SHEEP AND SHEPHERDING;

EMBRACING THE HISTORY, VARIETIES, REARING, FEEDING, AND GENERAL MANAGEMENT OF SHEEP;

With Treatises on Australian Sheep-Farming, the Spanish and Saxon Merinos, &c.

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BY M. M. MILBURN,

Author of "The Cow," and of various Agricultural Prize Essays.

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PREFACE.

SHEEP may be classed among the most useful of domestic animals; and with our ever-increasing population their culture is becoming an object of the first importance,—their wool being one of the great staples of our national economy, and their flesh the chief food not only of the humbler but of the more elevated classes of society.

With these objects in view, the writer has undertaken to embody all the information which his long experience in rural affairs has enabled him to collect respecting the breeding and rearing of sheep. The knowledge he has derived, as a farmer and a grazier, is not of a theoretical but of a practical character; and he feels assured that his agricultural brethren, on consulting these pages, will derive advantage from the useful and diversified information they convey. Of the MERINO breeds, and of AUSTRALIAN SHEEP FARMING, which are daily increasing in importance, the author has treated rather diffusely; and the information there detailed, he trusts, will be found both useful and interesting.

A slight reference to the annexed Table of Contents will show the variety of subjects, connected with the culture of Sheep, on which the writer has treated.

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THE SHEEP, AND SHEPHERDING.

CHAPTER I.

INTRODUCTORY.

WITHIN the whole range of Zoology, it may be confidently affirmed, there is no animal more serviceable to man than the SHEEP. It is the first domesticated animal mentioned in the early records of history; and the progress of civilization is, in some measure, identified with its existence. Indeed, its history may be traced to the remotest antiquity; for the care of it was first committed to the younger son of the first created man. "Abel was a keeper of sheep;" and he "brought to the Lord the firstlings of his flock, and the fat thereof."

According to the zoological classification of Cuvier, the sheep belongs to the class *Mammalia*, on account of the young being nourished with milk from the *mammæ*, or teats, of its mother;—to the order *Ruminantia*, because of its four stomachs, in which the organs of digestion are disposed for chewing the cud;—to the tribe *Capridæ*, from its horns being placed on an osseous nucleus;—and to the genus *Ovis* (a sheep) with or without horns; the sheep being chiefly distinguished from the goat by his convex forehead, by his spiral horn not projecting posteriorly, and, more than all, by the preponderance of wool over the hair.

The progress of modern civilization has not rendered sheep less important to the necessities and the enjoyments of man than they were in the earliest periods of antiquity. As food they form one of the first essentials of life, not only to the humbler classes, but to the more elevated portions of society. Their wool, too, is one of the most important articles of our social economy, which contributes largely to our trading and manufacturing industry. They supply the

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chief portion of that clothing which, in a country like England—so exposed to the inclemency and vicissitudes of the seasons—mainly contributes to the preservation of health, and the general comforts of existence. Their skins, also, are applied to a variety of uses. They form covers for our books, and afford materials for the legal instruments of nations, and the transfer of estates. Even their very entrails are converted to useful purposes, and serve as strings for musical instruments. Their bones, both by the chemist and the cutler, are applied to objects of the greatest utility; while their fleeces—by being converted into skins and leather—call into active employment vast multitudes of our labouring population. Nay, the very manure of sheep, which tends to enrich the pasture lands, and even to fertilize the barren downs, is a source of great profit and advantage to the farmer; and materially adds to the increased production of that cereal food which forms the staff of life.

In the general characteristics of the sheep there are, moreover, many qualities that enhance its value to mankind. In a highly improved state of husbandry, it is almost the sheet-anchor of a farmer's pursuits. In the alternating system of farming,—which constitutes the keystone of British agriculture,—the sheep forms an indispensable element. Without green crops, consolidation, and kneading, the convertible system of husbandry would fall to nothing; and an entire change would come over the whole of our best systems of farming. In these times, the lighter portions of soil are the most valuable, simply because they admit of the green crops being consumed in the land by sheep, while the stronger soils—once the "good wheat and bean lands"—are considered of inferior value; and the test of that value is, the capability, or otherwise, of bearing the "eating on" of turnips by sheep.

It is thus evident that the sheep is a manurer of the land; and there is a Swedish proverb that "the foot of the sheep is gold," for it transmutes to that metal all it touches. The wool constantly leaves its greasy deposit on the soil where the animal lies down; the rains wash out of it a combination of soda very nearly resembling soap; while from the nostrils, when feeding, is evolved the carbonic acid gas, the food of vegetation, so readily taken up by the alkalies in the soil. The dung of the sheep is voided in thick and consolidated droppings, so as to have a strong tendency to concentrate and preserve its qualities. It does not so soon evaporate as the same materials in that of the horse. The great quantity of urine also made by the sheep, in proportion to the food consumed, is again a large source of

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nutrition to plants; but, above all, the sheep's foot, on any sort of soil, so kneads and consolidates the surface of the land, as to render loose and shifting sand available for the growth even of wheat and beans; both of them being crops which require the most solid root-hold.

There are few plants that can bear much oxygen at their roots. A dry loose sand is so favourable to the permeation of that gas, that it is almost worthless for the cultivation of any valuable crop. But the *kneading* peculiar to the treading of sheep,—which no implement ever yet devised can imitate,—seals up the soil with the manure and moisture it contains so effectually as to prevent the access of a surplus quantity of the subtle and exciting gas. Hence arises the improvement of loose sandy soils, which the farmer by no other means can accomplish.

But the moral qualities of the sheep (if we may be allowed so to speak) are such as still further to render it an object of attention, and even admiration. It has ever been considered as the emblem of patience, forbearance, and docility. The patience, under persecution, of the Saviour of mankind, is pourtrayed under the simile of a lamb led to the slaughter, or as a sheep dumb before her shearers. Indeed, so amiable and docile is the sheep, that it has been chosen as the emblem of the Elect, who are spoken of, in innumerable places, as "a flock."

It not unfrequently happens that those animals which are characterized for their patience are charged with stupidity. Submission is often ascribed to obstinacy, and hence has the sheep been accused of want of sagacity; but this is an erroneous conclusion, arising from circumstances. Worried and terrified with dogs, the gentle and timid animal often betrays symptoms of desperation, which are construed into want of sagacity.

We have heard the story oft repeated of one sheep stupidly following another into danger, or inevitable death. We ourselves remember an instance of the leader of a flock (generally the oldest ewe or wether) leaping over the bridge at Yarm into the river Tees; and all the flock, one by one, following over the battlements. But surely this was no proof of want of sagacity; although it evinced an absence of calculation and caution. Let it be remembered, however, that while there were worrying dogs, and shepherds, and shoutings behind, all tending to terrify the animals, they could not see over the parapet of the bridge, like men of six feet high; and therefore they were unable to perceive that this wall was different from those which had usually

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bounded their inclosures. It is thus that many an army, led by a gallant officer, has committed as great a blunder; and yet it would be the height of absurdity, on this account, to characterize the whole race of mankind as being destitute of intelligence!

If cruelty renders the sheep obstinate, kind and friendly treatment makes it docile and intelligent. We once had a favourite sheep, which had been in its days a pet lamb. It always produced three lambs; and in every season, as soon as the throes of parturition were upon it, invariably rushed through every open gate, and bleated piteously till it gained admission into the kitchen. When it had been delivered, it willingly joined the flock; but always made up to any of the family, and rubbed against them for a handful of corn, which would appear necessary to supply the demands on its lactiferous system made by its progeny being more numerous than those which belonged to the rest of the flock.

The writer of this little treatise, when leisure permitted him to keep a flock of breeding ewes, had as docile and gentle a race of animals as ever lived. They were perfectly obedient to his call. For most of them he had names; and though they were not individually called by them, nor able to answer, they were, as a flock, altogether disposed instantly to answer to the general call "orch," and would run to meet him at the gate; or if permitted, and the gates were opened, they would come galloping up gaily from as great a distance as they could hear the sound of his voice. He well remembers when once his ewes were grazing with those of a neighbour, and had to be parted. The farmer was just in the act of sending his dog to chase the whole flock into a corner, till they could be singled out by their marks; when the writer requested him to keep in his dog, and he would "call them out." The farmer gave an incredulous smile; but the well-known "orch" soon set them running off in the direction of the gate from which the sound proceeded. This was a signal to the neighbour's flock to rush in the same direction, from an impulse of fear,—imagining, doubtless, that the dog had been seen. This terror in a short time subsided. The writer's flock hurried to the gate, and were let out, one by one, without the least difficulty; while the others, kept off by fear and timidity, remained in the pasture.

It is odd that the leader for many years of this docile flock was a large-horned black-faced Scot, and a favourite, selected from a flock of Scottish wethers, among which by some means it had strayed. She was the tamest and the most docile of the whole flock!

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The secret of all this was, that they were regularly fed with a handful of oats each for a fortnight before lambing-time; and this alone gave them, in the absence of chasing dogs, a confidence in and affection for their master.

In affection for their young few domesticated animals surpass the sheep. The timorous ewe, when she has lambs, becomes the most courageous of animals. She will keep a dog at bay, and menace him by significant stamping of the foot. She attends her young with the greatest affection; and we have heard instances of ewes so fond of their lambs, that from sheer affection they have bit off their tails. So strong indeed is their attachment, that if an ewe after lambing does not regard her offspring, it is an indication well known to shepherds that she is likely to die. But if the lamb is weakly, and after a day or two cannot follow, she becomes a careless mother, and often resigns it to its fate. We once had a lamb thoroughly crippled from the well-known and often fatal disease, the "crook." It could not get up, though otherwise healthy, and had to be suckled; but so careless did the ewe become of the lamb, that nothing but force would induce her to come near it. The lamb, however, lived, and ultimately walked; though more cost was expended in rearing it than it was worth.

Strong as are the instincts of the sheep this may be broken by excessive domestication. Pet lambs brought up in the house seem not to have the instinct of avoiding poisonous herbs, and often die from wanting the capability of discerning them. But it never loses the sense of dependence on man, and will always show affection and gratitude for the kindness shown in its early helplessness. We cannot but deprecate the taste which seems to delight in such painful subjects being hung upon the walls as engravings of the "sale of the pet lamb." It is a pity to make the fine feelings of children, and the coldness of heart of the insensitive butcher taking away their companion and treasure *for money*, the familiar subject of daily observation. It only hardens the heart.

In England there are no certain means of ascertaining the exact number of sheep. In France, where some attention is paid to agricultural statistics, there were said, in 1839, to be 31,864,247. Mr. Porter describes the British sheep as numbering only 19,000,000 in 1800; but as increased in 1828 to 26,000,000; while with some probability of accuracy, Colquhoun estimated them, in 1800, as high as 42,000,000. M'Culloch is far below the mark in putting them down in 1839 at 32,000,000. The most probable estimate is that of the Frenchman, M. Ternieux, who stated them to be 55,000,000, and

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valued the produce of the wool at £9,000,000 per annum. But assuming that there are in Great Britain 60,000,000 sheep, and valuing them at £1 10s. each, it will give the enormous sum of £90,000,000; and if to this, the very moderate sum of £10,000,000 be added for their wool, it will give the gross value of the flocks of this country at one hundred millions of money.

Mutton forms one of the great staple articles of food in this country. It is a favourite diet both for the invalid and the epicure, for the luxurious tables of the rich, and for the humble board of the peasant.

Fat mutton had once a wider range of admirers than at present. The fattest animals were the best. A dish of potatoes was placed in the common oven, and over it the fat loin of a Leicester sheep. This made a great mass of gravy. The master of the house dined off the meat, while his family equally fared on the delicious and saturated potatoes. But at the present time luxury has almost banished the fat Leicester mutton from the tables of the manufacturing operative, and is more confined to those engaged in the mining districts. The South-down and the Highland Scot, the Cheviot and the half-bred (small in joint and full of flavour, with less fat), seem to be the kind of sheep which the spread of luxury and epicurianism demands in the manufacturing districts of the country; and therefore the present tendencies of breeders must be somewhat checked, if not altogether reversed.

Still, however, the flesh of the sheep has lost none of its popularity. They may change the kind of animal; but as to any neglect of the flesh altogether, it is out of the question. The Leicesters, the Cotswolds, and the Teeswaters, will, if this system continues, have to give way at least partially to crosses with the mountain breed, and the class of sheep in this country will cease to be so large, or possibly so symmetrical; but taste must be consulted, and the breeders' predilections will have to give way to profit.

CHAPTER II.

ORIGIN OF SHEEP, AND THE BREEDS OF FOREIGN COUNTRIES.

If the original breeds of cattle and horses be involved in obscurity, there appears a far denser cloud hanging over the investigation of

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the primeval origin of the sheep. From the earliest periods of antiquity, we find a variety of breeds, with different characteristics; as the horned and the hornless—the black and the white—and also a mixture of both. In one place we have them covered with long wool, and in another with short, while in other localities we have them destitute of wool altogether and covered with hair; thus presenting as wide a difference within a few degrees of latitude as there is between some species of the sheep, and the goat or the red deer. There is not more difference between the lethargic flesh-mountain-breed of Leicester, sleeping among the fat pastures of Lincolnshire, and the black-faced Highland Scot, skipping from hill to hill, and picking a morsel amongst the mosses and scanty heather of that cold and barren land, than there is between the last-mentioned species and the goat; and yet we are forbid to class the goat amongst the sheep, although animals as discordant, and even more so, are to be so classed in another direction.

The question for consideration is, whether the original sheep was the woolly inhabitant of the cold north; or the hairy denizen of the hot sultry east? Or was it made up of some medium animal (now extinct) of these apparently contradictory and discordant races? We have absolutely no information. The only resources we have are the sacred records of early ages, dictated by Omniscience for the instruction of man. We have to depend altogether on the incidental notices of the animal for any distinct knowledge of the qualities it possesses.

Of all quadrupeds, the sheep appears to have been domesticated the earliest. From its size and manageability, it would be an easy task; but this conveys the idea rather of a tame northern sheep than of the wild and agile tenant of the rocky steppes of the east or the south. Sheep-inclosures, of a date so early as the second generation of man, forbid the idea of the sheep being a *wild* animal, when "Abel was a keeper (or feeder) of sheep." Neither could the animal there be the fleshless deer-like race which some have represented it; for "fat" is mentioned among the earliest offerings as the product of the sheep.

Nearly all writers agree that if the sheep had not an origin different from anything we now possess, it sprang from the domestication of the Musmon or the Argali. The former is an inhabitant of Sardinia, Africa, and America; and the latter is confined to the centre and north of Asia.

The MUSMON, or MOUFLON, the *Ovis Mouflon* of Buffon, is found in Asia, Sardinia, and the Islands of the Grecian Archipelago, in

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Greece, and in the western part of European Turkey. It is two feet and a half in height, and about three feet and a half long. It has large semicircular and wrinkled horns, bending gracefully backward, and somewhat resembling the black-faced sheep of the Highlands. They are, however, much thicker, usually measuring from twelve to sixteen inches at the base, and sometimes as much as twenty-two inches in length. The colour is grey, and the animal is covered with *hair* of a curling and woolly kind. There are a few black hairs about the head. The female either has very small horns or is altogether destitute of that appendage. The breed invariably inhabit the sides of hills, or their tops in very temperate latitudes. They always herd together for mutual defence; and, like other gregarious animals, under the protection of the largest and strongest rams. At the rutting season they separate into smaller flocks, and very savage battles take place among the males. They have usually two lambs, dropped in April or May, which the dams, in case of need, defend with great courage.

These animals, according to Cuvier, are very dull and untameable. He says that "domestication has had no influence" in taming them; "it merely accustoms them to the presence of new objects; and they are no longer affrighted at the sight of man, but rather seem to acquire more confidence in their own powers as they become more familiarized with us; for, instead of avoiding their keeper, especially the males, they attack him with fury." There is another peculiarity in these animals; their flesh is well-flavoured; but they are always in lean condition. Their skins are very thick, and almost impervious.

The ARGALI (*Ovis Ammon*) has a much wider range of habitat than the Musmon, and its general characteristics much resemble those of the sheep. It inhabits the tops of mountains in cold latitudes, and is common in Siberia. In the highest mountain chains of North America, it is known as the Rocky Mountain Sheep, while the African type is found in Persia, where it inhabits the central regions. The Siberian Argali seems to have attracted by far the most attention of any of the species. It is upwards of three feet high, and four feet from the nape of the neck to the tail. The horns of the male are very large, being at the base about twelve inches in circumference, and from three to four feet in length. They curve backwards and outwards, so as to make two-thirds of a circle, and are wrinkled at the base. The tail is very short, and the hoofs small. The head closely resembles that of a ram, and its colour is grey. The body is brown, with a yellowish streak on the back. It is covered with short hair in summer, but in

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winter this covering assumes a sort of *woolly* character, rough in texture and somewhat curly, and about one inch and a half in length. The ewes have smaller horns, though they are sometimes altogether destitute of these appendages.

The ewes drop their lambs in March, and separate from the rams. Their flesh is *fat* in summer, though they usually become lean in winter. They are extremely timid, and usually herd in small flocks; but, though untameable when grown up, the young are easily domesticated. When pursued they will turn and look at the pursuer, as is common in our sheep. Sometimes, in fighting, the males become locked in each others horns; and then are either destroyed by being dashed down the hills or precipieces, or become an easy prey to the sportsman or hunter.

Applying our knowledge, as obtained inferentially from the most ancient of records, we find incidental notices tending to fix the character of the earliest sheep, of which history informs us, with the one or the other of the class of animals above referred to, but especially the latter. Abel had "firstlings of his flock." Hence he possessed domesticated animals. The lambs of the Argali would be a ready means of procreating a flock; as they are even now easily domesticated, and which would hardly be the case with the untameable Musmon. Abel also offered fat, which is a secretion common to the Argali, but of which the Musmon is said to be destitute.

The sheep of the Patriarchs, too, had horns; at any rate the rams had that distinction. Nor could they be simply upright; as a ram, it will be remembered, was "caught in a thicket by his horns," when the staying angel arrested the hand of Abraham. The curvature of the horns being much more nearly complete in the Argali than the Musmon, which are merely bent back, renders it the most likely of the two to be entangled in a thicket.

That sheep were some of them brown in Jacob's day is quite certain, from their being set apart for his wages; and this again agrees with the colour of the Argali.

That the covering of the skin was something better than hair even in early days is quite evident from Laban's shearing his sheep; for it always indicates, at least, a woolly texture rather than a hairy one, which requires the application of the shears.

Job, who lived, it is supposed, in early patriarchal times, evidently made use of the wool of his sheep. His flock consisted, at one period, of 7,000 sheep, and at another of double that number; and he thus reminds his friends of his benevolence:—"If I have seen any perish

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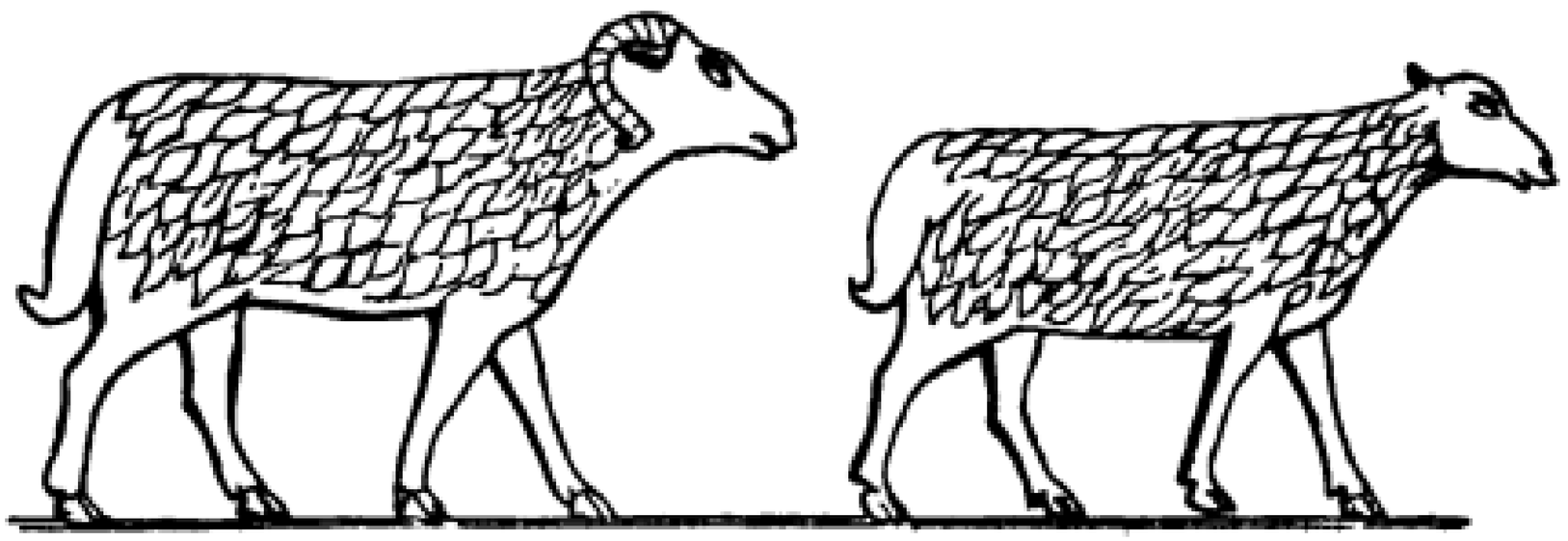
for want of clothing, or any poor without covering; if his loins have not blessed me, and if he were not warmed with the fleece of my sheep."

If we take the records of the highest antiquity, we shall find very striking illustrations. The written records of Assyria have passed away; but the historical relics of its greatness, brought to light by modern research after lying hidden for centuries, throw a mass of information on the practices, habits, and comforts of the people who lived at vastly remote periods. The researches of Mr. Layard, at Nineveh, have brought to light several pictorial representations of the Assyrian sheep; for, though war rather than the peaceful arts seems to have been the glory of the Ninevites, "six score thousand" citizens brought for their "women and children," after the war, abundant spoils of sheep; and the sketches give a very accurate idea of the progress the Argali breed had made in supplying the wants of man at this early period. The tail had lengthened and thickened;



ASSYRIAN SHEEP—FROM THE NINEVEH MARBLES.

the fat had begun to accumulate; and the hair had become more woolly. The horn, which was still nearly circular, had become smaller, and the legs and head thicker. The ram had horns; the ewe was hornless. The same species of domestication which had diminished the large horns of the ram, had still further reduced the diminutive horns of the ewe. There is a marked difference, however, between the sheep and the goats of Layard's figures. The latter have always the upright tapering horns, and are quite unmistakeably different from the sheep.

