that they have contracted the rot. This suspicion will be farther increased, if a few weeks afterwards, the sheep begin to shrink and become flaccid in their loins, by pressure about the hips. At this time a crackling is sometimes perceptible. Now, or soon afterwards, the countenance looks pale, and upon parting the fleece, the skin is found to have exchanged its vermilion tint for a pale red, and the wool is easily separated from the pelt.

As the disorder advances, the skin becomes marked with yellow and black spots: about this time the eyes lose their lustre and become white. These symptoms are rendered more severe by an

obstinate purging, which comes on at an uncertain period of the disorder. In five or six days after contracting the rot, the thin edge of the small lobe of the lever becomes of a transparent white or bluish colour, and this spreads along the upper and lower sides, according to the severity of the complaint.

Mr Clater, about ten or twelve years ago, published a medicine for the rot, accompanied with printed directions; and as the disease prevailed very much on low grounds, particularly in the south country, where he had sufficient opportunity of giving the medicine a fair trial, and had great satisfaction in proving its efficacy in curing this complaint, he undertook many even in the last stage, and frequently succeeded in curing nine out of ten. Farmers whose lands lie in low situations, and are subject to this disease, will find the following recipe of infinite value.

RECIPE.

Take—Nitre in powder, six ounces;
Ginger fresh powdered, four ounces;
Colcothar of vitriol in fine powder, four ounces;
Common salt, three pounds and a half;
Boiling water, three gallons;

Put the water hot upon the ingredients; stir them, and when new-milk warm, add to every pint of the mixture, three ounces of spirit of turpentine, and bottle it up for use. Keep the infected sheep from food all night. On the following

morning, give to each sheep two onnces or four table spoonfuls of the above mixture. Remember to shake the bottle well at the moment of pouring it out; keep them from food three hours after giving the medicine, and then turn them into dry pasture.

It will be necessary to repeat the medicine every fourth day for three times, observing the above rule.

RED WATER.

This disease is of the inflammatory nature, and prevails most at the latter end of the year, or during the winter, among sheep feeding on turnips or succulent grasses. It seldom misses a season; but it makes its appearance amongst some of the numerous flocks that feed on vegetables of these kinds, and for the most part attacks those sheep first which are in the best condition; and if no relief can be obtained, they generally die in the space of twenty-four hours or less.

The symptoms which indicate the presence of this disease are, the sheep appears dull, and loiters behind the rest of the flock; loss of appetite; and the belly a little swollen.

Treatment. The following medicine is recommended by the Doctor, who has been fifty-five years in practising to a great extent among cattle and sheep, and he was much approven of, for his superior skill. He had an opportunity of try-

ing it on a large scale, sometimes on five or six hundred sheep belonging to one man. The sheep must be bled before administering the medicine.

RECIPE.

TAKE—Epsom salts, six ounces;
Nitre in powder, four ounces;
Boiling water three pints;
Pour the water upon the salts, when new-milk warm;
Spirit of turpentine, four ounces;
Bole armenic in powder, half an ounce;
Mix and shake them well together at the time of giving; the dose is from three to four table spoonfuls;

When this medicine is intended to be given to a number of sheep, they must be taken from the turnips or whatever they are feeding on, and put into a fold-yard two hours before it be given them. Then a small horn should be provided, that will just hold the quantity proper for each sheep. Let the bottle be well shaken each time it is poured into the horn.

FOOT HALT AND FOOT ROT.

These diseases in the feet of sheep, Mr Clater says, always appear to proceed from one and the same cause; yet if any person wishes to make a distinction, it may easily be done by considering the first stage of the disease as the foot halt, and

the last as the foot rot A minute description of this disease would be of little service, as all persons accustomed to the management of sheep cannot be otherwise than acquainted with it. It is first discovered by the animal walking lame, and if no attempt be made to cure it, it must in time fall a victim to the disease.