Egypt, another great nation of antiquity, whose history is altogether pictorial, was not celebrated for its sheep. The Egyptians hated shepherds, on account of their historical associations; and the country was unsuited, from the overflowings of the Nile and its rank luxuriant vegetation, for the successful breeding of sheep. Hence their hieroglyphics, their sculptures, and their paintings were nearly all destitute of representations of the fleecy tribe. Of cattle, for

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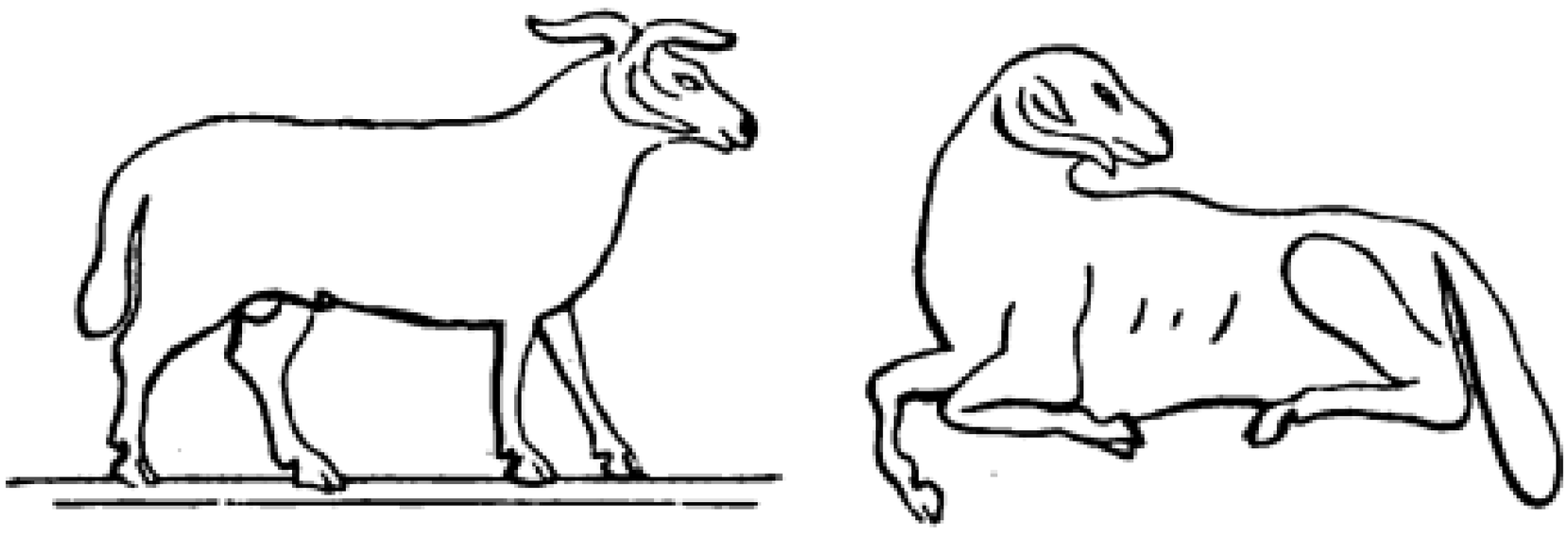
which the Egyptians had an idolatrous veneration, there was a vast abundance; but in all the volumes of Belzoni, as far as we remember, there are only three places where sheep are represented.



SHEEP OF ANCIENT EGYPT.

We here give two instances; but as they are all unshaded, we can only give the outline. The one is in a standing position, and the other is recumbent. The horns of the former seem fanciful, but remind us of the female Argali, which has but little curvature in her horns. Of her covering there is not the slightest means of judging; but there is the long thick *tail* exhibiting either fat or wool, either of which would be indicative of an approach towards some of our modern breeds. The legs and feet are clearly those of sheep; but the body is deer-like, and very much resembling the Argali.

In the larger specimen, which is lying down, there is a horn slightly curved, but extending more forward than that of the Ninevite specimen. The tail is better defined, though the head is not very happily delineated; but the fore-foot and its position clearly indicate that the draughtsman understood the natural history of the sheep better than the painter who drew three pigs feeding at a trough, without one of them having a foot in it.

The ABYSSINIAN sheep (or Persian, as it is sometimes called) is but a remove from the Argali even at the present time; and is entirely identical in character with the drawings just given, if it can be said to be so far improved. It inhabits the shores of the Red Sea. It has a shortish tail and a coarse hairy wool, and is of a greyish or brownish colour. It has horns diverging from their roots, and bent so as to form a large portion of a circle. The relationship is very close. It is not difficult to imagine this long-legged, horned, hair-covered sheep to be a variety of the Argali. It is by no means unreasonable to suppose it to be similar to the drawings of Layard or Belzoni. It requires a very little stretch of imagination or of credulity to conceive or to believe that it did not require six times a

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thousand centuries to effect the change. But it is another thing to squeeze a somnolent Leicester out of an Argali; for to that, it will be seen, we unhesitatingly give the merit of the original of our own sheep of every kind. For how does the *hair* become *wool?* We know the coverings of animals, as down, wool, and hair; but it is not very easy to define the distinction, though there is a distinction so great, that it is impossible almost to conceive how the one can be transmuted to the other. Yet this is quite easy; it is what is continually occurring even in a very short period, and has been frequently noticed both at home and abroad.

Dr. John Davy says, in the Philosophical Journal for April 1852,—"The sheep from Barbadoes, originally from an English stock, affords a striking example of the change that may be effected by climate, in a few generations, in the character of the hair of an animal. In that island, instances are frequently to be seen of sheep in which hair has so taken the place of wool (using the terms in their usual acceptation), that, were it not for the form of the animal—and that is not altogether free from change—it would be impossible to suppose that they belonged to the same species as our English sheep." He carefully examined two specimens of hair—one from a sheep two years old, the other from one a year old. Both were of the same colour, a light reddish-brown, and the same length. "The hair of the three-year-old," he proceeds to say, "was coarser than that of the one-year-old; it consisted chiefly of harsh fibres, slightly tortuous, each about the 180th of an inch in diameter, some cylindrical, others more or less flattened, all looking towards a point at their distal extremity. The hair of the one-year-old consisted of coarse and fine fibres in about equal portions, the one about the 363rd of an inch in diameter, the other the 1333rd of an inch; the former resembling the hair of the older sheep, the latter having the appearance of wool, both in its fineness and general aspect, whether seen with the naked eye or under the microscope. The presence of a portion of wool underneath the hair of the younger sheep accords, I may remark, with the belief of my friend, that all the very young lambs of the island have wool, which gradually passes into hair as they grow older." This, he writes, he thinks is the fact. The doctor then expatiates on the care "Divine Providence exerts in changing the clothing of an animal to be suitable to the climate it inhabits."

The tendency to lay on fat, it has been seen, is much more prevalent in the system of the Argali than the Musmon. This, again, proves its relationship to the fat-producing sheep to be much more

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intimate. But though all classes of sheep show this disposition, more or less, they vary as to the parts in which it is deposited.

Excluding at present the British sheep from remark, they may be divided into two classes—those which secrete and deposit the fat on their *rumps*, and those which secrete and deposit it on their *tails*. This peculiarity naturally divides the principal foreign breeds of sheep. The first are the most remarkable—

THE FAT-TAILED RACE OF SHEEP.

The *Wallachian sheep* is a remarkable animal, and altogether the most beautiful, as a picture, of all the various breeds. They are common in the whole of Southern Russia. The horns of the ram are of a peculiarly tall and spiral form. The wool is of a hairy character, but beautifully white. The tail, however, is the peculiarity. Kohl, in his Russia, says, "it really carries its fat about in its tail, which grows into a shape something similar to a pear, swelling at both sides to an enormous size, and tapering to a point at the extremity." The Russian shepherds are a very dull and helpless race of men, and more credit is due to the dogs and goats which accompany the flocks for their care of the animals than to these serfs, who are indolent and dull of comprehension. About four goats are associated with a flock of every hundred sheep to face the Pontine hurricanes, and to lead the sheep over ravines, and by the sides of steppes, which otherwise neither the sheep nor their shepherds would face. The sheep *follow* the courageous goats; and on once making the effort, they have powers quite equal to the task. The shepherds are strictly nomadic. They wander from pasture to pasture, accompanied by their dogs and a wagon, which is their kitchen and bed. The sheep are collected for the night into as narrow a compass as possible. The dogs watch them, each sleeping on a mat; and with this the flock is generally secure from the wolves, who prowl about in the hope of finding some stray or sickly animal on some unguarded point. This race of sheep has spread for a great distance over Hungary, Bohemia, and Austria. The peasants still use the shaggy skins for coats, which are an ample protection from the cold blasts of the northern climate.

The tail of the Wallachian sheep is large and fat, also more from its length than its breadth; a characteristic in which it differs from the African sheep, to which we shall hereafter allude.

The *Persian Sheep* is another fat-tailed variety, and is mixed up with others which develop the fat in other parts of the body. The

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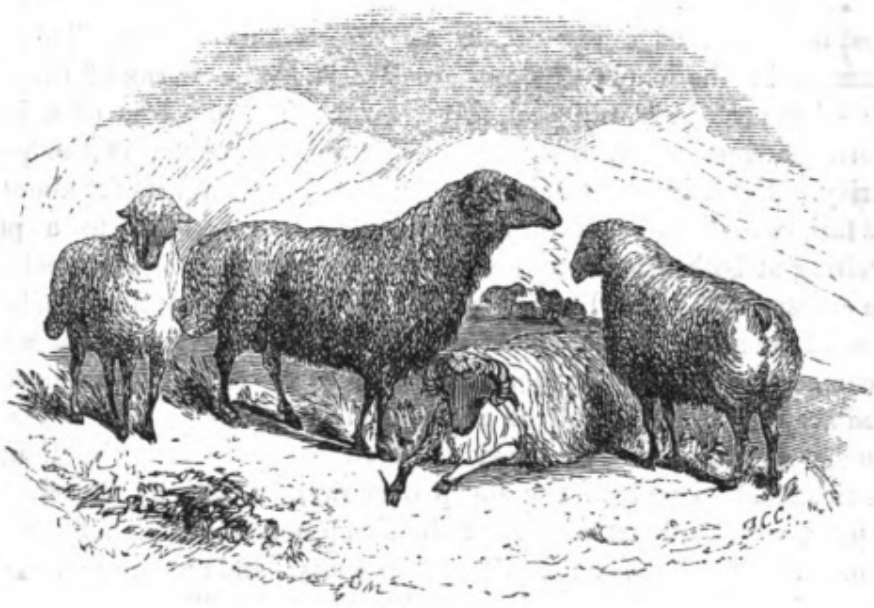
eastern mode of keeping wandering flocks appears still to be, like many other eastern customs, obstinately adhered to. Its wool is of a long hairy grey, and extremely coarse. It also has horns, and these disposed very like those of which we gave a specimen from the ruins of Nineveh; and it requires but little stretch of the imagination to conceive how it is very possible that the slow unimproving Persian may have gone on for unnumbered ages without change, without crossing,—without one lineament of the outline of the sheep being changed. The tail is a considerable accumulation of fat, tending to



PERSIAN SHEEP.

the pendulous, and to accumulate in a somewhat conical form. The wool is of a much finer staple than the Wallachian, and is of two kinds—a long hair-like, but thinly-dispersed wirery, and an under one from which the finest class of wools are obtained; and these are said to be equal to Cashmere in their fineness of texture.

The *bas-reliefs* of Persepolis represent a long procession sculptured on the wall of a staircase, where two rams, attended by shepherds, form part of a migratory train of horses, asses, camels, and oxen. Whether the horns were common to both the rams and the ewes is not by any means certain; but if they were not, the Nimroud sculptures certainly indicate two distinct breeds. The tails are long and pendent, and thickening towards the end, they reach below the knee. It is odd enough that the sacrificial bull figured on the obelisk found at Nimroud is also exhibited with a long thick fat tail, an appendage very

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unlikely to belong to that animal; but it is probable that this is a bag attached to the animal, and part of the decorations with which he was arrayed previous to the sacrifice.

It is worthy of remark that when cattle are shown, in other and more secular characters, the hair of the tail only is made to appear; thus indicating the correctness of the observation as to the sacrificial decorations accounting for the thickness of the tail.

The *South African* sheep is of the fat-tailed kind; but instead of the long, pendulous, and conical tail, it is broad and flat. All other parts of the body are lank, and the flesh thin and flabby. The tail and its seat, but especially the former, is the reservoir of heat-producing matter, laid up in store against the cold nights and rainy seasons, when it is required for resisting the cold. Barrow, in his work on South Africa, says:—"The tail is short, broad, and flat, naked on the under side, and weighs the amazing weight of from six to twelve pounds. It is of a thin oily consistence, and is sometimes used as a substitute for butter. This tail is from twelve to eighteen inches long, and tapers downwards, being five or six inches thick near its setting on at the rump."

This sheep is covered with long curly hair of a very strong and resisting texture, which from its elasticity is used for making cushions. The wool varies foom black to grey; it is often spotted, and sometimes brown and dun. Little care is taken of the breed, and they are most inhumanly butchered by the Hottentots. Nor is their covering more carefully preserved; it being usually allowed merely to drop off in the autumn of the year. Some individuals have a second or under coat, as was the case in the instance before alluded to. This hairy wool more resembles fur, and is used for coverlets by the superior classes of Boers. A similar sheep occurs in the same or higher latitudes, and they are found in Madras and Bengal.

In *Northern Africa* a similarly formed animal occurs, especially in *Barbary*. It has three and sometimes four horns; but its tail is thinner and fatter than the South African variety. Its colour is chiefly white; and while the anterior parts are covered with soft hair, the posterior have on them fine wool. The ears are pendulous.

With the *Syrian Sheep* we shall conclude the fat-tailed variety, which spread over a vast extent of the globe,—the whole of known Africa, more or less numerously; the empires of Hindostan and China; and part of Russia.

Aristotle speaks of the Syrian sheep in his day, and names a variety which had tails a cubit broad. Such a naturalist ought

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certainly to be credited. Dr. Russell describes the tails of modern Syrian sheep as weighing 50 lbs.; but these are house-fed animals, and certainly exceptions to the general rule. In some cases it is necessary to have it protected, and even placed in a rude carriage, so unwieldy does it become, and liable to damage. Indeed this is not at all improbable, when a weight approaching 50 lbs. has to be supported, and that consisting of a remarkably delicate adipose matter. The head is bare, and the horns semicircular, and bending downwards. The ears are pendulous, and the face free from wool. The throat is covered with long shaggy hair, projecting almost as far forward as its mouth. The posterior parts are woolly, and the tail reaches nearly to the fetlock joint, which it would do if it did not turn upwards at its pointed tip.

THE FAT-RUMPED BREEDS OF SHEEP.

In this country we have far less difficulty in realizing a fat-*rumped* than a fat-*tailed* breed of sheep; for our own Leicesters are often very amazing instances of "ugly fat" deposits on the rump. In these the tail is lost in fat, and that which, in the cases before instanced, seem to be calculated to carry the extraneous supply of fuel food for the animal, is now lost in the accumulation of the same material in another part.

The *Tartarian sheep* is a type of this class. It is hornless, and as thin and gaunt in its general contour as the difference can possibly be. Its head much resembles the former, and its horns are of a similar kind. It turns downwards, and describes two-thirds of a circle. Its ears are also pendulous, and reach to the bottom of the jaw. Its shoulders are small and thin; but its head somewhat deep but not forward. Behind the shoulders it is small, and considerably deficient of flesh on the sides and ribs. The leg is also short and thin, as regards its muscular parts; but the whole vital power of the animal seems to tend to the production of the perfect cushions of fat by the sides of the tail, which absolutely bury it. The female has smaller horns, or is altogether deficient of them.

The colour varies like those of the African races. The race is usually roan, or of a light brown, mixed cast, while the ewe is black. The wool is somewhat short, and fine in quality. The weight of fat about the rump will be nearly as much as that of the fattest tailed Syrian, viz., thirty to forty pounds.

It should be borne in mind that the fat of the rump of these sheep is similar to that of the tail of the fat-tailed, and different from the fat

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of our mutton. On this Dr. Anderson appropriately observes:—"There is no meat on the body of our common breeds of European sheep which in many of its distinguishing characteristics resembles that of the tail of the broad-tailed sheep of the southern parts of Africa or Asia; far less does any part of the flesh of our mutton bear the smallest similitude to that of the hemispherical bumps on the bullocks of the Steatopagu breed, which so much abounds in the northern part of Asia. The bumps are called fat, because they resemble that substance in colour and consistency more than the lean of mutton, but it differs externally from the fat that is found on any part of the body of our sheep."

The *Persian Hornless* sheep is another variety of fat-rumped sheep, which is very different from all the kinds we have before described. The fine head and neck are as destitute of wool as of horns; and the ears, though pendulous, are short. The carcass is both deeper and more cylindrical than those of any of the varieties hitherto named. The breast is deep and prominent, and well rounded in front. The body is deep, and not by any means defective behind the shoulders. The leg is small and thin; but the rumps are a cushion, or rather a double cushion of fat, so that the small tail is nearly lost, and more resembles a head than a tail. The wool is short, but far from being fine, and is of a milky whiteness. It will weigh 16 to 20 lbs. per quarter, and is far from being a despicable kind of sheep.

There is incidental mention of the rump in the Mosaical sacrifice. Moses took the fat and the rump and all the fat that was upon the inwards. This Youatt quotes as indicative of the Jewish sheep being of the fat-rumped variety. But this is by no means conclusive. There were six parts of the ram to be burnt:—1st, the fat; 2nd, the rump; 3rd, the fat of the inwards; 4th, the caul above the liver; 5th, the two kidneys and the fat that is upon them; and 6th, the right shoulder (Exod. xxix. 22).

Now it appears to us that these directions rather oppose than support the conclusion that the rump was covered with fat. If so, why did they not specify the fat covering the rump, in the same manner as covering the kidneys? and if the mention of the rump along with other fat parts is to convey the idea that it was fat also, the mention of the shoulder would convey the same impression, which would not be at all accurate. The assumption that the fat was accumulated on the rump and legs would operate in favour of its also being equally deposited on the shoulder. We imagine that all that was intended was, that all the *best parts* were to be sacrificed in the

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"ram of consecration." The *internal* accumulation of fat, too, is opposed to much *external* formation.

Nearly allied to the fat-rumped sheep are the *short-tailed sheep* of Zetland and the Orkneys. These are extremely small and hardy, and will subsist on almost any kind of vegetation, however poor. In seasons of great want they are said to eat even dried fish. They generally run wild, and have a kind of wool mixed with hair. In their state of wildness, starvation, and neglect, the wool is not even shorn, but plucked off their backs—an operation certainly rendered less objectionable by the tendency of the wool to *moult* and fall off about Midsummer. The weight of the fleece will not be above two or three pounds, and the carcass will not often exceed thirty pounds. The method of catching them is to hunt them down with dogs.

This breed is not mentioned for the sake of a lengthened description, but rather to show the gradations between one class of animals and another.

Having disposed of the classes of *mutton-producing foreign sheep*, a very important class now demands our attention.

THE WOOL-PRODUCING BREEDS OF FOREIGN SHEEP.

Wool is valuable in proportion to its length, or the fineness of its texture. Hence animals with fleeces the most opposite in character will be generally held in estimation for the purposes of manufacture; the long wool for making worsted stuffs, blankets, and carpets; and the short for making broadcloths, merinos, and habits. By far the foremost, however, of all the foreign breeds of sheep, for the purposes of wool producing, is the

Merino Spanish sheep.—This is a brced so far superior to all others of the ovine race, for the production of that peculiarly fine wool so much in demand for the manufacture of our most costly cloths, that its breeding and culture have been objects of the first attention in almost every quarter of the globe; and there is no country where these efforts have better succeeded than in Spain, except, perhaps, in Australia, where the breed has been brought to the highest perfection; and to which we shall hereafter direct attention.

The origin of the Merino breed is involved in the greatest obscurity. By some it is supposed to have been introduced from Barbary, possibly about the period of the irruptions of the Saracens. But this is merely conjecture. Spain, however, has long been celebrated for her wool. The Bætis, or Guadalquiver, as we shall have occasion afterwards to mention in speaking of dyeing, was said to have grey or

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brown wool; and Pliny says it had a red covering. Columella speaks of a cross made by his uncle, a farmer or herdsman of Bætica, in

THE MERINO SHEEP.

crossing the Tarentine breed with some "wild rams of an extraordinary colour, which had been brought from Africa to Cadiz"—(lib. vii). The Italian shepherds seem to have migrated to Spain, as may be inferred from Corydon's excuse to his friend Melibœus, where he says that, but for the generous bounty of which he speaks—

> "There had I now been doomed to tend for hire
> Iberian flocks, or else of want expire."

Martial, who praises the wool of Bætica, was by birth a Spaniard; and Strabo says of the wool of Turdentia,—"Much cloth used formerly to come to this country. Now also fleeces come from it more than from Coraxi, and they are exceedingly beautiful, so that rams for breeding are sold for a talent each. Also the *fine webs* are very famous, which are made by the Saltatiæ."

It is quite evident that Spain has long been celebrated for its

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wools; and this partly arises from the peculiarity of its climate, and more possibly from the care bestowed by its shepherds in the breeding, management, and feeding of their flocks. That country no longer manufactures cloth, nor does she supply even the whole of the wool, for which she is so peculiarly favoured.

The Merino is altogether a remarkable sheep. Its form is neither symmetrical in itself, nor indicative of being of any value as a mutton-producing animal. It is destitute of muscle. The legs and shoulders are thin, and the space behind the shoulders almost literally bare. The head is a prominent part of the animal, while the thick spiral horns, standing *sideways*, renders the animal at once unique as regards the horn, and ill-shapen as regards the carcass, if we take English perfection as the proper standard. *The whole vital energies of the sheep are concentrated in the production of the finest and most delicate quality of wool.* The female is hornless, but produces wool as valuable, though in less quantities, than the male. The wool is so closely set, that it rather offends the English eye, and so abundant in yolk, that the outer surface is absolutely stiffened, and thus all dirty gravel, sand, and dust accumulate there, and form a sort of crust, which gives the animal a very singular appearance. The fleece usually weighs from three to five pounds, though the two shear wethers will sometimes have a fleece weighing from six to eight pounds. For this, and not for its carcass, the animal is especially valuable.

The mode of treating the Merinos in Spain—the *transhumantes*, as they are called, from their annual migrations from the high to the low lands in winter, and *vice versa*—is very peculiar. They feed in summer in the mountain ranges; and being most suited to a dry temperature, rather high than otherwise, they seem to thrive remarkably well on this pasture, which is by no means very fertile. On this they feed from the end of April till about October, when another weary march to the lowlands of Estremadura or Andalusia takes place. The ewes are put to the ram before they start, when at least six weeks travelling is before them, and they lamb at their destination in winter. They possess none of those qualities which the Englishman deems valuable in his sheep. Their milk, for the same reason as their flesh—the *tendency to secrete wool*—is both poor in quality and small in quantity; and many lambs are often slaughtered to enable the residue to obtain a sustenance. Though the lambs produced are seldom more than one at a time, fifty per cent. are often killed, in order that the milk of two mothers may be supplied to a single lamb. Possibly the annual migrations in Spain would render the animal less

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able to maintain its offspring; and travelling from five hundred to a thousand miles may be a bad preparative; but in Australia, and in Saxony, where the same migrating is not at work, they are anything but good milkers. The migration is now almost become national. The Spanish law provides common pasture, under restrictions and limitations, as well as legal protection to the moving flock; and though by this custom the loss is immense, it is still persevered in.

Each flock is divided into about a thousand, and is under the care of two shepherds and their dogs—the one called a *Mayoral*, and the other a *Gagal*. These convey them on their tedious journeys, sleeping on the ground by night on their way, and at their destination providing themselves with huts to protect them from the inclemency of the weather; though the climate is so mild and genial, that the country appears fitted by heaven for being the greatest and finest in the world; but despotism and priestcraft keep her amongst the very lowest of nations in wealth and intelligence.

Ten millions of sheep are at a certain time of the year driven at the rate of twenty miles per day at one journey, and the ewes in lamb. The sheep seem to know the period of this change of pasture instinctively—possibly the older sheep from habit,—and begin to show signs of satisfaction when they approach their own pasture, and of uneasiness when the period of return arrives. In the April return from their lowland pasture to the mountains where they feed in summer, the annual shearing takes place, and is a very bustling operation. Large buildings are provided in the line of their march; and the sheep are crowded into them on their way preparatory to their being shorn. This heats the sheep, and superinduces very profuse perspiration. It also assists the separation of the fleece, which, from its closeness, is difficult to shear, and which, from its shortness, requires to be cut as closely as possible. From a hundred to two hundred shearers commence at once; and an entire flock of a thousand sheep is shorn in a single day. The wool, when cut, is separated into five divisions; the first quality commencing at the top of the shoulders, and taking the rump and saddle; the second occupies the thigh and the space behind the neck; the third the belly; and the remainder the tail, the cheeks, the lower part of the legs, and the breast.

The *Saxon Merino* differs from the Spanish only in the mode of its treatment (not being migratory), and in the extra care with which the animals are tended. They are protected from the weather by clothing and shelter, are fed inside buildings provided specially for their use, and are regarded as part of the shepherd's family. In summer they

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are allowed to depasture in the open air during the day-time, but are certainly either clothed or kept up in sheds at night. This practice is at least as old as Columella. The Tarentine sheep were covered with skins, and called "soft" sheep, in reference, doubtless, to the effect the covering produced on the wool. Columella insists on the care it was necessary to bestow on these sheep as regarded food, warmth, and cleanliness. He says they were principally brought up in the house. In his days the same practice was common in Spain, and followed by the Roman settlers in the north of Gaul.

The winter food of the Saxon Merinos consists of hay, or different kinds of straw, supplied at various times of the day, and oats. The rams are carefully fed with oats for fourteen days before being put to the ewes; and eighty of the latter are allowed to one of the former. Equal care is bestowed on the lambs. A shepherd watches the ewes, which are all housed; and every lamb when dropped is removed with its mother, as soon as it is suckled, into a separate pen. The best and freshest food is given to the mother till the lamb is trained to eat.

No attempts are made to improve the flock. They are kept only for the wool; and purity of breed is the great desideratum. If any change takes place in the animal's characteristics, that change is sure to be injurious to its wool-producing tendency, either in regard to its quantity, or, what is even of more consequence, its quality.

As may be expected, the Saxon wool is the finest in the world; and it is evident that this extra care is well remunerated by the increased value of the material produced. They are unable, however, to overcome two peculiarities of the Merino, unfavourable to its history, where it is found. It is both liable to suffer, and even die, during the period of parturition, and is very subject to the abortion of its young. Care may do much; but a larger per centage of the flock of Merinos will suffer more from these causes than almost any other. This is a drawback upon the profit of the shepherd, or owner; but it is one for which the price of the wool will at any time compensate him. The Saxon wool sells at a price far beyond that even of the Spanish Merino; for, large as is the sum obtained for the latter (varying from 3s. to 4s. per lb.), the Saxon Merino is worth from 4s. 6d. to 5s. 3d. per lb.

The care of the Saxon Merinos is, however, one of attention and housing, rather than of food. To confine the English sheep on dry straw, dependent on a grain of corn left by the thrasher, let it be changed ever so often, or supplied ever so fresh, would only be to subject the animal to starvation and death; but shelter, warmth, and

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dry atmosphere are of more consequence to the Merino and his wool even than superior food.

Frequent attempts have been made to introduce the Merino into England. The first was made by George the Third, who took a great interest in the naturalisation of the Merino into England, to render her as independent of foreign countries, as far as regarded the wools of luxury, as she was with respect to the long wools of economy. But the experiments altogether failed. The losses were so great as not to be compensated by the extra value of the wool; while the absence of mutton would be a defect to which the English flesh-eating people would never submit. They preferred the fine and short wool of the Down, though far inferior, because it was accompanied by a superior class of mutton. The wool did not, however, degenerate; but the low land pastures of England, with their rich luxuriant grasses and succulent herbage, were too much for the Merino. These experiments were made in 1791, from a very fine flock presented to His Majesty. They seemed even to become less hardy than when they were imported.

It is to be regretted that this trial was not made in some of the wolds of Yorkshire or Lincolnshire, so as to give the animal that peculiar dry and unsucculent pasturage which it seems to require. Shed-feeding in winter, on inferior food, seems to be the kind of treatment indicated by the habits of these sheep.

Another attempt was more recently made by the Marquis of Breadalbane. Here he adopted the most careful and skilful management. The sheep were housed, or shedded, at periods when other breeds were exposed. They had excellent keeping, perhaps an error arising from the endeavour to increase the mutton; but the three shear wethers could not be made to exceed 64 lbs. each, except in very rare cases, and these not more than 72 lbs., while less pampered breeds would realize nearly double these amounts of weight, and at an earlier period of their lives. Their constitutions appeared too weak for this exposed and moist climate.

The late Lord Western devoted considerable time and attention to the breeding of Merinos in this country. His chief efforts were directed to crossing with the Leicester; but while the frame and mutton of the animals seemed to improve, the wool in some degree varied. He obtained it, however, of a beautiful texture, and of great length. The writer saw some at least from twelve to fifteen inches long, which possessed a texture almost as fine and delicate as silk. It had, however, a peculiar knotted appearance.

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An experienced and well-known agriculturist has favoured us with the following remarks on the Merino breed, which are worthy of the deepest consideration:—

"Although the importance of this breed of sheep, at the first glance, may not be fully recognised (for they are little known, and since the deaths of Lord Western and Mrs. Dorien have only been bred by Mr. Sturgeon of Grays), a little reflection will shew that it can hardly be overrated; for it is this which supplies our colonists at the Cape and Australia with the fresh blood which the nature of their climate renders periodically necessary.

"In the latter colony, gold may now absorb the frenzied attention of its population; but we must not forget that wool was the foundation of its rapid growth and prosperity, nor overlook its importance in finding employment for our ships and our manufacturing artizans by its successful cultivation.

"The Merino sheep is more distinguished for the quality of its wool than for other excellences. It presents a very peculiar appearance,—the face is beautifully soft and white; a little rise is perceptible on the points of the shoulders, as also on the back of the head; the knees incline slightly inwards, and the legs are covered with wool to the feet. The rams are horned, and the ewes almost invariably polled. The Merinos exhibit a remarkable tendency to throw out horn, their feet growing so rapidly that it is necessary to use the knife where they are not travelled much,—a provision of Nature seemingly to fit them for the migratory life their ancestors led. They endure wet weather or low situations with difficulty; but in the hot weather no sheep appear in better condition."

Mr. Sturgeon states that our climate seems to affect both the carcass and wool of imported sheep. He lately showed some tups which were bred from sheep selected in Silesia by his son, from the flocks of Prince Tichnowsky and Baron Bartenstein; and we noticed that the wool was nearly double the length of that produced by either the sire or the dam.

Nature appears to refuse to give the *finest* wool to the *largest* carcass; but Mr. Sturgeon's exertions for the last thirty years seem to have induced some relaxation in his favour; for on sheep that would, if fatted, weigh 10 or 12 stones, we find a quality of wool that can hardly be surpassed; and such sheep as (possessing the requisites of size and form, *and the constitution peculiar to English-bred animals*) must always be in request by our colonists, and have

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the preference over the German-bred animals, which seem to want the size, form, constitution, and length of staple they are sent to restore.

Mr. Sturgeon's Merinos are the result of an amalgamation of the flock of his late Majesty George the Third with those of the late Lord Western and Mrs. Dorien, both of whose flocks he purchased at their deaths. To these he has added the best blood of the continent; and now, we are assured, possesses such sheep as were never before bred in this country.

SHEEP-FARMING OF AUSTRALIA.

The growth of this wonderful colony, great as it has been, is now only commencing. Its importance has not as yet been duly estimated. It is not so much for its gold as its wool, that its success is intimately bound up with the mother country.

The first sheep introduced into the country were the Bengal—a species resembling the African race—long legged, gaunt, *hairy*, Argali-like animals, which, of course, were simply useful because they were better than none. Subsequently the New Leicester and Southdown sheep were introduced, and both kinds seemed to answer for the climate. The carcass did not deteriorate, as they do in Jamaica, and as described by Dr. Davy in a previous page; but the wool, in particular, was found to improve. Still there were only some six thousand sheep in the settlement in the first year of the present century. Shortly after this the Merinos were introduced, and soon became the established breed of the colony, simply because wool was more exportable than mutton.

In no country has the Merino sheep been more successful, or its qualities more fully developed. In 1813, there were 65,000 sheep in the colony; in 1828, 536,000; they now number at least twelve millions. The supply of wool, once so utterly insignificant, may now become the mainstay of our manufacturing prosperity. In 1807, only 245 lbs. were imported; in 1839, there were 10,128,774 lbs.; and now there are importations yearly of the value of £2,600,000.

The kind of sheep in Australia is the Saxon Merino; and the peculiarities of the climate, hot as it is and dry in some seasons, seem to be suited to the development of the fleece and general success in the breeding of an animal which in other regions incurs the greatest risks.

The progress of a flock in Southern and Western Australia is

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thus given by George Grey, Esq., some time Governor of Australia, and late captain of the 83rd regiment:—

In Western Australia, a settler, commencing with a flock of 100 ewes would have in five years, with ordinary management—

Ewes	180
Maiden ewes	56
Wethers	164
Ewe lambs	72
Wether lambs	72
Total	544—value £800.

But in Southern Australia, a settler, commencing with the same number, would have in five years—

Ewes	540
Maiden ewes	168
Wethers	492
Ewe lambs	216
Wether lambs	216
Total	1632—value £2400.

This gives a balance in favour of Southern Australia of £1600.

To the class of jobbers called OVERLANDERS, the interior districts of Australia are indebted for their flocks and their means of success. A district soon becomes overstocked. A successful flock more than doubles itself in two years, and thus will occupy double the share of land; and at the end of eight years, sixteen times the space originally occupied. A colony is formed, a tract of favourable land opens out, and immediately the zeal and energy of these neck-or-nought men seem to be developed. Mr. Grey thus graphically describes the effects produced on a district by the Overlanders:—

"The first individual who opens a market which no Overlander has visited, rides into the district an ill-clothed, way-worn traveller. The residents do not at first cast a glance upon him, till presently it is noised about that an overland party has arrived, that a route from the stock districts has been formed, and that the incalculable advantage of abundance of cattle at a cheap rate has been secured. Landed property instantaneously rises, perhaps to double it had been a few hours before; numbers of persons find themselves suddenly made

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rich without an exertion on their own part; and from all parts individuals flock to seek their benefactor."

The Overlander sometimes invests £13,000 in stock, sets off over hill and dale, crossing river and swamp, wood and rock, to find a market; and sometimes he takes 8000 to 12,000 sheep to find a road to a source of demand, over roads untrenched or untrodden, except by the kangaroo and the "wraggle."

The stock pastures or stations consist usually of several shepherds, having each charge of 800 sheep. A wooden box is erected, and this is left in charge of a watcher, who cooks and provides the means of comfort on the shepherd's return at night; and then takes his turn of watcher of the flock, whilst the latter is sleeping. Sometimes two flocks are situated at one station, so that one watcher answers for two shepherds.

The life of a shepherd is an idle one, and somewhat disreputable. It is the lowest grade of employment, though he gets £25 to £30 per annum and his keep, which consists chiefly of salt provisions. These are the wages paid in ordinary times; but in the present state of things they are sometimes more than doubled or even trebled. During the day the shepherd wanders with his dogs, and allows his sheep to graze freely, but keeps them together, and drives them up at sunset to the station, to give them again in charge of the watcher. By one or the other they are daily counted in and out, and also by the general overseer, who often superintends several stations, once or twice a-week. The sheep are kept in inclosures of rude hurdles, and surrounded by the Scotch colly dogs, which instantly give an alarm if any of the wraggles or wild dogs approach, as they are the only enemies of the sheep in this favoured country, which is free from the ravages of wolves and ordinary wild beasts.

The two great "harvests" of the Australian sheep farmers are the *lambing* season and the *clip*.

In the *lambing* season, the shepherd usually obtains a bonus for every lamb he rears; and sometimes a prize is awarded to him who rears the greatest number. The lambs seldom sustain injury from anything but wet. If a rainy season ensues, many of them will die; for the Merino appears to suffer in lambing more than any other breed, and shelter for such a number of animals is out of the question.

The *clipping* season is, however, after all, the most important. The wool makes the money. The first operation is the washing. It is usually performed by damming up a small stream until it becomes

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a pool, which is by far the best arrangement; but as they cannot always be available, a still pool is sometimes selected. This soon becomes foul and dirty, and hence the complaint of the bad colour of much of the Australian wool. In other cases, the water is simply poured upon the animals from the mouth of a can held above them, or from a spout; and this is said to clean the wool very effectively, but to be somewhat injurious in some cases to the animal.

The clipping is mostly done by travelling labourers, who are paid by the piece. They have from three shillings to four shillings per score, with ample provisions of the most liberal kind; and usually from fifty to eighty sheep per day are easily clipped by expert shearers. Sometimes the shearer has to purchase his food of the sheep-master, and has a consideration in the price paid for the work. Shearers, however, are now difficult to obtain.

The overseer's business is to stand in a building, and enter the wool-shed to keep account, and particularly to see that the sheep are shorn bare.

There are two sorts of wool, both short, but one part shorter than the rest, called the bottom wool. This is easily run over, and when neglected is a great deterioration of the value of the wool.

The packing, folding, &c., next occupy the farmer's attention; and a dray with eight or ten oxen is despatched, with the most trustworthy servant in the establishment, to take it to the neighbouring town, perhaps Sidney—a most difficult and at times laborious journey—sometimes from 250 to 350 miles. The wool is carried in a wide vehicle, called the "bush dray," with low wheels and sides, and a pole resembling the wagons of the Wolds of Yorkshire. Iron pegs are placed on the sides of the cart to keep the packs steady. A waterproof cover is thrown over the packs. Two men usually attend it, and carry with them all the necessary provisions for the journey, and encamp under it at night, after seeing the cattle obtain the best pasturage at hand. Several sheep-masters often send their respective teams in company, for the sake of mutual protection; and they travel from twelve to fifteen miles per day. It is often two or three months before the men and bullocks return; and then the bush-wain is loaded with grocery and provisions.

The climate of Australia, though so fine, is hot; and incalculable suffering often ensues from want of rain. To an European, the scenes which sometimes occur are beyond conception. Mr. John Gould, in speaking of the climate of Australia, thus describes the occasional want of rain:—

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"The thermometer frequently rises to 110°, 120°, and even 130° in the shade; and this high temperature is not unfrequently increased by the hot winds which sweep over the country from the north, and which indicate most strongly the parched and heated nature of the interior. Unlike other hot countries, this great heat and dryness is unaccompanied by night dews; and the falls of rain being uncertain and irregular, a drought of many months' duration sometimes occurs, during which the rivers and lagoons are dried up, and the land becomes a parched waste. Vegetation is burnt up, and famine spreads destruction on every side. It is easier for imagination to conceive than the pen to depict the horrors of so dreadful a visitation. The indigenous animals and birds retire to the mountains, or to more distant regions, exempt from its influence. Thousands of sheep and oxen perish; bullocks are seen dead by the roadside, or in dried up water-holes, to which, in the hope of relief, they had dragged themselves, there to fall and die. Trees are cut down for the sake of the twigs as fodder; the flocks are driven to the mountains, in the hope that water may there be found; and every effort is made to avert the impending ruin; but, in spite of all that can be done, the loss is extreme."

The three great drawbacks to Australian sheep farming are the *catarrh*, the *rot*, and the *scab*.

The *catarrh* is a disease unknown in this country, and therefore demands more attention than the other two, which are better known. It is an affection of the liver and stomach, and usually attacks the sheep in a severe drought. The animal shows symptoms of uneasiness, the nostrils discharge a dark mucus, the strength and appetite fail, and in a day or two the animal dies in great agony. This is only a beginning. The same course is at work, and hundreds, and even thousands, fall victims to the plague before it can be arrested. Indeed it seldom is arrested, until a change of weather—a refreshing rain—re-animates the parched-up ground.

The carcasses must be skinned and boiled down for the tallow, and extra servants are engaged to perform the unwelcome task. The skins are dried in the sun. Many a time the flockmaster is nearly ruined; for when part die, the rest are so enfeebled and emaciated, that their wool is of little value. In one year, and that possibly a bad one, as many as 70,000, according to the testimony of Mr. Hood, were carried off; and as the drought and catarrh often or invariably occur at the same time, the lambs are sometimes actually destroyed to prevent this last drain on the vital resources of the mother, and

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thus make her extinction certain. In these cases nobody will have the least remnant of an infected flock; and death and burning, to prevent the plague, is sometimes inevitable. The only alternative is that of boiling for the tallow, a process which has been of late pretty extensively adopted. The tallow from sheep taken in health, and so boiled down, is about one-third of its dead weight; and some establishments are conducted on the plan of carrying out the whole process, at a definite price per head. Ninepence per sheep is the price for the whole operation, from the slaughtering to the making the tallow marketable, the offal and refuse being the property of the boiler. If the wool is also preserved and made ready for market, threepence more will be required; so that the tallow and wool will be taken and made ready for the market, from the living animals, for one shilling per head.

The fluctuations of price which take place in Australia are necessarily very great. After a season of catarrh and loss, they will advance to the prices before indicated; while they have been as low, in a period of abundance and depression (1841 for instance), as eight to ten shillings per head.

The great desideratum in Australia is the presence of water sufficient to enable the flockmaster to wash his sheep; for, though a very small pent-up stream will be sufficient, if it is *running*, still pool-washing in this country is one very difficult and very prodigal of water. The settler will do well, therefore, to get on the banks of a stream, if possible, at once capable of washing his sheep or of transporting his wool, with sufficiency of high land to keep his flock secure from the floods of the rainy season. A small stream is not to be depended on, during the intense droughts of this fine but variable climate.

The pasturage of Australia, being less rich and moist than in this country, is very favourable to the Merino. The absence of our severe winters also renders the climate and herbage uncommonly suitable to sheep, and to the Merinos in particular. It thus becomes worth while, in selecting new locations, to choose those where the box-wood and the apple flourish, provided there be also plenty of that one great indispensable element—*water*. If he finds the timber trees possessing bark of a contracted stringy character, the soil will be unprofitable, and especially unfavourable to sheep.

Many parties are disposed to check their propensity to emigrate to Australia, on account of the gold diggings rendering the prospects of the sheep-farmer unfavourable, especially in respect to the obtaining

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of servants for shepherds and sheep-shearers. That danger, however, is now passing away. The many disappointed diggers are now quite adequate to re-supply the drain which the first indications of the gold fever produced, and there need be little fear of obtaining hands in sufficient abundance.

We know an instance of a young gentleman, the son of a Scottish Writer to the Signet, who has a large sheep-farm close to the diggings; and he never, for the fifteen years he has been on that continent, was able to make so much money. He finds in the disappointed diggers (and in some cases these are reduced to a state of starvation), the most facile supply of hands, and he can obtain them on very moderate terms in any number he requires, either for sheep-tending or for managing tillage land; while his near proximity to the vast mart for his produce saves him the long carriage for what he sells dear in the shape of mutton, milk, butter, cheese, and flour. It is odd enough, that this young gentleman's first location was in the precise spot where the very busiest and most active search is being made for gold. His sheep-fold was once where the most successful and productive holes are being excavated; and when he dug for his original posts, wherewith to make the inclosure, fifteen years ago, he must have been within a few inches of the gold! But if he had found it, it is probable it would have been disregarded,—so foreign to his purpose was the mining for the yellow metal, and so improbable would have been the idea that it could exist there.