The cure will be easily effected if the following rules be observed: Let the sheep infected with this disease in their feet, be fetched from their pastures and put in a dry fold-yard; after they have stood one hour, take a brush such as is commonly used for cleaning teeth, and brush all the dirt from between the claws; then take a wooden skewer, and dip it in butter of antimony, oil of vitriol, aquafortis, or spirit of salt; any one of these will be sufficient; and anoint the diseased part all over; after which let them stand dry for one hour. If they are properly managed, once dressing is generally found sufficient to perform a cure. If any of the above articles is preferable to another, it is the butter of antimony, which seems to have more effect in some cases than the other.

A second dressing is seldom required, except in those cases where there is some appearance of proud flesh, when it must be repeated every third or fourth day for a few days.

RECIPE.

TAKE—Blue vitriol, white vitriol, alum, all in powder, of each one ounce;
Bole armenic in powder, half an ounce;
Mix them together for use.

The wound must be covered all over with these powders quite thick; secure them properly on with tow or old linen and tape. This will stop the bleeding, and prevent the proud flesh from rising.

To prevent

THE FLY.

RECIPE.

TAKE—White lead, flour of sulphur, and white arsenic, of each one pound in fine powder;

Mix them all well together in a mortar for use.

The above quantity will be sufficient to dust on sixty sheep; or if it be weighed and folded in small packets of three quarters of an ounce each, a single packet will be sufficient to dress one sheep.

Sheep Lice and Ticks, or Reds. Sheep of every description are liable to these kinds of filth; and more particularly such as are in an unthriving state. They in every respect appear to be constant attendants on sheep that are struck with poverty. A description is almost unnecessary, as shepherds, and others accustomed to sheep, must have a knowledge of this kind of vermin.

RECIPE.

TAKE—White arsenic in powder, two pounds;

Pearl ashes, half a pound;

Soft soap, four pounds.

Put them in a large tub and pour from fifty to sixty gallons of boiling water upon the ingredients; this may be done every night, and it will be fit to use next day when cold. The lambs or sheep may be dipt or immersed in the solution, taking care the head be sufficiently kept above the water.

DISEASES OF HORSES.

HIDEBOUND.

This term implies a tightness in the skin, which feels as it were glued to the ribs, the coat having, at the same time, a rough unhealthy appearance. This complaint is generally occasioned by worms, or want of attention in the groom. It occurs sometimes, however, without any manifest. Give

Barbadoes aloes, one ounce ;
Castile soap, nine drachms.

OR,

Tartarised antimony, two and a half ounces ;
Powdered ginger, one and a half ounce ;
Opium, two ounces.

MANGE.

This disease is seldom met with, except in stables, where scarcely any attention is paid to the horses, and where their food is of the worst quality. It is certainly very contagious, and may in this way attack horses that are in good condition.

Mange Ointment.

Sulphur vivum, finely powdered, four ounces;
Oil of turpentine, three ounces;
Hog's lard, six ounces;
Mix.

OR,

Oil of turpentine, four ounces;
Strong sulphuric acid, two ounces;
Mix cautiously, putting the acid by a little at a time; and add
Hog's lard previously melted, eight ounces;
Train oil, six ounces;
Sulphur vivum, four ounces;
Mix.

The acid and the turpentine should be allowed to combine perfectly, and become a blackish liquid mass, before the other ingredients are added: Or this, it being a cheap composition, and in general efficacious;

Oil of tar, eight ounces;
Oil of turpentine, four ounces;
Sulphur vivum fine powdered, two ounces.

GLANDERS.

This disease is contagious, and has, I believe, hitherto proved incurable. The most essential thing to be known with respect to the glanders is the method of preventing its being communicated to sound horses.

GREASE.

When a horse has suffered much from this disease, and particularly if he appear to be weak and out of condition, a liberal allowance of corn will tend to recover him, if assisted by the astringent lotion and careful grooming. In cases of this kind, exercise is essentially necessary. It must be obvious, that when this disease depends upon debility, a dose of physic would not be an eligible remedy; yet considerable benefit has sometimes been obtained by giving the following alterative every morning until the bowels are moderately opened:

Alterative Ball.