Much nearer was a friend and neighbour of the preceding adventurer of making the discovery ten years ago. In digging by the side of a rivulet (now the scene of a horde of washers), he found mixed with the soil a vast number of shining yellow scales and dust. He brought home a basket-full, and showed it to his friends; when he observed that it was a metal extremely like gold. This was the signal for general laughter; but he still maintained his determination to carry it to Sydney to be assayed when next his wool went to market. To this he received such a volley of ridicule, with threats of his being made a laughing-stock in the city, that he took the basket and emptied it upon the dung-heap.

Gold was not then suspected, though there were individuals who here and there anticipated the possibility of the present discoveries. A friend of the writer's had a relative, a ship captain, who, while his vessel was loading, took his gun inland and shot game. Amongst others happened to be a kind of a duck. This, when opened, had two pieces of yellow metal in its gizzard,—one a roundish piece like a

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marble, and the other a scale like a thumb nail. These he preserved, and had them examined in London, when both were pronounced to be gold. This was twelve years ago, and he then declared his conviction that gold would some day be found in that country.

Thus the Goshen of shepherds, has become an Havilah of gold, and a field for emigration far surpassing, all in all, any of the *El-Dorados* pictured by romance, or suggested even by the genii-lands of the "Arabian Nights."

Having glanced at the principal features of the mutton and wool-producing races of sheep above, it will be necessary to notice those miscellaneous kinds, which, either from their prevalence or their peculiarities, fill up the links in the chain between the Argali and the Leicester—between the small Welsh mountaineer and the large Lincoln or Teeswater; found in some one or other of the countries of the earth. We might take, for instance, the regular gradations as follows, from the Argali to the New Leicester—these being the nearest approach to the goat. The following will be a somewhat accurate scale:—

1. Argali.
2. Barbary Sheep.
3. Cape Sheep.
4. Merino.
5. Welsh Mountain Sheep.
6. Shetland Short-tailed Sheep.
7. Blackfaced Highland Sheep.
8. Cheviot Sheep.
9. Southdown Sheep.
10. Dorset Sheep.
11. Cotswold Sheep.
12. Old Leicester Sheep.
13. New Leicester Sheep.

The gradations are these:—

The *Argali* has hair, and circular side-expanding horns, and short tail.

The *Barbary* sheep has less horns, larger tail, short hair on the posterior, and wool-like hair on the neck and breast. To this breed subsequent allusion will be made.

The *Cape* sheep has a downward drooping horn, a mixture of hair and wool, and a cushion of fat on the rump; the tail is small and almost lost.

The *Merino*, as we have seen, has side spiral horns, like the Argali; short but fine wool, long pendent tail, and the breed may be

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considered as a step in the refining of the hair and wool of the Cape sheep.

The *Welsh* are exceedingly diminutive sheep, with short but coarse wool, horns arched upwards, light and wrinkled, with long pendent tail.

The *Shetland* sheep ought for general conformation to have preceded these. The horns are upright and more tapering, the wool shorter and finer; but the long tail gone, and more resembling the Argali and the Cape sheep.

The *Blackfaced* mug has large spiral horns, partly upright, partly proceeding sideways, long hair-like wool, long bushy tail, and of larger size.

The *Cheviot* has a compacter frame, shorter and thicker-set wool, and deposits fat externally—a peculiarity lost since the Cape sheep was referred to. It has lost its horns.

The *Southdown* has become more square and compact. He has lost his horns and wild habits, but is still active. His wool is short and fine.

The *Dorset* has larger concave-tapering and side spiral horns, external deposits of fat, long tail, but deep-formed and quiet.

The *Cotswold* has no horns; ears slightly pendent; abundance of thick-set long wool, and large heavy body.

The *Old Leicester* has no horns; large in size; full of wool; deposits mutton on the back and side; very dull and quiet; and has lost almost all traces of the Argali.

The *New Leicester* is a step in advance in the same direction; slow, quiet, hornless; deep in its chest; round-made in the sides; full behind the shoulders, and approaching a tube in shape,—as far removed from the appearance of the Argali as possible.

For the purpose of making out a little more fully the general features we have mentioned (the links as it were in the chain of connection), the description of a few more varieties amongst foreign sheep will be necessary.

The *Barbary* sheep has been partially described. It has high withers, like those of a cameleopard, the belly, hind legs, and thighs being covered with hair or fur. Its flanks are hollow. The hair about the throat and breast is very long, and the horns, though small, are bent backwards. The ears, like most of the African varieties of sheep, are decidedly pendulous. The tail is long and slender, and rather hairy towards the extremity, somewhat like that of a cow.

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The throat and dewlap are pouched and pendulous, and convey the idea of loose and flabby as well as coarse flesh. It is slow and powerless in its efforts, as if it felt itself a degraded animal, different alike from the agile Argali or the stately Highlander—from the mild and patient Southdown, or the nimble and gay Merino.

The *French* sheep, in some respects, resembles the Merino, but is deficient in many of its peculiar characteristics. Though some of the varieties have doubtless traces of Merino blood, and are in some respects managed like them, they are in other respects very dissimilar. They have no horns. The neck and legs are covered with a coarse hairy wool, and the wool of the rest of the body is not by any means fine, nor gracefully curled, but rather straight, like hair. Their colour is always white. These are the *moutons de Picardie*. Many of the French varieties are migratory, like the Spanish Merinos. In May they emigrate for the low countries in the south of France, particularly for Languedoc. These migrate to the Alpine range, and are on that account led by trained goats kept for that purpose. The shepherds, like the Spanish, have about one thousand in a flock, with one dog, and a troop of asses to carry provisions and tents for the mountain summer quarters. The goats have bells to their necks, which the sheep soon learn to follow, and are completely at the command and obey the directions of the shepherd.

These migrations are said to influence the quality of the wool. But the fact is otherwise. For it is doubtless the climate to which the improvement in the texture of the wool is attributable. Though the sheep of southern France are hornless, they have fine wool, of a close frizzled texture, and nearly resembling that of the Merino. The Merinos in France have not been altogether successful; for though separate and individual experiments have been now and then favourable, they seem to be more suited to a warmer climate, and Spain seems to be the especial European home of the Merinos.

The *Iceland* sheep are noticed because of the peculiarity of their horns. They usually—the rams in particular—have three horns. Two bending downwards, and nearly semi-circular, the other rising out of the middle of the forehead, tending upwards, and slightly forwards. They sometimes, however, have a perfect forest; and instances are mentioned where as many as eight horns have grown from the head of a single animal,—and this, while the cattle are *hornless*, is a remarkable circumstance.

This kind of sheep is small, and covered with long hairy wool, but with a bare tail. He is a hardy active animal, and feeds in droves,

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crowding together in snow-storms, or taking shelter in holes of the rocks or mountains, and often perishing from hunger. Like the Shetland sheep, they will eat dry or frozen fish, and in seasons of extreme pinching, they will even gnaw the bones after they have devoured the flesh.

For milk, as well as for their warm fleece, these patient and hardy animals are a great boon to the poor snow-covered Icelanders. The wool forms the material of the long hair-like articles before described, and also the under covering of fine downy wool. The colour is brown, or approaching to black—a rule the converse of what usually happens in a cold climate. Wild animals are generally white, during winter, in snow-covered countries; but domesticated ones are subject to a different law, and are often of other colours. The former have the colour of nature, to protect them from the far-seeing eye of their pursuer; while the latter have a diverse one, to render them more easily recognizable by their protectors.

The *Tunis* sheep is the best wool-bearing sheep on the African continent; and if we can consider the manufacture of field caps as indicative of the quality of the wool, it may be said to be at least capable of being turned to good account.

The Tunis sheep has been exported to North America, and there it will sometimes weigh as much as 183 lbs., and show symptoms of depositing fat on the saddles, shoulders, and legs. The African mind, however, is slow, either at originality or adopting any improvements; and it is not likely that they will take place to any considerable extent, until a far greater amount of civilization is imparted.

The energy of mind consequent upon Christian institutions is the only certain lever which can ever be successfully applied to the African temperament, in the promotion of great social objects.

CHAPTER III.

HISTORY OF THE BRITISH SHEEP.

In a subsequent chapter on the woollen trade, the British sheep and its history have to be necessarily interwoven; so that the present chapter will only give an outline of the history of the sheep. Indeed the materials are so few that much more could not be easily collected. In the earliest record they have hardly assumed the impor-

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tance to be distinguished in descriptions of cattle; but historians generally take it for granted that the term "small cattle" invariably includes them. Herodotus may be quoted as an instance. Speaking of the Persians, he says of their feasts:—"the wealthy provide an ox, a horse, a camel, and an ass, roasted whole in furnaces, and the poor provide the *smaller* cattle;" evidently, by distinction, meaning sheep and goats. Therefore when Cæsar spoke of the cattle of the ancient Britons it is probable that sheep were included.

Little is known about sheep till the Conquest, when an acre of land and four sheep were deemed equivalent. The wolves, which appear to have inhabited the ancient forsets in the Saxon period, were objects of extermination by that pastoral race. That they were not all destroyed is certain; nay, that the few left were preserved, probably as objects of chase, is equally true, as late as the reign of Stephen; for Corran Duke of Brittany granted to the abbey of Fores in Wenslydale, Yorkshire, "pasturage and grass in the adjoining forest; but reserved a proviso against using their mastiffs to drive away the wolves. In the Saxon period the sheep were valued at one shilling, until fourteen weeks after Easter, when it was probably fatter, from the grass having then sprung up, and would be of an increased value.

The Saxon chronicle incidentally mentions that a great and destructive epidemic prevailed, in 1041, amongst cattle and sheep; by which, with one that succeeded in 1125, most of them were destroyed. This was possibly a reason why the sheep became of a greater value. Towards the close of the reign of Henry I. they were worth 20s., and in the second Henry's reign 25s.

In 1387 the Hawstead farm in Sussex, containing 572 acres, had only 92 "muttons" and "10 score hoggerills," less than three hundred altogether,—a large stock of sheep, considering they grew no winter green food for their flocks at that period.

About this time there seem to have been several kinds of sheep in the country, which produced wool of very different values. In 1341, while the Cumberland and Westmoreland wools—doubtless those of the coarse mountain breeds—were worth only 10s. 1d. per stone, those of Salop—the fine short wools—were worth 5s.

Two years afterwards, 1343, we have a great variation in prices. The Shropshire is still at the top of the list, being £9 6s. 8d. per sack;—while the Cornwall wool—doubtless from another mountain or forest breed, possibly the original Dartmoor sheep—was worth less than half that money, viz., £4 per sack.

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The greatest impetus to sheep-farming in this country was doubtless the introduction of turnips. In 1684, Worlidge says "sheep fatten very well on turnips, which prove an excellent nourishment for them in hard winters when fodder is scarce; for they will not only eat the greens, but feed on the roots in the ground, and scoop them hollow even to the skin." "Ten acres," says he, "sown with clover and turnips, will feed as many sheep as one hundred acres would have done before."

Never had the pastoral and flesh-loving people of this country a better mode of securing, even from arable land, a supply of mutton, and which is by far the most plentiful at the period of winter, when fat or eatable mutton must, at an earlier period, have been a difficulty to obtain, and possibly only obtained at the expense of hay and corn.

Before this period, indeed, it was difficult to see how so many sheep could be kept alive in winter. Harrison, who wrote a century before Worlidge, says that some husbandmen possessed as many as 20,000 sheep, though an act had been previously passed restricting one man to the number of two thousand.

In 1662, according to the Berkeleyan MSS., the price of a "sheepe was VI.ss.;" and, according to that authority, in the time of Edward the First, "a fat sheepe was worth from XVII.d. to XX.d., a lambe X.d.;" "a weight of woll" in Richard the Second's time, (twenty-one pounds), "was V.s."

Distinctions between grass-fed and corn-fed sheep—winter and summer mutton—were made by Act of Parliament in 1314. It determined the price of a "corn-fed sheep." "A lambe" is spoken of as being worth X.d. or XII.d. in the reign of the first Richard.

The first energetic and general improvement of the sheep doubtless took place in the reign of Henry the Third. In 1699 there were said to be twelve millions of sheep in the country, and the carcass value of each was 7s. 4d. The fleece averaged about 10s. 4d.; and the boast of the writers of the period was, that "no country but England and Ireland, having a sward or turf, would bear sheep producing the wool of which the English draperies were made." They were willing to let the Spanish wool have the palm for the costly dresses of the Peer; but it was insignificant—"not above 9000 pieces of these Spanish cloths were sent abroad," and these were only for the "wear of the richer sort."

To the recent improvements of the Leicester and Southdown sheep we shall not here allude; for, though it is one of the most important epochs in the history of that animal connected with this country,

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they will be discussed under the head of each class of animals as they pass in review. In the meantime, we shall give (chiefly from Mr. M'Culloch) a tabular synopsis of the breeds of sheep in this country, with an epitomized outline of their peculiarities, habits, &c.

Mutton-producing Sheep.

	Wool.	Weight of fleece.	Mutton per qr.	Age when killed.
Black-faced Heath	Long	3	15	3½
Dorset	Short	3½	18	2
Wiltshire	Short	3	20	3
Southdown	Short	2½	18	2
Norfolk	Short	2	18	3½
Cheviot	Short	3	16	4½

The above are amongst those celebrated for either *quantity* or *quality* of mutton alone, and unincumbered with the other desiderata, the weight, value, or fineness of fleece. Such will be enumerated in the third list.

Wool-producing Sheep.

	Wool.	Weight of fleece.	Mutton per qr.	Age when killed.
Teeswater	Long	9	28	2
Romney Marsh	Long	8	22	2
Lincolnshire	Long	12	25	2
Ryeland	Short	2½	14	3½
Shropshire	Short	1¾	12	3½
Berkshire	Long	7	18	2½

The above are rather selected as examples than dogmatically laid down as specifically wool-producing; they all are used for mutton-growing, but the wool is a very important item in their value.

Sheep producing both Wool and Mutton.

	Wool.	Weight of fleece.	Mutton per qr.	Age when killed.
Leicesters	Long	8	22	1 to 2
Cotswold	Long	9	24	2
Dartmoor	Long	9	25	2
Exmoor	Long	6	16	2½
Bamboroughshire	Short—Long	6	18	3

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There are a few sub-varieties, which it is not necessary to mention here. The above will be found the leading descriptions of British sheep, and the further peculiar characteristics of each will be enumerated in the subsequent pages.

It may be asked—Are all these breeds either useful or necessary? Cannot they be consolidated, at least, into wold or down sheep for the higher lying dry land; so as to have heavy-carcassed and wooled sheep for the rich low lands, and mountain sheep for the high hills? To this question we are as yet scarcely able to give a certain answer; but it may be partially discussed in our chapter on feeding. There is often danger of loss from too hastily either introducing or displacing the breeds from one district to another;—the new seldom succeed, the old have generally to be replaced.

CHAPTER IV.

WOOL-PRODUCING BREEDS.

Wool is a product common nearly to the whole race of sheep, but quite indispensable to the British sheep; for though some of the Africans may be said to have a coat more resembling hair than wool, there is no dispute as to any breed known in these islands being distinctly wool-bearing. But this country is also a flesh-eating country, and therefore the breeds which are purely wool-bearing—that is, those which leave little profit for the carcass—are in this country looked upon with disfavour; and it is rather when the two are more or less combined, that the farmer is anxious to possess them. Hence no kind of sheep bred in these islands are kept exclusively for their wool-bearing, and it may seem somewhat inappropriate to divide them in any such manner. The usual mode has been to divide the different breeds by the character of the wool they produced, as long-wooled, short-wooled, or middle-wooled. But this is a classification which does not convey definitely enough the distinctive peculiarities of the several breeds; and, for the first time, we have adopted a mode suitable to the kind of united produce they afford—their carcass and their coat—rather than make a division from the characteristics of one alone. Hence this chapter will treat of those breeds which are more celebrated for their wool than their mutton; the next of those being more valued for their meat than

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their covering; and the third will include those to which, perhaps, no predominance can be given to the one or the other.

Wool is the covering which Nature has given to the sheep in cold climates. It is a very bad conductor of heat, and is generally more or less liberally supplied, in proportion to the nature of the climate which the animals inhabit. It is in every way suitable to protect them. Light to carry, and warm in winter, curling in long and graceful folds, it easily covers the whole of the animal but the bony face when he lies down, so as to defy the influence of the most piercing blasts.

The distinction between hair and wool, which, as we have seen in the introduction, so easily run into each other, is not readily drawn except with the aid of the microscope; and this reveals the difference. They are both tubular and conical, but the wool is completely covered with serrations like the scales of a fish; while the hair is almost smooth, with a few scattered buds, which here and there issue from its sides.

The kinds of wool nearest resembling hair are those which have the fewest serrations. That which is the farthest from it, in appearance and character, has the greatest number. Youatt describes the wool, as shown by the microscope, as resembling "a succession of joints in the form of inverted cones, the apex of the superior one being received into the cup or half excavated base of the inferior one."

The structure of the wool may not inappropriately be termed precisely that of a fir-apple, only it possesses the cylindrical instead of the conical form; and an idea of the intensity of the serrations, in some of the different breeds, may be gathered for the annexed list:—

Merino . . .	2400	serrations	in an inch.
Saxony . . .	2720	,,	,,
Southdown . .	2080	,,	,,
Leicester . . .	1860	,,	,,
Cheviot . . .	1440	,,	,,
Norfolk . . .	1600	,,	,,
Wallachian . .	2080	,,	,,

To show the difference in structure between hair and wool, the following specimens are selected:—

Hair of the Wallachian Sheep, 1600 serrations in an inch.
Hair of the Tiger, covered with scales only.
Hair of the Seal, 6000 in an inch.
Hair of the Rabbit, cloudy irregularities only.

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These show at once the transition. The Wallachian sheep has hair more serrated than the Cheviot wool; the seal's hair has not half the number; while that of the tiger falls off to mere scales, which are totally lost in that of the rabbit.

On some parts of the sheep, however, the hair still predominates. The head and face are covered with it, and so are the legs; and in some breeds there seems to be a struggle even here.

The head of the Merino and the Wallachian sheep is covered with wool, at least at the top, while the face rarely retains its wool; and in some individuals of the Highland blackfaced breed, the backs of the legs are decidedly woolly, at least the hind legs. It is further remarkable that, in many breeds, while the wool is one colour the hair is another. The hairy portions of the face and legs of the Southdown are black or brown, while the wool is a milky white. The same features show themselves in the black-faced Highland breeds; as if climate had changed the colour, as well as the texture of the hair; while improvement has banished hair altogether from the faces of the purest new Leicesters, which have that part almost wholly bare.

So much for the physical conformation of the covering. Its chemical constituents show it to be intimately connected with the state of the soil. Vanquelin showed the yolk of wool to be essentially soap. It had animal oil, carbonate of potash, some lime, and was, indeed, exactly similar to the household soap, being composed of alkalies and an oil. But the wool itself is a very remarkable combination. It contains 98 per cent. of organic elements, and 2 per cent. of ash. The former consists of:—

Carbon	50·65
Hydrogen . . .	7·03
Nitrogen	17·71
Oxygen . . . }	24·61
Sulphur . . . }	
	100·00

The ash contains oxide of iron, sulphate of lime, phosphates of limes and magnesia; so that the sulphur is a very important element in the composition of wool. Some close statistical calculations have been made, which show that in the United Kingdom as many as five millions of pounds of sulphur are abstracted from the soil, which annually receives the sheep's wool. It is evident, therefore, that in order to have healthy animals, and a full produce of wool, there must

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be in the soil a sufficient supply of sulphur, of nitrogen, of potash, and of phosphorus, or the land will not enable the animal to secrete wool in perfection.

We now proceed to enumerate the principal wool-producing races of sheep. And first, the

Teeswater.—This is a remarkably long woolled and large breed of sheep—indeed, almost gigantic, for it will sometimes attain the enormous weight of 60 lbs. per quarter, or 240 lbs. weight. The fleece is peculiarly long, but somewhat coarse, very open, and thinly spread upon the back, and will weigh from 9 to 12 lbs. The Teeswater is a very old breed of sheep, and has for a very long period occupied the banks of the Tees. The same fertile valley, celebrated for its short-horn cattle, had doubtless a breed of sheep peculiar to itself, and they were no less indicative of its richness than its favoured cattle. It is, by nearly all writers, classed amongst the Lincoln sheep, and said to be an importation from thence. This is a most gratuitous assumption. The principality of Durham, celebrated for its native wild cattle and pigs, had doubtless its own peculiar breed of sheep and cattle, and the old Teeswater sheep had as much an habitat* in those rich pastures as the wild cattle of Branspeth, or the deer at Aukland Palace. The great peculiarity of the animal was its slow growth, and, at the same time, its large size and bone, its heavy, thin, and coarse wool. The length of the legs, in particular, gave it an imposing and somewhat ungainly appearance; while its thick skin made it a slow feeder, in any but its native pastures—the alluvial washings of many generations.

About twenty years ago the writer obtained two lambs, as a great favour, from a flock of pure Teeswaters, which had escaped the awful rot-year of 1829, by having access to a hay-stack, which preserved a flock of about twenty ewes, when nearly the whole race perished. The farmer forbad us having two of his best animals, and we had to be content with one. He selected another, so close in the pelt, and so unsymmetrical, that we decided in putting it off. The best was well kept, and astonished both ourselves and our visitors by its amazing size, and the great weight and quantity of its wool; but, just before shearing, it died a victim of wool and mutton. As it was skinned and not shorn, we had no mode of weighing the fleece, but it could not be lighter than 12 lbs. The load of fat, added to the

* Thoresby says, in 1703, "We passed the river Tees in a *fruitful country which produces very large sheep.*"

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envelope of heavy wool, seemed to have suffocated the animal. It was, however, exceedingly well kept.

The pure Teeswaters are now very scarce. They have all, more or less, been improved by crosses with the Leicesters. A more beautiful cross we never saw. The Leicester shortens the leg, and reduces the bone and coarse parts; but it must be confessed that it also shortens the wool. Still it so far keeps up the character of an open fleece, that it is very excellent in a point where the Leicester is somewhat deficient. The cross is always the substitution of a Leicester instead of a Teeswater ram, to a Teeswater flock of ewes. The finest animal shown at the Liverpool meeting of the Royal Agricultural Society was one of these crosses, and it was excluded because it was not a pure Leicester. So manifest was this said mistake, that "long-woolled" was a term soon after substituted for Leicester, so as to admit sheep of this description to compete.

As this class has taken the place of the Teeswater, it may not be amiss to give a description from memory of the ram, as he appeared when shown at Liverpool. He was large, but not coarse, with pure white, long and curly, but very open wool; the head thickly set, with short whitish hair; the ears thin and small, and destitute of wool; the back extremely broad, and though wider across in the middle, was also a considerable width over the shoulders and rump; it was all filled up with firm solid but elastic flesh and fat. The legs were short, but with sufficient bone to bear the great weight of the animal, and long enough to display his figure. With little less quality than the sheep of the Duke of Rutland (who, if we remember right, carried off the prize), he would certainly have made three of him, and weighed at least 40 lbs. per quarter. The largeness of his size did not at all prevent his being fine and delicate in his useless parts. The neck was broad, but small in circumference, and without pendulous matter; the breast very deep, but proportionately wide, so as to make him walk with his fore legs a great distance apart. His legs were more fleshy, and had more mutton than those of the Leicester, which have a stronger tendency to accumulate it on the saddles or loins. The eye was gentle, mild, and placid; and he seemed as perfect a specimen of a wool-bearing *sheep* as we could well imagine.

The Teeswater sheep answer best in small flocks, and dispersed over pastures with other stock, rather than being laid on very thick upon the ground. The ewes are remarkably prolific, and usually produce two and often three lambs at a birth. They are good mothers and excellent milkers; and though almost incapable of

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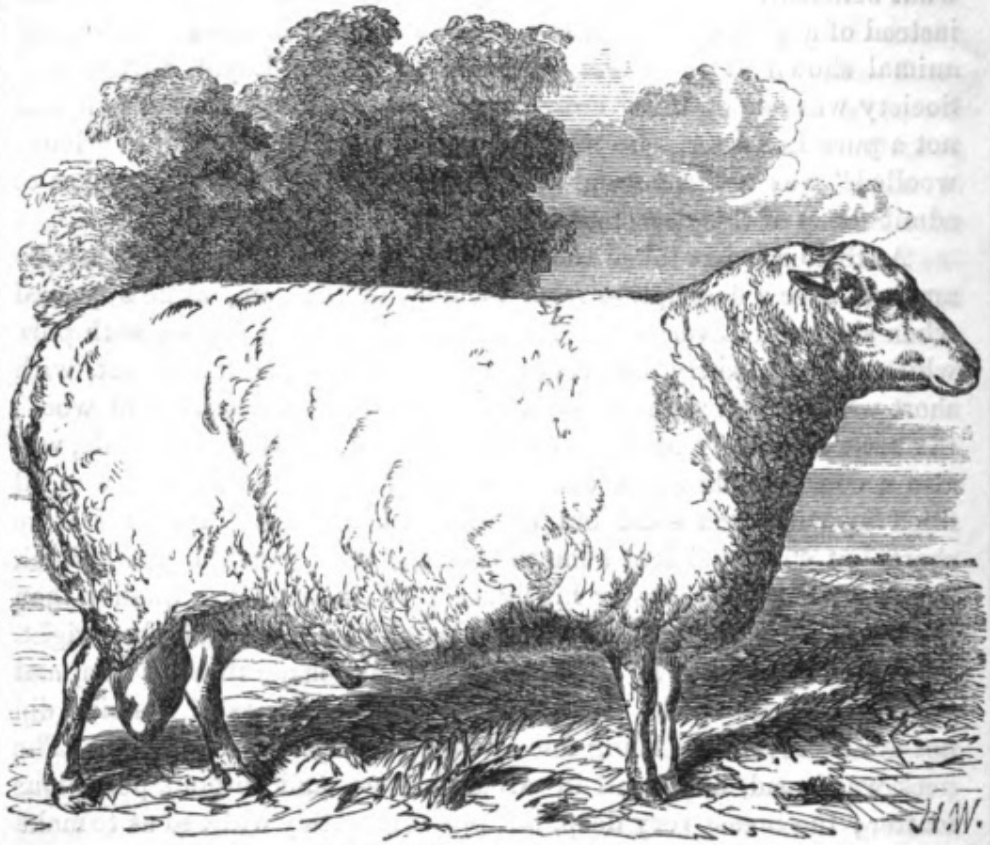
being made fat at one year old, they will weigh twenty-five to thirty pounds per quarter at the shear without difficulty.* The contest respecting large and small sheep on good land, and the most politic course for breeding and fatting, is by no means settled. We once heard a controversy terminate as follows between a Leicester and a Teeswater breeder:—"I like something to fill the eye," says the latter; "And I to fill the pocket," said the former. Possibly both were right.



ROMNEY MARSH OR KENTISH SHEEP.

The *Romney Marsh* or Kentish sheep is not, in its external characteristics, unlike the Teeswater. Like them it inhabits a locality to which they are peculiarly suited, and where it has pre-

* Mr. Tuke, in his Survey of the North Riding of Yorkshire, speaks of the Teeswater as being a part of the cross of nearly the whole North Riding of Yorkshire in his day, and gives some averaging instances of size and weight. He mentions Mr. Powley, of Thornton, steward, having a wether sheep, rising three years old, which weighed, when killed, 16 stones 11 lbs., or 59 lbs. per quarter nearly. It cut 6 inches of fat at the rib, and 4¾ inches on the rump.

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vailed for a great number of years. Sir Richard Phillips says of them in his day:—"The marsh lands of Kent, used for breeding sheep and fattening cattle, are 82,000 acres; of which Romney Marsh is 44,000." This had been reclaimed, at some time, from the sea. Sir Richard doubtless speaks of this breed when he says, "Four sheep will live on an acre of moderate land in summer and two in winter." The proportion is now quintupled, but the season is reversed. He then appears to lament the deterioration of the wool of the Romneys:—"The wool of sheep deteriorates as the sheep's carcass increases; hence for some years, owing to the enlargement of the English sheep by new breeds, the wool has become too long and coarse for fine cloths. Our long and coarse wool will not unite or produce the required substance for clothing."

The Romney Marsh sheep have a thick and large head, covered by a white woolly tuft. The forehead is broad and flat, the neck long and somewhat small for the size of the animal. The loin and back wide, but the sides flat and the belly deep. This exaggerates a naturally narrow and not very deep chest, so as to make it appear still less favourable. The legs, speaking of them in the sense of mutton, are large and broad; and the hind quarters generally are better developed than the face. The wool is long but fine, and very suitable for combing, and weighs about nine pounds per fleece. The mutton is good in quality, but the bone rather large. The weight is often 140 lbs.. and in some cases 150 or 160 lbs.

The race are peculiarly suited to the district. They can bear cold, wet, and eastern exposure. Formerly they were fed both winter and summer on grass and a little hay. They are seldom provided with shelter, and not unfrequently the lambs all die; and the ewes suffer from the cold and wet.

The Romney Marsh sheep were to Kent what the Teeswaters were to the counties of York and Durham; and what the ploughing up of the pasture in these counties has done for the Teeswaters, the improvements of Romney Marsh have done for the sheep peculiar to that district. The New Leicesters have invaded both, though they have displaced neither. There are few ordinary farmers in Cleveland, in the Dales, or in the county of Durham, whose flocks have not a sprinkling of the Teeswater; so there are few Kentish sheep which are not considered all the better for a considerable proportion of their native blood. Inured to the exposed district, suited in their development to the herbage, and their wool generally valued in the markets of continental manufacture, the men of Kent did right to

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keep a considerable amount of the native and hardy blood, suited to the climate as well as suited to the soil.

The infusion of Leicester blood effected a change, possibly for the better, on the old Romney Marsh sheep. It made a finer animal, reduced the quantity but not the quality of the wool, deepened the chest and increased its width, rounded the rib and lessened the bone generally, drew up the belly, and destroyed the tuft of hair on the top of the head; so that it made the sheep altogether a better feeding animal, without destroying its suitability to the soil and climate which it had inhabited for years.

With its other improvements, the cross had also the effect of reducing the period of bringing the animals to market. They were usually three years old before they were sold to the butcher for killing. They are now prime for the London market at two; and as this enables the feeder to turn over one-third more capital in sheep fattening, it is a great advantage, though he has possibly somewhat injured the hardihood of the animal; and it now requires a greater amount of care and skill for the bringing up of the lambs.

Nor has the wool been so far injured as to prevent the breed from being classed among those celebrated for this commodity. The Leicester may have shortened a little, and made the fleece closer set on the body; but it has neither destroyed its fine texture, nor prevented it from standing high in the estimation of the manufacturer.

The *Lincolnshire* sheep is one very much resembling, in many of its characteristics, the races we have just described; and it is very probable that these have had one common origin. To Teesdale we give the decided palm of priority; and it is the easiest thing imaginable to conceive how the constant incursions of the Picts and Scots into Durham and North Yorkshire induced, from time to time, the shepherds, or *sheepowners* more properly speaking, to drive their sheep *southward*, to avoid the destructive and marauding propensities of these semi-barbarous warfarers. The country could not be laid waste, time after time, without some such effect being produced; and the fact of all this class of sheep being on the eastern side of the island, is somewhat corroborative of what we have hinted.

These sheep stand on high and bony legs. They have smaller faces than the Romney Marsh sheep, and are altogether lighter in flesh. The carcass is large and coarse; the length from the head to the tail considerable, measuring in some cases four feet six or seven

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inches. This great length sometimes produces a hollowness of the back. The ribs are flattish, and not covered very thickly with flesh. The belly is deep, like the Romney Marsh sheep, and the shoulders so forward as almost to hide the breast. The neck is thick and large, from which hangs a deep and flabby dewlap. The skin is thick, and the flesh often grained. The hind quarters, like those of the Romneys, are full and fat, the tendency being to lay on fat at the rumps. The legs are fleshy and deep. The whole animal appears to be of a somewhat unshapely form, taking the standard of connoisseur taste as a criterion; but when the valued wool covers the animal, the whole of his imperfections are hid. He is one living square of wool, ranging from fifteen to eighteen inches long; and more wool is clipped from the Lincolnshire sheep *than from any English sheep whatever*. The fleece varies from the enormous weight of 12 to 14 lbs., which, when it sells for 15d. or 18d. per pound, is equal to the value of the whole carcass of some of the smaller breeds of sheep. Nor are they far behind in mutton. The wether will weigh from 30 to 35 lbs. per quarter, sinking the offal, or a nett weight of mutton per sheep of 140 lbs.

To the fens of Lincolnshire these sheep are peculiarly adapted, and, apart from their coarseness, are a most valuable breed.

The Old Lincoln sheep were what any other breed (useful in its day) was, before the magic touch of improvement visited it. They gained mutton slowly, but the wool made them valuable to the fen farmer. They required, however, good pasturage. The only part of Lincolnshire, where the old breed remains in its unmixed purity, is the rich eastern marshes, aud the low south-eastern portions of the county.

Here, as in the case of the Tees Valley and the Romney Marsh, the Leicester has slipped in. They reduce the size a little; they diminish the length, and revive the accumulation of fat inside, which was a peculiarity of the old Lincoln, and deposit on the outside and back of the animals. Into the lowland flocks a small dash of Leicester is permitted, but in the Wolds flocks there exists fully three-fourths Leicester to one-fourth Lincoln; and perhaps the Lincoln specimens are not the old unimproved breed to begin with. The effect on the wool, as to quantity, certainly depends on the degree of Leicester blood infused. The lowland sheep, when it prevails in a smaller degree, have a large massy frame of flesh, covered and grained with fat. They are compact and light of offal, and are kindly feeders, though they require more food than when a larger

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proportion of Leicester blood prevails, and cannot either be put on land so inferior, nor on any land in the same average quantity; but for wool they exceed most of the breeds known. Remarkable instances of this are recorded. A wether killed at Grantham, one of an equal lot of twenty-seven, clipped 17 lbs. of wool, and weighed almost 308 lbs.

The sheep are always sold at two shear, and the united clip—the one made as a shearling and the other at two years old—will often average 20 to 25 lbs. When fatted to the utmost extent, remarkable specimens are on record. A wether killed at Holbeach Marsh weighed 300 lbs.; an ewe from Long Sutton, at the Smithfield Club Show, when killed, weighed 262 lbs. in 1846. These instances are given to show the capabilities of these large-framed sheep—not, perhaps, adapted to all localities, but remarkably productive of wool and mutton. Take, for instance, a choice specimen—assume him to be two shear, and his whole produce will be little short of a small cow.

	£	s.	d.
Two fleeces of wool, 24 lbs., at 1s. 3d. . .	1	10	0
Carcass, say 250 lbs., at 5d.	5	4	2
Total	£6	14	2

When greater prices prevailed, of course the produce of the animal was more; but enough has been said to show that the Lincolnshire sheep, when the least removed from its original stock, is an animal wonderfully remunerative in the shape of wool and mutton.

The Ryeland Sheep.—This sheep is another old, if not original, breed, being resident and produced in the light or *rye-growing* districts of Herefordshire. As the Lincoln are celebrated for quantity, these are for the *quality* of their wool. It is white, and covers the sides of the face; and over the top of the head is a bushy tufty patch. The wool they produce is in great favour for *carding*—superior, indeed, for this purpose, to all other kinds of British wool, and almost equal to Australian, if not entirely so. Hence they were eminently a wool-producing animal; and as the desire for mutton began to extend in the country, and improved turnips cultivated in the light lands enabled them to produce more of that material, the breeding of the true Ryeland sheep has somewhat declined. They appear to have had the same characteristics, as to wool, so far back as 1343, when the price is given as 12 marks, or 160 shillings per sack. Formerly these sheep were protected with almost Saxon care. They

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were regularly housed at nights in inclement or severe weather, and thus the fleece was preserved in a state of great fineness and beauty. It was also said to be sounder and better calculated for carding. It was of a light quality, weighing only 2 lbs.

The frame of the Ryeland is small, but compact; the bones are extremely small, and the animal arrives pretty quickly at maturity. It weighs about 13 to 16 lbs. per quarter. The head and face, from being covered with wool, has a large and heavy appearance, as compared with the short leg and small but compact carcass of the animal. The ears are somewhat thick and erect; the chest deep, but not broad; the barrel round, but the back by no means very flat. The fat of the Ryeland has a tendency to accumulate mainly on the rump and tail, but not to the degree to interfere with her activity. They are extremely hardy, and are supposed capable of living on less food than any English breed; but they require the food they have to be of a fine quality. They have, like all the old races of sheep, the tendency to accumulate their fat internally. Assuming the correctness of our theory of the large heavy English sheep—in the shape of their types, the Teeswater, the Lincolnshire, and the Kentish, spread over the eastern portion of lowlands—Mr. Herbert's is rendered more plausible, that the Ryeland was the type of an animal occupying the midland longitudinal portion of the country, from the Thames to the Tyne.

The main attempts to improve the Ryeland have been to assist the development of fine wool by crosses with the Merinos. Long ago, Dr. Parry, of Bath, M.D., stimulated by the venerable Bath and West of England Agricultural Society, attempted the ewes with the Merino. The first cross was most successful. The fleece was increased one pound per animal; the texture was finer, and the carcass was considerably enlarged, while the flavour of the mutton was said to be unimpaired. The wool also was said to be as fine as the pure Merino. But they committed the error of nearly all cross-breeders, which has brought crosses into such disrepute. They inter-bred with the crosses between themselves, and hence they deteriorated in three or four generations so much that, in the evidence of Mr. E. Webb Hall and others, before the House of Lords, the deterioration was so great that the Anglo wool was nearly unsaleable.

Having once crossed they should have carried back the cross to the one pure breed or the other; or, what was perhaps better, they should have kept a stock wherewith to cross, and thus have kept a fresh and continuous breed of newly crossed animals. Attempts to improve the

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size of the sheep have been made by crosses of the Leicester, Cotswolds, and Southdowns; the contrast, however, was too great. The results were destruction of all the peculiarly desirable properties of the Ryeland, as well as the obliteration of several of the others; and the breed has been rapidly abandoned for more profitable mutton-producing kinds of sheep.

The *Shropshire* sheep may, for all practical purposes, be considered as a climatic variety of the Ryeland. At the early period before referred to (1343), it is clear that this breed was very valuable for its wool. The produce of the Shropshire sheep exceeded even the Ryeland by two marks per sack, making the large sum of £9 6s. 8d. per sack, the dearest of all the English wools mentioned by Anderson. This breed inhabited a rye-producing district, probably the Morfe-down, consisting of about 4000 acres of common land near the Severn, which yielded a short and stunted, but fine grass. The colour, however, shows them to be in some degree distinct from the Ryelands, though possibly of one common origin, and a part of the stock alluded to by Herbert. The *hair* of the face and legs is speckled and grey, and they have a sort of short undeveloped horns. The fleece is about the same weight as that of the Ryeland—2 lbs.; but the staple is particularly fine. They are seldom kept till more than five years old; and the ewes will not weigh more, when fat, than 9 or 10 lbs. per quarter. The wethers will weigh 13 or 14 lbs. Modern tastes and habits will not allow, however, of sheep being kept for 2 lbs. of wool and 40 lbs. of mutton; and hence the changed demands and wants of the population are fast banishing all these original breeds of animals,—breeds of a class comprehending the promotion of both wool and mutton supplying their places.

The *Wiltshire* sheep is the largest of the fine wool-bearing animals; and the wethers will weigh, when fat, 70 to 100 lbs.; though the latter is, perhaps, an extreme weight. The wool is not very short, but extremely fine, and weighs 2½ lbs. per fleece. The sheep is horned, the horns rising close together, and bending backwards and downwards, close to the head of the animal. The hair on their faces and legs is perfectly white. They have large bones, and are slow feeders. They are very voracious, though they make little flesh in proportion to the food consumed. Their bellies are destitute of wool; the head long; the nose somewhat arched; and the nostrils open, wide, and prominent. The fore quarters, especially the breast

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and shoulders, are light; and there is a good deal of dewlap. The hind quarters are better developed, and the saddles and legs very good. The back is black in the middle, and the shoulder points project upwards. They are large-boned and clumsy sheep, and are only preserved in their unimproved and native form on a family farm near Hendon, where the stock is kept pure, under the provisions of a will which permits the farm to be held on this special condition.

These Old Wiltshires were unprofitable and unfashionable sheep; they possessed neither paying carcasses nor symmetrical forms, and have given way to the Downs almost entirely.

The *Berkshire* is a smaller sheep, producing fine wool.

CHAPTER V.

MUTTON-PRODUCING BREEDS.

ABSTRACTEDLY, the body of the sheep may be considered as a machine for converting vegetables into a more concentrated, invigorating, and solid food. It collects together the scattered vegetables, assimilates the flesh-producing portions of these plants, and stores them up in their proximate forms. Thus it relieves the human stomach from the severer work of separating the more *fibrous* portions of plants, which possess powerful organisations, and large quantities of water. The chemical principles of vegetables and animals are in general intrinsically the same; but as regards the *state* of the one and the other they are essentially different.

The sheep is also a machine which converts the raw material of man's food into that kind of flesh which, from the fineness of its texture, is perhaps the most readily digested and assimilated; so much so, that mutton and mutton broth are amongst the first solid food which the medical faculty will allow to the invalid.

Necessity selects the kind of mutton which is the cheapest for a family. That which affords solid food for the hard-working head of the family, will supply a plentiful portion of gravy, for making the potato more palatable and more nourishing to the growing and less actively employed members of the family. Hence the Leicester, the Lincoln, and the Cotswold, are the favourites. *Luxury* takes those which have the finest grain, and the most delicate and exquisite

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flavour, ond chooses the Highland black face, the Southdown, or the Welsh mountain breeds; so much so, that the demand for these smaller animals is so great, as to make the smaller weight of more absolute value than the larger. In the larger also, the tendency seems to be to grow both wool and mutton in a considerable degree. Hence we have selected, as the test of classification, the market value of the mutton, in defining the mutton-producing breeds.

We have seen how native breeds deposit their fat as well as their flesh; for both are necessary to the English notion of mutton. The race which deposits it on the hind quarters is very numerous—some depositing it on the rumps, others on the tails. The characteristic of the native English sheep appears to be the depositing of it on the *flanks*, as will be seen from the description of the wool-producing breeds mentioned in the last chapter. The progress of the improvement, however, has more than developed the fat either equally all over the body, as in the case of the Leicesters, or divided it between the layers of the muscles, as in the various breeds of mountain sheep, and the Southdown. The reasons appear to arise from the physiological points and natural history of the animals, which are alone adequate to account for these peculiarities. The race of sheep, of which the Leicester is a type, are a set of *still* animals. They are luxurious and sluggish. The deposit of fat is not worked in, as it were, by the action of the muscles, but accumulates under a *skin* peculiarly soft, yielding, and elastic. The mountain breeds (for into such we shall presently resolve all the favourite mutton-producing breeds of sheep), lead an active, vigorous life; and thus the fat is deposited between the muscles, in order to lubricate them for the performance of their duties. Hence we have marbled mutton, the fat and lean being regularly dispersed; and the gravy is kept in the grain of the meat when cooked; while in the other case the fat fries out, and only bastes the joints while cooking, thus affording more dripping for the cook than gravy for the master,

The process of mutton-making is thoroughly English. *The internal formation of fat is the first process in all the English sheep.* A network of fat is first formed, which envelopes the intestines, and another mass accumulates on the kidneys. Thus it begins to be deposited on the rump; and the first symptoms are the sides of the rump rising, so that the backbone cannot be felt. They begin to be *cloven*. This progresses gradually on the back, until the backbone is lost; and, instead of the protuberant bones, there is a crevice along the line of the back to the shoulder, or possibly to the juncture of the neck. Then it begins to

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be accumulated on the sides, and proceeds towards the flanks, and forms on the breast, shoulders, and brisket, thus showing how gradually the whole tendencies of the sheep, in all climes, are brought out to make a fat-mutton English, or rather British, sheep. When all this is accomplished the sheep is fat, or *prime*.