Barbadoes aloes, one ounce;
Castile soap, one and a half ounce;
Powdered ginger, half an ounce;
Syrup enough to form a mass to be divided into balls.

COLIC-PAIN.

The first thing to be done when a horse is attacked with colic pains is to put him into a box or large stall, and give him plenty of litter that he may not hurt himself during the violent pain; the state of the dung should then be enquired into. It is generally thought necessary to bleed, though no symptoms of inflammation appear. By some the following medicines are applied:

Venice turpentine, one, two, or to three ounces;
Oil of juniper, two or three drachms;
Spirit of nitrous ether, one ounce;
Mix for one dose.

OR,

Tincture of opium, from six drachms to an ounce;
Spirit of nitrous ether, from one ounce to half an ounce;
Water, or peppermint water, a pint;
Mix for one dose.

Barbadoes aloes and castor oil are also very good, only a small quantity of each.

Horses sometimes discharge blood with their urine in considerable quantity, generally in consequence of violent exertion, or blows on the loins; but sometimes it occurs without any apparent cause. If the horse is healthy in other respects, the following ball may be given; but when it is attended with fever, pain in staling, and other symptoms of inflamed kidneys, it must be treated accordingly:

Ball for Bloody Urine.

Powdered catechu, one ounce;
Alum, one ounce;
Cascarilla bark, one to two drachms;
Liquorice powder and treacle, enough to form balls for one dose, to be repeated three or four times, if necessary, allowing an interval of twelve hours between each dose.

WORMS.

There are three kinds of worms found in horses. The most mischievous reside in the stomach, and are named *bots;* they are of a reddish colour, and seldom exceed three quarters of an inch in length.

The Ball.

Barbadoes aloes, six drachms;
Powdered ginger, one and a half drachms;
Oil of wormwood, twenty drops;
Prepared natron, two drachms.
Syrup enough to form a ball for one dose.

It is often necessary to repeat this medicine; but there should be an interval of ten days between each dose.

See inflammation of the lungs, &c. Bleeding and oil of turpentine have been strongly recommended to the celebrated Mr Whyte, by a medical gentleman, for the worms that inhabit the intestines, particularly the very short or needle-like worm. He has on several occasions prescribed it, and in every instance there was a great number *ascarides* voided.

Favourable reports of it from some of his correspondents. The dose which that gentleman advises, is to be given in four ounces in a pint of gruel, having kept the horse without food for three or four hours before, and a short time after. During the day he is to be sparingly supplied with bran mashes, and have only a small quan-

tity of hay. He advises also, that the bowels be brought to a moderately loose state, before the turpentine is exhibited, by giving the horse, the day before, three or four drachms of aloes with a little soap.

In my young days, neither men nor horses were so well meated or fed as they are now; but the food then was as good for the constitution of each of them as what is used now. Farm-horses then were mostly fed with corn and straw; there was not much hay in farmers' stack-yards in my early days. I approve of corn and hay for horses; but of late farmers have got a new way of feeding horses, by steaming potatoes, turnips, and chaff together, which no doubt will put a beautiful skin upon them; but it occasions what is called the batts or colic, and a vast of griping pains in the belly, and if not relieved will soon terminate in the death of the animal. The cure which has proved effectual, is

Half a gill of turpentine;
One bottle of train oil;

And if the animal is not relieved within half an hour, then repeat the one half of the dose which will give relief immediately, and will be known by the horse giving up dashing and tumbling.

Horses are often foundered by the inattention or carelessness of the owner or his servants, both by corn and water. For this disorder farriers

often bleed in the sole of the foot; but it is newly found out, that bathing the foot with cold water, and banishing the blood from the foot is much better than bleeding in the foot. I know of no better way of bleeding than the neck-vein, for any distemper in the animal. If one bleed fluently in the neck-vein, it will take effect sooner and surer than in any other part of the animal.

THE END.