The *Blackfaced* or *Heath Sheep* takes the lead in the epicure's list of fine mutton-producing sheep. A four-year old Scotch wether, as they are usually termed (though a similar breed inhabits the whole of the range of mountains known as the "Backbone of England," as well as the Scottish mountains), if killed fat, and the mutton kept from two to five weeks in winter, until it begins to be covered with a green mould, is one of the finest dishes an epicure can desire.

The mutton is very small in the grain, dark in its colour, not very high flavoured, and extremely tender. It may be considered a native of the Highlands of Scotland, and is a wild, active, and rambling sheep. Material improvements have of late been made, not by crossing, but by selecting the best, and breeding from these exclusively, until the once goat-like, shaggy, ungainly animal is more symmetrical, tamer in disposition, and finer, though equally long, in the wool. The usual weight is fourteen to eighteen pounds per quarter; but Mr. Stephens mentions the case of an animal of this breed, shorn at the Perth meeting of the Highland Society, which weighed forty pounds per quarter—an enormous weight for any sheep, but especially so for a small wild mountain breed. It may be supposed, however, that this was quite an exception. The Gillespies of Lanarkshire were the great improvers of the breed, and could show very beautiful specimens. The Messrs. Plummer of Laidlaw slaughtered in Edinburgh, in 1850, about two hundred of these improved animals; and they averaged twenty-five pounds per quarter, some reaching thirty pounds.

The peculiarity of this sheep is its hardiness. It will live on food the most unlikely; and for *growing* it is usually left to shift for itself amongst the heather and furze; and when unmolested he picks up a subsistence unknown to a finer race. Thus he grows up at very little expense, either to his master or any one else, until he is taken to a better pasture, or to turnips, for the sake of being fatted.

The hair on the face and neck of these sheep is usually black, though sometimes approaching to grey, and a little before shearing time somewhat brown. The head is fine, and slightly Roman, while elegant and graceful horns grow from each side, usually bending backwards and downwards. The specimens on the heads of some four-year

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old wethers are really beautiful. The heads are broad, and the backs straight and broad; the chests deep, and the legs straight and fleshy. The wool is long and pendulous, and convoluted in the most graceful ringlets. The eyes are bright, full, and expressive of *life*. The carcass is full and round-barrelled, having well arched ribs. The lines down the hams and the breast are straight and perpendicular. The neck is fine and clean.

The lean Highland sheep are usually purchased at Falkirk trysts, where teeming myriads of animals clothe the moor,—a sight calculated to bewilder the observer. As many as 80,000, and even 90,000, are sometimes shown at the October tryst. Twenty thousand is a common number at the other trysts. About half this number are wethers of the shear; the remainder are two-year olds, for further picking on the moors, and for store or for feeding, and a few rams.

The year-old wethers are either purchased there, and put to turnips to fatten, and sold off, or killed in March or April, or they are run on in winter in any low pasture with rough grass, and fattened in the summer of the following year on grass. During the winter these will live, and even improve, on grass of a very inferior kind; such, indeed, as every other animal will refuse; and if put somewhat thinly on the ground, will manage to get through the winter. Many persons imagine, that four or even five years are absolutely necessary to the full mutton-development of the black-faced sheep. This is not the case. Heather-fed sheep, fed in the second winter after they are lambed, are, when rapidly fatted, as prime and ripe as they can be at any subsequent period. Mr. William Bogue had a two-year old wether sheep slaughtered, which weighed twenty-seven pounds per quarter, and this, Mr. Dickson shows, is by no means an improbable or uncommon weight, for he gives an instance of several live animals which weigh from 117 lbs. to 187 lbs.; and these would average twenty-seven lbs. per quarter when killed. Mr. Bogue states that for fattening they exceed the Southdowns which he had also in his possession; but it should be borne in mind that this was at Skateran, a situation too cold and bleak possibly for the Southdowns. There is great difference, however, it must be admitted, between those heath-fed black-faces and those which have been bred up on more genial soil. The heather sheep requires to be kept to a greater age before fattening. The same may be said, indeed, of any kind of animal whatever; but Mr. Bogue, who feeds so successfully, and at so early an age, never allows the lambs to lose their first lyre, so that no uncommon waste has to be replaced by the feeder.

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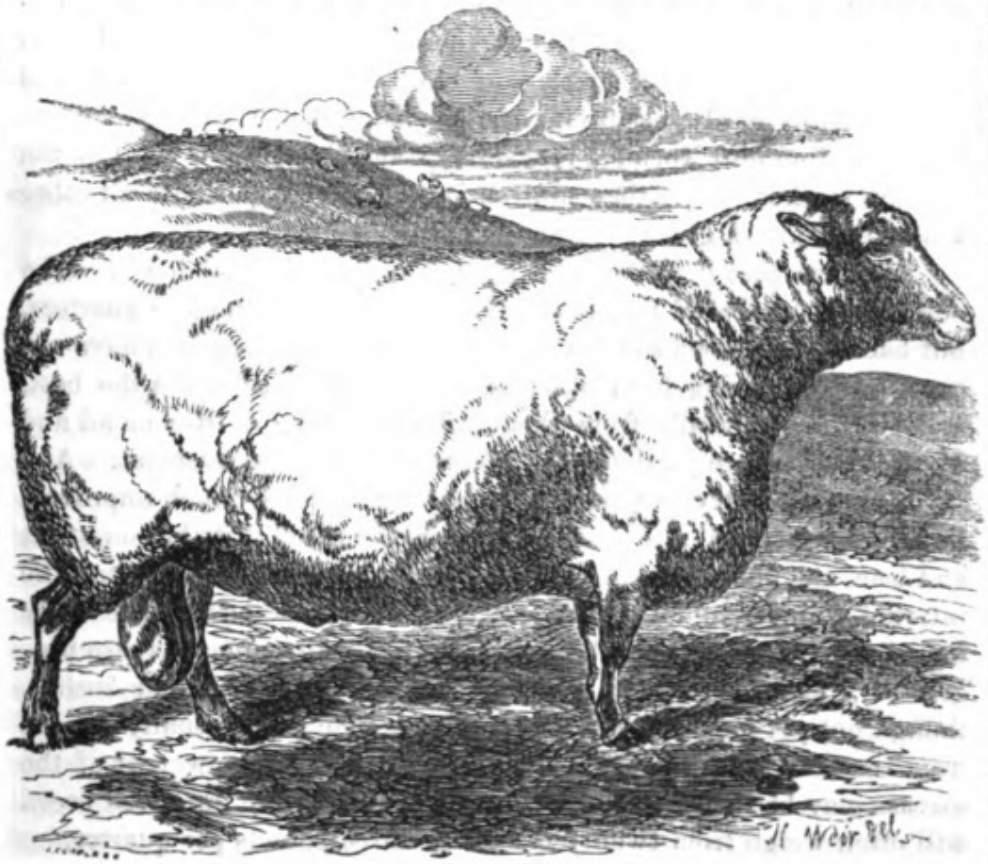
The great secret in keeping the black-faces is not to overstock. They will bear a large amount of cold and wet, and will live and thrive on a very poor pasture; one, indeed, on which, perhaps, no other animal will thrive or grow they will fatten upon; but they are so seldom tried even with this, that age has to make up what neglect has previously done, that it is absolutely necessary to keep them to a period of their lives beyond that, perhaps, of almost any other sheep. Heavy stocking will nearly always make the difference between good and bad produce—it will diminish the size of the sheep—throw him back in his feeding, and the breeder and the feeder will be a much greater time in having their produce ready for the market.

The *Southdown Sheep* is in England what the black-faced sheep is



THE SOUTHDOWN.

in Scotland, being far the most popular as a mutton-producer, at least for the tables of the rich. Nor can there be mentioned a breed which has undergone more improvement in the last few years than these beautiful sheep. As a style and class the Southdown is unique. The

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hair on his face is black or brown, short, even, and fine. The wool is short, close, and remarkably fine in texture and quality. It lies thick over the whole body, and has, when touched, a peculiarly velvety softness, with all the elasticity of a piece of India rubber. The top of the head is free from wool; the countenance is fine and placid; the eye is full and expressive, but mild and gentle, and somewhat large and prominent. The ears are small, falling backward and little upward. The hair is small, and the legs short, especially from the knees to the feet. The breast is full, round, and prominent, as well as moderately wide; the neck thick and short, but free from loose fleshy skin. The top of the back is straight and flattish, but not remarkably broad; and the side ribs are moderately arched. The legs are full, but gently rounded, and tapering downwards; and the belly is nearly straight, but a little tucked in behind the shoulders. The wool is remarkably fine, and is the only kind of English wool altogether suitable for the finer class of cloths. They are hornless, and comparatively hardy, occupying the downs of Dorset, and now gradually spreading into Norfolk, Yorkshire, Hampshire, Kent, &c. In the London market, where their mutton is considered superior to all other kinds, they are in great request.

We have just described the present improved Southdown. The older and unimproved breeds were low, and light in the fore quarters, but backed with good saddles and legs. The improvements have not gone on by crossing from other breeds, but from selecting the best, and breeding carefully from them. To the Duke of Richmond and Mr. Ellman we are particularly indebted for this improvement. And while the symmetry and points of the animal are so much improved, the fine quality and grain of the mutton, the equal distribution of fat and lean, the marblings of the flesh, the bright dark mutton, and the internal fullness of tallow, are all most fully sustained. The early maturity of the breed has been attained; the fattening has also progressed; and the wool is made longer, being about four inches, though not yet long enough for combing. The fleece usually weighs from two and a half to three pounds; and the average weight of the carcass may be taken at eighteen pounds, though the improved breed will often weigh from twenty to twenty-three pounds per quarter.

This sheep requires a dry chalky limestone or gravelly soil, with fine short herbage, on which they will thrive, and accumulate their peculiar mutton better than in more luxuriant lowlands. They are peculiarly suited, also, for folding or stalling, to which circumstance we shall have hereafter to allude. The ewes are prolific breeders,

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two bearing twins to one being single; and the draft ewes are usually sold off, at four years' old, to feed in the turnip districts of Norfolk and Suffolk.

The care of the sheep is nowhere better understood than by the Sussex farmers, who house and shelter the flocks in severe weather, at and near the lambing season. When the lambs are a-foot, they are well provided with shelter, and their dams with nourishing food. The Southdown is a sheep remarkably free from disease, especially the sturdy and the rot.

With the uses of the Down we shall deal when the subject of breeding is considered; in the mean time, we shall consider the

Cheviot Sheep,—which is another of the hornless breeds of mutton-producing sheep, little inferior to any of the above, either for hardiness or for valuable mutton. It is hornless, and has a white face and legs, remarkable for their snowy whiteness, somewhat resembling the cover of the hills during the larger period of winter. The striking characteristic of the Cheviot flocks is their extraordinary likeness to each other, how many soever there may be.

The fault of the Cheviot sheep is narrowness of the back, ribs, and shoulders, from which arises their incapability of carrying a large accumulation of mutton. Judges of the best kind, therefore, *choose those with broad faces*, because this characteristic is indicative of a broad bony development.

In selecting lambs, or even fattening sheep, the hand of the grazier grasps the back-bone, over the kidneys, and judges by its broadness whether it is sufficiently capacious to carry the complement of flesh and fat which he calculates putting upon it.

The eyes of the Cheviot are small, but prominent and lively. The body is long; the fore-quarters somewhat light; the legs clean, and small turned; the feet thin; the wool close and fine, but neither so soft or so elastic as that of the Southdown, but too thick for combing. The improvements in the sheep have added a little to the breast and shoulders; neither have they diminished the feeding qualities, or injured the wool. The neck and shoulders are fuller. The breast has become slightly prominent, but still narrow. The back retains its narrowness, but the fall behind the shoulders, common in the old breeds, has been filled up. The ribs are still flatter than either the Southdown or the Highland. The animal unites the fat with the muscles, and is, when fat, well covered internally with tallow. They are remarkably hardy animals, and live on very poor and stunted food

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growing on the mountains of Northumberland. In storms of snow, they seem peculiarly calculated to forage for their food, and the snake-like head, as it peers out, seems well calculated for wedging amongst the deep snows which often cover its native mountains for long successive periods. They also bear travelling and driving better, perhaps, than any other kind of sheep, and are sometimes driven very great distances.

So much hardiness of character has induced many far-seeing Scotch farmers and breeders to adopt them on the Scottish mountains, and they are to be found successfully bred and thriving on the hills of Sutherlandshire; while they have also an extensive range on the Yorkshire hills.

The Cheviot mutton is smaller in the grain than the Leicester, and is a very tender, sweet, and delicate kind of flesh. It is neither so bright nor so high-coloured as that of the Southdown or the Highland, but it has somewhat of its high flavour, and the fat is more dispersed and less luscious than that of the Leicester. They are now sometimes fatted at one year old; and the flesh resembles in appearance, when well kept, the Welch mutton, but it is more tender, and not so high in flavour. The bags will weigh 14 lbs. or 15 lbs. per quarter, and the two shear-wethers will sometimes weigh as much as 22 lbs. Instances are mentioned where they have been made to weigh 25 lbs. per quarter, but these are extreme cases.

The recent improvements of the Cheviots are chiefly owing to a mixture, very cautiously infused, of the Leicester blood. But this requires great care. The Leicester is a tender and delicate sheep, unsuited to the snow-clad moors of Northumberland, of Westmorland, and of Scotland; but while a single dash of Leicester will improve the frame, lengthen the wool, and increase the feeding propensity, it will not be so severe (if the impression be carried rapidly back to the Cheviot race) as to weaken materially the vital power of the animals.

The question, when Cheviot and when black-faced sheep should be selected for breeding and rearing on mountain pasture, depends upon the following criteria:—

When the produce of the hills is simply black furze, or heather, the black-faced Highland sheep will be preferable. When the grass is green, though ever so poor, the Cheviot will pay a greater amount of profit.

The following, taking this principle, will be about the comparative merits of the two breeds:—

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BLACK-FACED.		CHEVIOT.
Wool inferior	. . . . .	Wool superior.
Mutton superior	. . . . .	Mutton inferior.
Hardiness equal	. . . . .	Hardiness equal.
Maturity later	. . . . .	Maturity earlier.
Feeding less rapid	. . . . .	Feeding more rapid.
Less mutton	. . . . .	More mutton.

The balance on the whole, on suitable lands, seems to be decidedly in favour of the Cheviots.

The *Norfolk Breed*, though fast disappearing before the Leicester, must be considered as a mutton-producing race of sheep. In some respects they resemble the black-faced Highlands; having the same coloured faces and legs, with full bone, long spiral horns, long bodies, high back bones, flat ribs, rather narrow loins, and very light and shortish wool. The mutton, however, is of that fine rich flavour which is found to be the quality of all wild and semi-wild animals. The Norfolk sheep is of a very peculiar roving disposition, and will leap over the ordinary fences; and their long residence in the county is doubtless one reason for those high banks on which the fences are generally found planted. And this has probably given rise to the saying, that if a fence had to be erected on Snowdon, they would raise a mound upon the hill on which to plant it.

These sheep will fatten at two years' old, and are excellent travellers. They often weigh from 16 to 20 lbs. per quarter, and their mutton is of a fine-grained quality. Owing to the natural wildness of these animals, they are now mostly fed on the large open heaths, which, strange to say, are still prevalent in Norfolk, notwithstanding its fine climate, and general capability of improvement. When fatted they are usually folded.

The principal value of the breed, however, is in their haunches of mutton, and their deer-like graceful heads and horns. The mutton, when long kept, perhaps more closely resembles venison than any other breed. The horns are nine or ten inches in circumference at the base, and as much as thirty-six inches long.

The *Welsh Sheep* is the most luxurious of all the mutton-producing race, owing to its being so high-flavoured, fine in the grain, and small. They are the very converse of the Lincolnshires, and are a truly Lilliputian breed. They are the most remunerative of any kind of

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mutton sold in the London market. The two haunches are usually cooked together, undivided, and present a most uncommon appearance. The wethers are killed at four or five years of age, and will then weigh, when fat, only eight or nine pounds per quarter. The ewes usually weigh two, or even three, pounds per quarter less. The sheep, when alive, is a goat-like animal, somewhat resembling the gazelle of the Nimroud sculptures. The ram has two crumpled horns, rising upwards, and falling backwards again to the neck. The ewes are usually hornless. The neck is long; the shoulders high and thin; the breast small, narrow, and backward; the legs and loins full and broad. The ribs re flattish, and the belly a little depressed; the tail long, and bushy towards the extremity, nearly down to the middle of the hind legs. The bones are remarkably small. They are the most active and sure-footed race of sheep we know. They are essentially wild in their habits, and clip about two pounds of somewhat fine wool. The ewes are sometimes milked by the Welsh farmers; but this pulls them down, and is very injurious to them. Some persons clip them twice; that is to say, they shcar them at the usual time in June, and again take off part of the wool from the fore-quarters in the month of October, alleging that they are less liable to have it torn off by the furze and briars, and more able to forage for their daily supply of scanty herbage amongst the bushes in winter.

Dorsetshire Sheep.—With our notice of this breed we shall close the present chapter. Though not remarkable as a mutton-producer itself, it is used for the purpose of supplying London with that form of it called *lamb*. It has the peculiarity, common to no other breed, of *breeding twice a-year*. The mutton, however, is fine-grained, and well flavoured. The Dorset sheep is not unlike the Merino at the first blush. It has a fine, small muzzle; face and legs covered with fine hair; and these, with the wool, are completely white. The horns are large and spiral in the male, exactly resembling those of the Merino; and in the female they are bent downwards by the side of the face, describing nearly a circle. The wool is fine and short, and amounts to eight or ten pounds per animal. The breast is full, but narrow, and by no means deep; the shoulders light; the neck rather long; and the legs the same, but light boned. It stands taller than the Southdown. The hind-quarters are heavy, and the tail long and bushy at the end. The ears are long, and extend sideways; the eyes full, prominent, and expressive. The wethers are sold for the butcher at three years' old, and weigh from eighteen to twenty pounds per

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quarter. They are good feeders; the mutton is well marbled; and they travel well to market.

The great peculiarity of the Dorset sheep appears to be, that while other breeds receive the ram only at one and the same season, the Dorset will take him all the year round, and even while the lambs are suckling. There is thus the power of supplying lamb at any season of the year for the pampered appetite of the epicure; and vast sums are thus realized by those who keep them for the purpose. Nor is this peculiarity one which at all applies, as might be supposed, to the mild climate or favoured pasturage of Dorsetshire. The breed possess the same peculiarity in all parts of the country, even in Scotland; though it must be obvious that the rearing of lambs at the period of mid-winter is far more likely to proceed favourably in the mild and genial south-west of England than in the colder and more northern climes.

The ewes take the ram in May, so that they will produce in October; and the early lamb at Christmas, in London, is obtained from this late produce. These lambs are house-fed, in a great measure; though the general mildness of our recent winters, and the chilliness of our springs, have rendered the rearing of our winter lambs more easy and certain than that of our ordinary spring lambs. The lambs are usually dropped about Michaelmas, and then put into a house or shed; while the ewes are partly allowed to be with them, and partly to roam and feed, either permanently or temporarily, in walled crofts, which are preserved full of grass, for the purpose of affording them a full supply of the most succulent food. In addition to this, turnips, rape, cabbages, &c., are added, which, by the most scientific farmers, are cut or chopped; and troughs are also placed, by which the ewe is supplied with cake, oats, peasmeal, or such mixtures and variety of food as she may be disposed to take, or which may be had with the greatest facility, or be the cheapest in the market.

The lambs are laid in dry warm houses, well littered with straw. They are also supplied with lumps of chalk to lick, to keep off the scour, to which they are very liable from the richness of the mother's milk. At first the dams are allowed to suckle them three or four times a-day; but as they grow older, and the crofts fail, the ewes are driven farther away to pasture, and they return to the lambs only at night.

When a lamb dies the ewe is still retained to milk the rest in turn, and stands are made with stocks, into which she is fastened until her udder is thoroughly drained. This takes place before each lamb

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is allowed to suck its own mother; and thus the loss of a few lambs is often no great injury, the whole stock deriving a larger proportion of the fattening milk.

The price at which the lambs are sold will vary, but sometimes they produce as much as £3, though £2 is possibly nearer the average, which is a large sum for the care and small period of time (about eight weeks) during which the lambs are being fattened.

When *grass lamb* is intended to be produced, the ewes are put to the ram at a later period, so as to have the lambs dropped about March, and only partial shelter is provided. The ewes are kept in the same liberal manner. The lambs have more liberty, and are much less trouble to their owners. Ten or twelve days after lambing, kept as they are on food so highly nutritious, they will again often admit the ram, and thus will bear lambs twice in the year. Of course, those which are house-fed have by far the best chance of successful breeding, as the second time of producing the grass-fed lamb would be an inconvenient portion of the year, when the young would be likely to suffer damage from flies, &c.

We shall close this chapter with a slight notice of a very ancient and singular race—the *Herdwick breed* of sheep, common in the mountainous districts of Cumberland and Westmoreland. These sheep are very small and lively. They are polled, have speckled faces and legs, wool short and rather fine, weighing about two-and-a-half pounds per fleece. The ewes weigh six to eight pounds per quarter, and the wethers perhaps eleven pounds. In winter they scratch down to the breast through the snow, and live on a small amount of very poor food. They are said to be more hardy than almost any other; and rams of this very diminutive breed are sometimes purchased to improve the *hardiness* of other breeds, though they must also influence their size.

The first samples of this breed, we are informed, were found in the wreck of a ship early in the eighteenth century; and from the few then saved the race has spread throughout the higher-lying parts of the northern counties of England. Their original country is said to be Scotland, or some of the islands north of it; but as no corresponding breed now exists there, the whole relation may be doubtful.

A very remarkable characteristic of the breed is, that they have fourteen ribs instead of thirteen, the number possessed by all others.

The wethers are killed at four or five years old, and weigh about ten or eleven pounds per quarter when fat. They seem not only to

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thrive best on their native pastures, but when the ewes are driven away they will invariably return at lambing time to their old quarters, however distant they may be. This shows a remarkably wild instinct, and is of the same character as that of the black-faced Highland sheep,—flocks of which will sometimes actually swim across the Firth of Forth to find their way to their native mountains.

The ewes, like those on the Welsh mountains, will breed for fifteen or twenty years, and are always kept as long as they will continue to do so; the sales being made of the fatted wethers. When killed at home, the legs are usually cured and dried, the same as pig's hams; and it is jocosely said that the inhabitants of these uplands never eat mutton but when they find a fallen sheep, which, when they do, they shake by the leg, and if it drops to pieces it is rejected, but if not, it is carried home, dressed, and eaten. This will certainly be *gameish* enough for the most depraved palate; but it is remarkable that the strong heath-like flavour is the one which the epicures chiefly seek after in purchasing their mutton in the markets of large towns.

CHAPTER VI.

BREEDS PRODUCING BOTH WOOL AND MUTTON.

ALL breeds of English sheep produce both these necessaries of life; though some, as we have seen, secrete and produce more of the one or the other, suited, in a peculiar degree, to the wants of the manufacturer or of human sustenance. Luxury demands peculiarities in both. It will be clothed in dresses, fine and soft, to please the eye and gratify the touch; and more than warmth is her object. It will not be satisfied with the quantity of food; it must be aggregated on particular joints, and must be of a peculiar flavour. Hence luxury selects those kinds of animals which feed on the most worthless food. Thus extremes will sometimes meet; and the extreme of luxury be met by the extreme of want and privation.

But these are animals which, though unfit to be placed in the category of those ministering to epicurean taste, will minister extensively to man's necessities, and manage to secrete large *quantities both of wool and mutton;* the one not so fine, perhaps, as luxury requires, and the other not so highly flavoured; but both well suited, in a very high degree, to the real wants of mankind.

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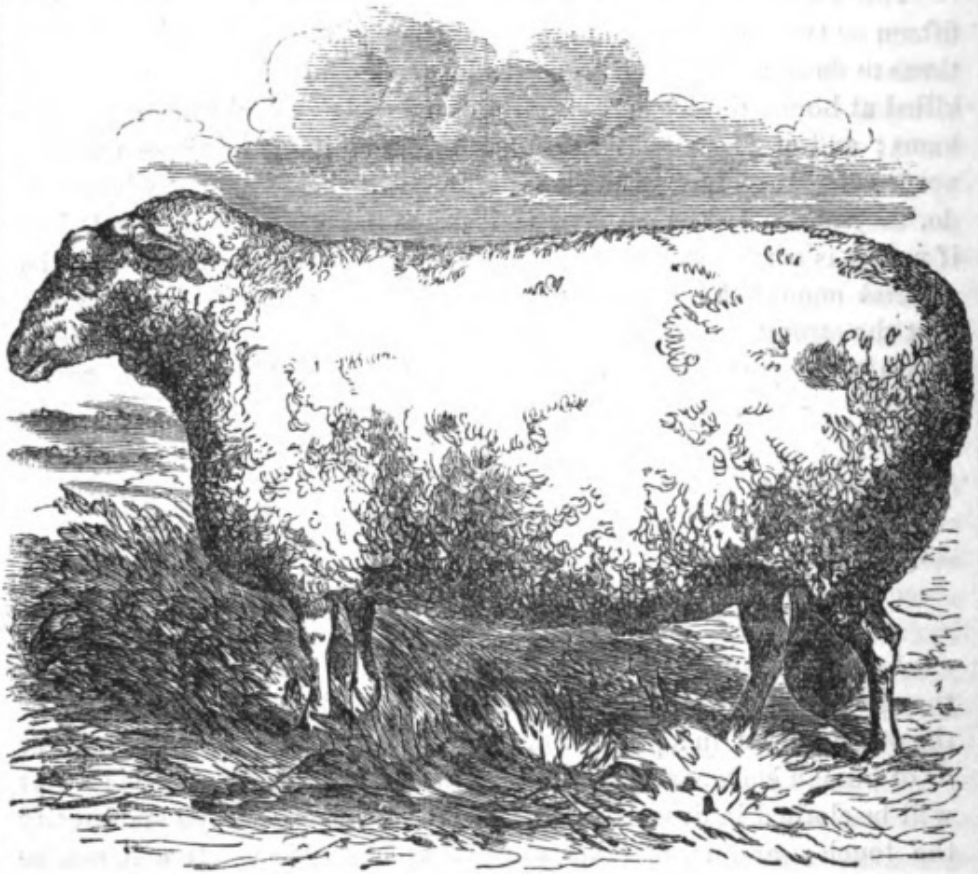
Foremost in this list stands the *Leicester Sheep*, or the *new Leicesters*, a name by which they are better known since the improvements of Bakewell. The original Leicester sheep was large and bony. It had the type of the Teeswater, the Lincoln, and the Romney Marsh character, or generic qualities representing the whole combined. It was a large heavy sheep, with disposition to feed favourably, but



THE LEICESTER.

with much heavy grossness about its composition. They were doubtless identical with the type of sheep so common to the district of the long-woolled and large carcassed animals; and which, probably, the Scottish invaders once took from the valleys of the Tees. They were flat-sided, heavy-boned, long-legged, coarse in the pelt and offal, with long excellent combing wool. The rams would weigh, when fat, 40 lbs. per quarter; and the fleece would weigh 13 or 14 lbs. On the rich Leicestershire meadows they would be fatted at three years old; yet not to the weight we have just mentioned; though a four years old sheep might attain that weight.

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It was on these animals that Bakewell began to experiment, with a view to improvement. Bakewell and his flock were first heard of in 1760, when he commenced the system of letting rams, as distinguished from selling. The usual course was for the farmers to save the best of their several flocks, and reserve them uncastrated, as male lambs. Bakewell began a letting system; but so little was it liked, and so little was thought of his rams, that he let one in that year for the season for only sixteen shillings.

Bakewell stands alone in merit as an improver. He took the native sheep, reduced his size, gave him small offals, induced him to lay on flesh and fat all along the breech, the sides, the shoulders, the flank, and the neck. He opened his wool, and also reduced it in weight, and a little in length. He increased the tendency to lay on fat in proportion to the food consumed, and made the animal take on fat a year or two earlier at least; by which he enabled two or three animals to be fed where one only was fed before. And this was not a fitful temporary change in the animal. It was permanent and indelible; and the same breed of sheep has, for nearly a century, not only maintained its position, but has been used with more or less success to improve nearly every breed of sheep in the United Kingdom, and, at the same time, has more or less displaced almost every other breed.

How did Bakewell accomplish these objects? This is a secret. He died without revealing it; and we have to guess at the probabilities. The breeders of the Teeswaters, of the Downs, and of Lincoln, all claim the breeds as the source of his improvement of the old Leicester stock. They allege that he might reduce the bone and frame by a simple dash of the favourite blood, and thus obtaining a firm superstructure, breed in and in, until it was indelible. But this is very improbable, as it is not likely that any *cross* could have so firmly taken possession of a race, and made them *all alike*. It is rather an indication of *purity of breed* than of any cross whatever. He doubtless selected those animals which corresponded with his ideas of what were the best, with light offals and a tendency to feed, and that exhibited early maturity and very unnatural forms; for these are the invariable concomitants of the state of things above referred to: and he had plenty of opportunity of selecting those which suited his purpose.

It seldom happens that one great man discovers any new fact or principle in science alone. Discoveries, according to Providential arrangements, seem to be made in different places at once. Mr.

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Joseph Allom, of Clifton in Leicestershire, who rose from the plough-tail, by his mind and energy, to be an extensive farmer and breeder, was known to select and purchase choice ewes from all parts of the country, chiefly from Melton. He had a breed which were great favourites before Bakewell was heard of. Specific characteristics we cannot very easily define. Mr. Youatt slurs even Mr. Allom in a note; and in the text says, "up to this period" (the middle of last century) "very little care had been bestowed in the breeding of sheep." Mr. Marshall goes to the other extreme, and says that the origin of Bakewell's improvements are due to Allom. The truth is probably between the two. Allom's stock might be made available to Bakewell's purposes; and his practice might set the latter to work, in more zealously improving the breed.

Another cause was also in operation towards the same end, and doubtless gave another opportunity for Bakewell's selecting his specimens to improve his breed. In 1747 there were some successions of bad seasons, which so operated on the succulent grass of Leicestershire as to sweep off nearly the whole of the sheep on the lower clay soils of that county. This banished the more wealthy farmers from the district, and they had to take refuge on the wolds of Yorkshire; and then purchased some small horned fine-bred sheep, for a supply to their decimated flocks. The trade of jobbing thus commenced, and it is said that Bakewell employed the jobbers who brought down, from time to time, these Yorkshire wold sheep, to allow him to call out the best before they offered them to the farmers. He thus obtained compact, square, rapidly-feeding animals, and persevered, year after year, in selecting the best, in his judgment, from his own flock, until he had obtained the celebrity which has handed down his name as the greatest improver that ever lived; and the once *new* Leicester sheep has become *the Leicester* sheep; so completely has it eaten out its progenitors.

Bakewell began to let, as we have seen, at the moderate price of sixteen shillings. Allom had before obtained the large sum of three guineas for the use of his superior ram lambs. In 1780 the former realized ten guineas for the loan of a ram for a season, and in six years more he lets one ram for 300 guineas. After this his celebrity rose to its height, and the demand for his stock became quite a mania. One hundred guineas was considered a small price for the loan of one of his rams. Three to four hundred guineas was by no means an uncommon sum; and on one occasion he had ten guineas per ewe for every one served by a celebrated ram, which he made to serve 120

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times. He let one ram subsequently for one thousand guineas; and as his sale ewes were always put on lowlands, where they were sure to become the victims of rot, he managed to keep his female animals from spreading; and, indeed, would allow no access to his breed but through the rams which he let, at the enormous sums we have named.

So much for the origin of the Leicester. He is, indeed, the type of a sheep suited to the grazier in every respect. The head and legs are covered by very short fine hair, so thin and fine that the skin is partially visible through it. The colour is whitish, but not the snow-white of the Cheviot; but it has a bluish tinge, and is as soft almost as down. The head is fine and small; the eyes very full, but quiet in expression; the ears thin, fine, of moderate size, and tending backwards; the neck rather short, fine, and free from all flabby skin or flesh, and thickening as it proceeds to its junction with the shoulders, but so forward that the prominent breast is in a line with it, and regularly filled up by the base of the neck. The breast is broad and full, as well as forward. The back is perfectly straight, from the setting in of the tail to the top of the head; the latter not rising upwards, but horizontally set on. The ribs are arched; the shoulders round and thick. The legs are broad, so as to give a table-like appearance to the back of the animal: they stand wide apart, and are somewhat short. The ribs extend well towards the legs. The quarters are long and full. The wool is somewhat long and spirally curled, set on very open upon the skin, and hair extremely white and soft, though strong. The inside has not so much development of fat as in some breeds, but it is laid on externally in greater quantity. The weights may be taken at 25 to 30 lbs. per quarter; the wool $7\frac{1}{2}$ to 9 lbs. each.

As a *turnip feeder*, the Leicester is, perhaps, the most successful of all breeds of sheep. The fat is in greater quantity, aggregated on the surface, than, perhaps, any breed whatever; and it will lay on as much fat, for the food consumed, as any other kind of sheep, if not more. We refrain, however, from entering into comparative feeding qualities at this part of the treatise, as it will be subsequently investigated; but the great qualification of the Leicester is his power to assimilate and convert the green crops into fat and flesh.

Perhaps a better proof of the value of the Leicester could not be afforded, than in the fact that they have superseded a vast proportion of the sheep of this country, from every circumstance of pasturage and climate, and established themselves in their stead; but they

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have also been used to improve the desirable points of almost every breed, which still at all keeps its ground.

The early maturity of the Leicester, and his disposition to accumulate fat, equalled only by the short-horn amongst cattle, is certainly unequalled by any other sheep in existence; and it is the only sheep which can, with any degree of success, be fattened at one year old.

The Cotswold.—This breed stands next, perhaps, to the Leicester, as a producer of mutton and wool. It is larger than the pure Leicester. It has a large frame and heavy fleece of wool. It stands high in estimation in its localities, as a rapid fat producer and a good grower of wool. In hardihood it exceeds the Leicester; in the prolific character and milking qualities of the ewes it is superior. They will also bear inferior pasture, though a larger sheep, and may be considered as one of the oldest and primest breeds of sheep in the kingdom; for while the new characteristics of the Leicesters have only been developed at most a century, they have been stationary in Gloucestershire, as a standard long-wooled sheep, since the time of Queen Elizabeth; and even by Markham they are described as long-wooled sheep. They are certainly deficient in early maturity: for though sometimes fed at fourteen or fifteen months old, they are more frequently two years before they are really prime or "ripe." Originally they were like most of the early and indigenous breeds of sheep bred on the uplands, and kept till two years old, and then fatted in the valleys—especially the vale of the Severn. But when the alternate system of husbandry became common on the Wolds of Gloucestershire, they were put to breed and fatten there mainly by the seeds and turnips.

The tendency of the Cotswold is to accumulate fat upon his back. The breast is not so wide, deep, or prominent as that of the Leicester. The bone is larger and the sides flatter, nor are the shoulders and the legs so broad and prominent. The handling, too, is different. The fat and flesh seem laid in the back, in an accumulated and unyielding mass; whereas the Leicester has the soft yielding elastic firmness which reminds you of substance, and at the same time is pleasant and soft as velvet. This may arise from the fineness of the pelt. The Cotswold, on the contrary, has a thicker pelt, and the wool is more straggling at the edges, and more matted near the skin. The head is white, and so are the legs; while the small ears fall downwards and outwards, and the top of the head is a mass of soft bushy wool. The weight of the animal will some-

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times reach 28 lbs. per quarter; but 28 to 30 lbs. will be a nearer average for two year old sheep. At a year and a quarter they will, when properly fatted, be found to yield 19 lbs. per quarter, and sometimes get as far as 20 or 21 lbs.; and will yield 8 to 9 lbs. of wool, which is fine and light in proportion to its bulk, but has not the open grain of the Leicester.

The gentle and gradual infusion of a little Leicester blood is pretty general amongst the most celebrated and extensive flocks; otherwise there is longer wool, less early maturity, more hardiness, more bone, and somewhat lighter fore quarters. Still the Leicester alloy is not excessive, and occurs perhaps in a very remote degree. The taste for more is probably increasing. Still the sheep shown at the agricultural meetings are sometimes monsters. We certainly saw one at the Cirencester Meeting which could not weigh less than 43 lbs. per quarter. He was said to be little more than two years old. The sheep is still and quiet in his habits, and is one of the best kinds for carrying out the board or hurdle feeding. Mr. Mechi selects them for feeding in his boards, where we saw lambs of ten or eleven months old fit for the butcher, and weighing 18 lbs. per quarter at least.

Of the crosses of the Cotswold—a sheep more capable, perhaps, than any other of giving size and hardihood to a flock which has too much "blood"—we shall speak more freely in the chapter on breeding.

The Dartmoor Sheep.—We are now coming rapidly to the sub-varieties of sheep; and, in classing this amongst the sheep valuable both for wool and mutton, we must be considered as combining not so much quantity as we have previously done, but the quality of both. They have some resemblance to the Dorset in appearance, but are much less in size and better mutton; while they are so hardy as to live on poor stunted heath, and pick up a subsistence on inferior land. They are white-faced, horned, small, and snake-like in the neck and head; very small-boned; weigh 12 lbs. per quarter, and bear mutton closely resembling venison. The wool is soft and short, but not very fine. It is used in the manufacture of livery cloths at Leominster. When fed on better pasture, they grow to a larger size, and produce a finer wool.

The Exmoor Sheep is very like the Dartmoor in its conformation and character, but of a still smaller size. They have hair under the chin, like the goat; and are, if possible, more wild than the former-mentioned race. Their mutton is equally good. The horns are

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large, and very peculiar; they spread at the roots so much, as nearly to touch each other; they proceed backwards and grow outwards, so as to be somewhat spiral. The little ears peer out of these folds, and a dull, heavy-looking head is situated between. The throat is flabby and hairy; the breast narrow and thin, sinking backwards, almost behind the fore legs; and the fore quarter is short. There is a falling of the back behind the shoulder, and a rise at the rump. They are now much improved by the infusion of a little Leicester blood. Their hardiness keeps them very popular, and they produce on poor land and bleak situations what the more valuable and less hardy Leicesters do on rich soils and abundant crops—wool and mutton assimilated from the most worthless herbage. In these capacities they are extremely valuable.

We close this chapter with the *Bamboroughshire Sheep*—a breed very peculiar and valuable, both for readily making mutton and providing valuable wool; and yet it is scarcely named by half the writers on sheep. It is bred in the south-eastern parts of Northumberland and north of Durham,—in fact, from the Tweed to the Tyne,—and the regular fair for their purchase is Rodbury. The flocks are remarkably like each other; they have flat level backs, are good graziers, producing 6 lbs. of wool of a strong but close quality, and will weigh 22 lbs. per quarter when fat. The heads are placed horizontally, and they accumulate fat rapidly; indeed with ordinary keep the ewes are always fat. They are somewhat voracious feeders, and consume a great deal of food. The fat is laid on most extensively and internally, but not duly mixed with the muscle; and consequently the mutton is somewhat insipid. In feeding they increase more in fat and less in muscle, perhaps, than any other breed. From their extreme likeness to each other they seem to be a distinct breed. They are a good deal grazed, and the ewes are purchased for lambing in Yorkshire. After the lambs are weaned, the ewes soon become fat on grass in summer, and the lambs soon feed for the butcher.

CHAPTER VII.

ORIGIN AND HISTORY OF THE WOOLLEN TRADE.

The first covering, in the sense of clothing, adopted by man was doubtless the skins of animals. It was evidently much easier to

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use the dried skin of one animal to which it could be of no further use, than to set about any contrivance whatever to imitate the covering which kept off the rain and the sunshine, the cold and the heat; and hence common intelligence would dictate, in a moment, what indeed had been anticipated by the Author of man's being, the clothing of primeval man in the skins of animals.

To the death of an animal, however, we must always feel we are indebted solely for its skin; and though the hunter might still find it a useful covering, and one supplied him by his calling, it is more likely that those who attended to domestic animals would so far value their lives, as to make some attempt to cover and shelter themselves from the inclemency of the weather by other means than their skins.

That skins were used in patriarchal times, at least as a disguise, we are certain; for the skins of goat are mentioned as the covering provided for the wily Jacob by his designing mother. But it is equally certain that the fleeces of animals were worn at some period very little later than this; for Joseph had a "coat of many colours," made him by his over indulgent father, who seems to have understood how to make use of the fleece as well as the skin, and also to have understood the art of dyeing. But a little later still, the answer of Job to his three captious friends clearly shows the patriarchal custom. Appealing to his well-known liberality and generosity, he says—"If I have seen any perish for want of *clothing*, or any poor without covering, if his loins have not blessed me, and if he were not warmed with the *fleece* of my sheep." (Ch. xxxi. v. 20.)

That the habitations, as well as the dress, of the early nomadic tribes were, partially at least, skins of animals, may be inferred from the covering of the wooden "Tabernacle in the Wilderness," which had a soft covering of "rams' skins dyed red," and a more durable and impervious one of "badgers' skins over that;" although "fine twined linen" was thoroughly known amongst them, as well as the skins and "goats' hair," which constituted a part of the offering.

It is probable, however, that, contemporaneous with or possibly antecedent to weaving, the process of felting was adopted. If wool be pressed together, or considerably heated in junction, or otherwise brought in very close contact, it becomes a thick impervious mass, very difficult, if not impossible, to separate again. This is owing to the structural conformation of the wool. Though the absolute cause was not known, the fact was understood and described at a very early period. The wool is covered with a complete series of scales, or

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serrations. These are capable of being opened and compressed, and felting is no more than the junction of these, and their compression with one another. So far will this go, that even the smallest particle of wool seems to possess the above quality. Youatt gives the serrations of Southdown wool at 2080 in an inch, and in Saxony wool 2720. If the oldest and most worn-out cloth, in which the felting has been only partially carried out, be torn to pieces almost resembling dust, and subjected to heat and pressure, a thick kind of cloth, formerly used for wadding for coats, and more recently mixed with a small quantity of fresh wool and worked into new cloth, will be produced. The machine which thus tears the filthiest rags is called, from its many crooked teeth, a "devil," and the refuse, when it has passed through, is called "devil's dust"—the latter part of which appellation is absolutely expressive of its character.

To this felting property we have long been indebted for our hats. It is mentioned in the "Iliad" of Homer.* Plato speaks of it as "cloth made by the thickening of wool." Pliny describes it with the more practised eye of an observing natural historian, as "parcels of wool driven together by themselves make cloth." Herodotus, when he describes the clothing of Xerxes' army of Persian soldiers, says, they wore "light and flexible caps of felt," which he also describes as used by the Medes and Bactrians. Julius Cæsar,† finding his soldiers annoyed by the arrows of Pompey's army, describes them as making shirts or clothing of felt, to protect them from the archers. Thucydides mentions a similar device to protect the body from the effects of arrows.‡ The more peaceful Greeks used the wool for a more pastoral purpose. They clothed their sheep with felted wool, according to Aristotle, in order to produce an impression on the texture and colour of the fleece. Tasso mentions that the Attic sheep were clothed to improve and preserve their fleeces, and Demosthenes calls them "soft sheep."

So well understood was the practice, that in relation to it and the naked children of Attica, the cynic Diogenes said, "he would rather be the ram than the son of a Megareusian."§

It was the impossibility of felting the hair of the goat and the camel, doubtless, which first suggested the idea of weaving.

Tasso says—"As the sheep yields to man wool for clothing, so the goat furnishes hair for the use of sailors, and to make ropes for military engines and vessels for artificers.‖ . . . The goats are

* Il. x. 265. † Bel. Civ. iii. 44. ‡ Thucyd. iv. 34.
§ Diog. Laert. vi. 41. ‖ De Re Rustica.

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shorn in a great part of Phrygia, because there they have long shaggy hair. Cilicia [*hair-cloths*], and other things of the same kind, are commonly imported from that country."

Aristotle and Pliny indirectly corroborate this testimony.

The character of this cloth is intimated in the prophetic symbols of the signs of the second advent:—"The sun shall become black as *sackcloth* of hair."

Dyeing seems to have been of very ancient origin; and Nature appears to have suggested the idea in the rearing of black, white, and party-coloured sheep. The city of Sæbaris stood between two rivers, the one called by its own name, and the other Crathis. The white breed seems to have flourished in one valley, and the black in the other; hence the inhabitants believed that the sheep which drank of the Sæbaris were black, while those which drank of the Crathis were white. Horace speaks of the river Galesus,

"Where flocks of richest fleeces bathe;"

as if an impression prevailed that the waters of the river had some influence on the *texture* if not the colour of the wool.

The same idea of the value of the washings in that river, either in dyeing, cleaning, or refining the wool, occurs in Martial,* where Chloe gave to Lupercus

"Of Spanish Tyrian *scarlet* fleeces,
And togas washed in warm *Galesus*."

The same writer makes the Apulian flock to be white:—"Of white thou hast to clothe a tribe—sufficient stock—the fair produce of more Apulian flocks than one." † That brown and red wools were also grown, is shown by the same authority—"While Rome delights in the *brown*, gay Gaul prefers the red,—gratifying her blood-thirsty children." "Tyrian purple" is alluded to by Juvenal. Bætis had fleeces possessing "metallic tints," especially the prized "golden hue," and also the sober *native hues* of "Bætic drab or grey." The two colours of Spanish wool were said, in 1607,‡ to be one a golden yellow, and the other a ferruginous or brown colour. These colours probably depended on the soil on which the animals fed.

The ancient monuments give the earliest indications of the wool trade. On an ancient Roman altar dedicated to Hope, above the emblematic ears of corn and the bee-hive, is a distinct bale of wool. On the altar to Silvanus is the caduceus of Mercury and a bale of

* Lib. iv. Ep. 28. † Lib. ii. Ep. 43.
‡ By Ramirez de Prado.

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wool, evidently tied with twisted and knotted cords, as if packed up for exportation.

The woollen manufactures seem to have been common amongst the Belgæ and the Gauls. The latter is alluded to in contrast to the proud purple, or Tyrian, and designated "goss Gaulish grey." In Juvenal's ninth Satire, allusion is thus made to Gallician manufacture:—"Some coarse brown cloak I may happen possibly to get—some Gallic fabric, as a defence from the rain."

When Britain was conquered by the Romans, Cæsar describes them as possessing cattle, being a pastoral people; and the northern Celts, who lived north of the Thames, did not grow grain, but lived on milk and flesh, and clothed themselves with skins. Strabo, however, speaks of the Belgæ, or inhabitants of the north of Gaul, who also occupied Cantium, or Kent, as excelling the rest of the Gauls in their manufactures. Eumenius, in his panegyric in praise of the Emperor Constantius, in 310, says—"And fortunate Britain, now the happiest country upon earth; for thou hast been the first to see Constantine made emperor." After dilating on the blessings of its climate, and its general productiveness, he says—"Thy woods contain no savage beasts; thy land no noxious serpents; but an innumerable multitude of tame cattle, distended with milk, and *loaded with fleeces*." The heavy-woolled sheep evidently prevailed in this country in his time.

There can be no doubt, however, but at the time of the invasion of Cæsar there were two kinds of wool produced in this country, and two kinds of garments manufactured by the polished Belgæ, who inhabited Kent. The one kind was thick and rough, calculated to protect from the cold, and common to northern countries; the other a fine soft material, resembling the Highland plaid. Doubtless the one symbolized the wool of the Teeswater or the Cotswold, and the other of the Southdown.

That fine wool was then known, amply appears by the quotation of old Holinshed from Dionysius Alexandrianus, who said—"The wool of Britain is often spun so fine, that it is in a manner compared to a spider's thread." Wherever the British manufactories of woollen might have been established prior to the conquest, Venta Belgarnum (now Winchester), was the place where the Roman fulling factory was established, possibly to manufacture cloths for the dresses of the soldiers of that warlike people. Here, surrounded by the short wools, and at no great distance from the Cotswolds—the long-woolled race of sheep—it is uncertain, for a long period after its establishment,

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what kind of wool was manufactured there, or what kind of cloths the demand of the day required—only, up to the present time, it seems that this seat of manufacture was never wholly deserted in all the turmoils and troubles of the times subsequent to the Roman invasion, arising from foreign conquest or domestic feuds. It over-rode the despotisms alike of the kingly, the baronial, and the priestly rule, and is now bound up with the rapid advancement of the middle class of society.

The mother of the wise King Alfred is spoken of as spinning wool, and instructing her daughters in the same useful art. The daughters of the subsequent King Edward the Elder were "set to woll worke, taking example of Charles the Conquesteror."

It was not until 1140 that any very definite or distinct allusion is made to the British woollen trade by any historical document. A petition was presented to King Stephen to enable them, by his charter, to form themselves into corporations or guilds. The object of this petition was to possess, under the monarch, self-government,—to have the power of appointing their own members, and subjecting them to such orders, laws, and regulations as they, from time to time, saw expedient.

One reason why trade guilds were readily granted by a despotic kingly power, was doubtless to squeeze from them more taxes than he could from individuals. Thus our early despots were the longer enabled to resist the baronial power, then becoming a great check upon the crown. The guild of Winchester, the old established seat of woollen manufacture, paid one mark (about forty shillings) for the power of self-government; and an annual payment of £16 is afterwards noted. The London weavers paid a similar sum; while that of Oxford paid forty shillings. Others paid even larger sums, important in those days, and showing these guilds to have been of great importance. The Worcester guild paid 100 shillings for certain specific privileges, and in ten years' time the decaying London guild paid £12 only.

In the year 1172 prohibitions against mixing Spanish with English wool were published. Whether national prejudice, or a desire to stimulate the improvement of the wool, was the object, does not now exactly appear. Some imagine that it was done in the same way as the celebrated hop-petition was framed, "because they would spoyle the taste of drinke"—so the Spanish wool would degrade the British article. Be this as it may, this threw the British on their own resources for the manufacture of broad cloth; and from that day they acquired the power of manufacturing it independently of Spain.

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The religious crusades of the middle ages drained the country alike of its fanaticism and its money. So impoverished was our Richard the First, that when he was imprisoned by the Duke of Austria, he had his heavy ransom of £300,000 paid by levies on the plate of the avaricious monks; and when they had no plate they had to send one year's produce of wool. Into their hands the best of the sheep land, and most of the silver, were very rapidly finding their way; and hence they afforded a ready means of raising the ransom of their king from the hands of the freebooter.

The inundations of the Low Countries (whose woollen manufactures appear to have sprung up at an early period, and to have been worked with great vigour) sent over some of the distressed operative Flemings in the reign of the first Henry, which gave an impulse to the improvement of English manufacture. Sir Matthew Hale speaks of the manufacture of cloth in the reigns of Henry II. and Richard as "greatly flourishing."

During the struggles of the barons with the monarchy, the woollen trade seems to have become depressed. The same authority says, that in the reigns of the two first Edwards it was "wholly lost," and the money for wool was made by exportation. The Flemings had again established their manufacture, and beat the English out of the market. The third Edward set about restoring it by vigorous means. Aware of the impetus given to it before, by the importation of Fleming weavers (or from their present skill in beating out the English manufacture) in 1331, he brought John Kemp, with seventy Walloon families, from Flanders, and an Act of Parliament was passed to encourage them. Flemish or other foreign goods were also prohibited by statute, and, to crown all, exportation was altogether prohibited; although it had before raised the sum of £534 — a large sum in these days, equal, perhaps, to £8000 of our money; and this at a period when population and trade were equally scanty. The promises made by Edward to the Flemings, during his visit to the Duke of Burgundy, were faithfully kept. Part of them were located in Kent —the seat, no doubt, of woollen manufacture before the Roman conquest. Some settled in the valleys of the Severn, where they established the celebrated manufacture of West of England cloths; while others went to the valleys of the Aire, where they found localities and water suited to their requirements. The two latter localities are still the seats of woollen manufactures in this country.

Edward strengthened both his purse and his country by these judicious steps. He found that the woollen trade he had encouraged

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afforded the sinews of power in his wars with the French; and when English wool after this found its way again to Flanders, in 1337, it sold for £400 per sack, and 10,000 sacks were sold at that time in Brabant.

The hilarious reign of Henry VIII. gave an impulse to cloth manufacture, though his enactments appeared calculated to depress it. Still, when one man (John Winchcombe) could equip sixty soldiers at his own expense, and maintain them at the battle of Flodden Field, it is evident that his one hundred looms had realized him a considerable profit. This was a way in which the manufacturers were able, when willing, to assist their monarch.

The privileges to certain cities, for services rendered, doubtless had an origin somewhat in this manner. York had an exclusive monopoly granted in the manufacture of coverlets; and worsted spinning was limited to Norwich.

Another impetus was given to the trade by Elizabeth. Home industry seemed now and then to require an impetus by importations of men from abroad, in the same way as a stock often requires foreign corrections to keep up its stamina. The persecutions of the Duke of Alva banished several manufacturing Protestants, to whom Elizabeth gave ample protection, and afforded a home; and they brought with them all their accumulated improvements and skill. Of these, five hundred took refuge in London; and the southern seats of manufacture had large influxes of weavers. The scarcity of hands complained of in the reign of Henry VII. disappeared; and Norwich had no longer to complain of any deficiency. In this reign, trade with Russia and the formation of a Russian Trading Company followed, and still further increased the foreign trade of the country. The Turkish Company was established in 1581; the African Company in 1585; and the East India Company in 1600.

In 1667 another importation of foreigners—not manufacturers, indeed, but dyers—arrived in England, headed by a person of the name of Brewer. The principal English dye had hitherto been wood; but he taught them all the mysteries of dressing cloth as well as dyeing.

In the reigns of the Charleses, the public turbulence and arbitrary interference seems to have crippled the trade. By Charles II., as well as by the Commonwealth, the exportation of wool and sheep were strictly prohibited.

Manufactures seem to have steadily progressed in the reign of the liberal and open-hearted William III. Considering Ireland to be a

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linen and not a woollen manufacturing country, he discouraged woollen manufacture there. The linen and silk trade were pushing onwards, and treading on the heels of the woollen trade. Florentine wool manufacture was stimulated by every means, legitimate and otherwise, and Sweden began to rival England. These were all competitors for public favour, and tended, no doubt, to render the English struggle to keep her foreign trade much more difficult.

The Georges took considerable pains to encourage the woollen trade. They were indebted to it in more ways than one. Manufacturers and staplers raised troops to assist them to repel the invaders. John Routh, a stapler of Thorpfield House in Yorkshire, raised a troop, and had colours presented by his sovereign, George II., for his loyalty. Like the assistance rendered to Henry VIII. by John of Nayland, it was the more acceptable because it was cheap. The king did more. He granted a charter (which is now in the writer's possession), conceding freedom of tolls to John Routh and others on the Aire and Calder rivers—an immunity of great value to a wool stapler.

It was in the reign of George III. that our manufactures rose to their pinnacle of greatness. We were at peace, though heavily taxed, while all the world was at war. A great portion of our great national debt doubtless went into the hands of the British manufacturers for the cloths they manufactured and fortunes were realized; which created a fourth estate of the realm—the *millocracy* of England. In the reign of George III. inventions in mechanical appliances, stimulated, doubtless, by the vast demand for woollen goods during the war, have placed the English clothier amongst the most flourishing and successful in the world. Our happy island, unscathed by foreign invasion for eight hundred years, has been an arena where he might well challenge the world for competition. At this period we obtain wool from Australia, Germany, Spain, Russia, the Cape of Good Hope, South America, and the East Indies.

The following will show the relative importations from the principal of these countries for the year 1815 and 1849:—

Total in 1815	.	13,634,167 lbs.
„ 1849	.	76,768,647 lbs.

An increase of nearly sixfold in the thirty-five years since the peace. The countries from whence it has been received have also varied in nearly an equal degree, and displaced each other, as will appear from the following list:—

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	1815.	1849.
Spain	4,937,438	127,559 lbs.
Germany . . .	3,137,438	12,759,011 „
Australia . . .	73,171	35,870,171 „
Cape of Good Hope .	23,363	5,377,495 „
East Indies . .	——	4,182,853 „

The declared value of the woollen manufactures exported was—

In 1789 .	£3,554,160
1829 .	5,372,490
1847 .	7,897,402

Thus a greatly progressing trade has been going on during the present century.

In England the woollen manufactures will always be intimately bound up with its pastoral character. Though dependent, as will be seen, on foreign countries for a large amount of the raw material, it still derives a great mass from our own country; and the paying character of sheep, both directly and indirectly, will have a great tendency to keep up the mutual dependence and reciprocity between the wool grower and the manufacturer.

The present extraordinary rage for cheapness is amongst the most wonderful tendencies of the age. It is inducing the English manufacturer to make up fabrics mixed with calico, and to work up wool dust, which will not redound to his credit or his high rank in foreign lands.

CHAPTER VIII.

BREEDING AND REARING.

The principles of sheep-breeding differ but little from those of breeding any other class of animals. The real intrinsic rules are in all respects precisely similar. If one person is more successful in breeding sheep, and another in breeding cattle, the cause is attributable to that persevering attention which is required to keep the mind undividedly directed to one particular pursuit; for if it be diverted to two very different objects, one or the other, in all probability, will be more or less neglected. In order to succed in life, a man must have one object. "Too many irons in the fire," is an

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adage more applicable to breeding animals, perhaps, than even to the blacksmith, who runs the danger of "some burning, and some getting cold." The breeder must watch tendencies and results day by day; and an alloy brought into his flock will, if the produce is not sacrificed, be the ruin of the race.

The first rule is to *breed from the best;* but this has its limitations and restrictions. A man may easily ruin his flock by adhering to this rule, without attending to its antecedents and adjuncts. There are two modes of effecting it. One man will scour the whole country to obtain the best ram, or to buy a few prize gimmers. From these he will select the most promising, and insure better alliances for his flock. The result will be a set of nondescript mongrels. Some distant impurity of breed manifests itself; some tendencies, far back in the genealogy of the race, break out, which are modified in one case, and fostered in another, until the flock shows signs of indiscriminate and injudicious dabbling.

Another man, better acquainted with the rules that regulate vitalism, takes his own flock, and having selected the best, he takes only those which he *knows* to be of the same breed; and thus goes on steadily aiming at giving breadth to the animal. He knows that the sheep, in order to thrive, must have a large lymphatic system. He must have a capacious chest and loins, and a frame on which to secrete fat, with lightness of offal. Hence he does not select at first that which has the most of these qualifications, but which is, perhaps, the widest form, and most unlike his own flock; but he takes those which show a tendency to pervade, in one uniform direction, not an individual, but the whole of the flock; and this he takes to mend his own. By this means all are a little improved in the direction he requires; and all keeping *alike* in their general contour, there is a kind of permanency and uniformity in the main features of the improvement.

Hence, if we look at the flock of the first-named breeder, we shall have breeds both large and small, "bony" and "bloody," rough and fine, white faces and blue, coarse and tender,—in fact, a set of mongrels, none of which was of sufficient value wherewith to form a flock, and none to be depended upon for any future breed.

The other breeder, by his cautious and judicious course, has an *uniform flock*—a mark both of purity and of skill; for no unskilful man ever long kept a flock in a state of anything like similarity to each other. Uniformity is as important to the jobber and the butcher as it is to the grazier. The merit of being "even" is always appre-

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ciated in a market, because they always suit the same class of customers. One butcher buys a large fat animal; it suits his friends: another, a light, thin one (wool being required by one, and mutton by another); one requires fat, and another muscle; and to make an uneven lot of sheep sell for all they are worth in a market, they must be judiciously sorted.

Perhaps the best criterion of a good breeder is "brains." He must have great powers of discrimination and perception; and then he will usually judge right. If he can readily see what suits his flock, he can easily obtain the animal in one place or other.

The usual course is to breed from the flock-master's own ewes, and to buy a ram from another breeder. The breeder makes two selections:—first, he drafts off the ewes of his flock which are unfavourable to his objects, then selects the best of his gimmers from the flock of the preceding year; and, keeping an eye to the intended characteristics of his animals, he selects a ram suited to their condition, of the same breed. The ram must be one thoroughly bred. Unless selected from his own breed, whose history, age, biography, and chronology he knows off by heart, the ram must have been used one year at least on a small proportion of ewes of the right kind, to try the effect. This may appear over-cautious; but it is safe breeding; and by this alone can thorough purity and caste, as well as uniformity, be obtained.

If there is a difference in the general outline of a flock, this is to be corrected by acting on the flock itself, and not by a new repurchase—a state of things seldom desirable, or, indeed, possible. Sometimes two, or even three, rams are given to specially-selected ewes, in order to secure a more general uniformity. But this is seldom satisfactory. Uniformity is best attained by drafting off regularly the failing ewes, and breeding from one common sire, which appears to have a peculiarly favourable influence on the breed,—greater even than the mother appears to exercise on the flock; for while a mother can only influence two animals, a ram will influence the whole of the produce, in a greater or less degree.

The main points in a ram are too well known to require any minute or elaborate description. The *points* attended to in the preceding pages, descriptive of the different breeds of animals, will be a general guide, more accurate than a very detailed description at this particular stage. Light offals, fineness of skin, absence of superfluous and coarse wool, and broad and deep-round frame, are the leading features. The back should be broad (especially near the

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shoulders, which is often a failing point in sheep), and well covered with solid but yielding and slightly elastic flesh,—not mere made-up flabby fat; though it is sometimes said that an animal on which it is possible to get a full fat development is one to be selected, on the ground that in a bad one this is impossible. As fat, however, is necessarily laid on muscle, it appears to be obvious, that when there is plenty of muscle, the fat may be expected to follow. A deep chest, broad at the base, is what must be aimed at; for the butcher always examines it as indicative of *weight*. It is the boiler of the steam-engine—the source of all the locomotive power, the mainspring of its energy. It must be thoroughly capacious, or there can be no successful feeding. The sheep must walk *wide* on both legs,—not a huddling, crippled staggerer, but a steady, firm walker,—holding his legs at a distance of at least six inches parallel to each other. The head must be fine, not flat, but rather broad, and the eyes very full and prominent, exhibiting, on the whole, an expression of quiet liveliness. The ears must be small; and the bare parts,—the face, ears, and legs,—whatever breed the animal may be, must have fine wool or hair upon them. The colour, too, is of great consequence. It will vary with the different breeds. A departure from white in the Cheviot would be as great a failing as black in the Highlander, brown in the Southdown, or blue in the Leicester. On this point there may be discussion. The colour of pigs once decided their merits, even to qualification and disqualification to compete at the Royal Society's Meeting at Derby. This was ridiculous enough; but the colour of the face of a Leicester is, in our opinion, of far more consequence, in a fattening point of view, than is generally imagined. It ought always to have a tendency to light blue in the ram, or we should suspect some Leicestershire or Teeswater tampering; not but that both are legitimate, and even an advantage, if judiciously made, for ordinary turniping wethers, on good sound turnip soils. Then good legs should be secured, if possible. The tendency is to encourage flesh developments on the back, to the neglect of the legs, especially in the Leicesters. Some of the best that we have seen are, in all other respects, sadly deficient. The fine development of the back seems not only to have robbed the leg of its muscle, but, by contrast, to have exaggerated its own deformity. The dread of a long, coarse leg of mutton has diminished the circumference, as well as the length; and, though a short leg of mutton is desirable in a Leicester, we must guard against a loss of its rotundity. Size is also of consequence. The finest specimens of Leicester—the purest and most symmetri-

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cal—are now decidedly the smallest. Breeders must earnestly look to this, and be careful, in selecting the ram, to have masculine qualities enough to secure a hardiness in the flock.

Before we describe the desirable qualities of the ewes, we must here enter a protest against the unnatural practice adopted by some ram breeders,—a practice too much fostered by the demands of their customers, but a course absolutely destructive of the finest breeds. The ram is a victim to his stomach. He is rendered miserable by over-cramming, in order to be ripe for the "show" which is usually held in August. Even art is resorted to, in order to exhibit the unhappy animal in a state as fat as nature can make him. No change of food, rung in infinitesimal changes,—no provocative of appetite,—no promotive of sleep,—no comforting or quieting dose is grudged or withheld for a moment. Cabbages, cake, corn, peas, malt, even rum and new milk, are employed in succession to keep the animal almost unconscious of want, or full to repletion. He is heavy, and somnolent, and fat, and the ram hirer thinks he has got a bargain. But the sale or letting being over, he is brought down. In his over-fat state, he would not look at an ewe. The gastric secretions had entirely overcome the sexual system. Hence, at pairing time he is a decaying, and fading, and reducing animal; and this, added to his previous pampering, makes his virility very doubtful.

The ewe should be straight and broad-backed, wide in the loins, and, what is often a failure in ewes, deep-breasted. She will always be sharper-angled than the ram; but breadth and depth, with fineness about the throat and legs, should be a special object.

After what has been said of uniformity in the flock, it is hardly necessary to say that the ewes should be as much alike as possible; and not only appear alike, but be, as nearly as possible, from the same general stock, with the same tendencies and peculiarities; so that any counter influence, brought to bear on the flock in the characteristics of the male animal, might affect the whole flock alike in a favourable manner.

The *cross-breeding* of sheep has attracted a great deal of attention; and it is odd enough, that it has all resulted in the adoption of *one* of the ten or twelve pretty distinct breeds as the crossing race,—at least on one side. Whatever may be the kind or quality of sheep, it seems now to be a settled rule that the *best cross which any sheep is capable of is one with the Leicester*. Whether Downs or Scotch Highlanders,—whether Cheviots or Cotswolds,—they all seem to answer the best when crossed with the Leicester.

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So far we seem to have got one general rule, but another appears to be pretty well in practice. It is not usually judicious to breed crossed animals. Uniformity, symmetry, and often disposition to feed, are lost by such a course. To cross almost any breed, pure in itself, is an advantage to the person who possesses the next generation; but when these are again attempted to be set up as breeders, the advantage seems to cease.

The most usual crosses are those of the *Leicester with the Southdown*. The true Leicester is unfashionable, though a paying class of mutton. It is fed too early, and is too fat for the amount of muscle to secure favour at the tables of the rich epicure. The advance of luxury seems to be greatly in favour of the discarding of that profitable animal. To this we shall afterwards advert. The Southdown has been selected to give a quality to the mutton, a fineness to the fleece, a tendency to lay on fat, with hardihood; and for several years a most successful breeder, Mr. Thomas C. Johnson, of Chevet Grange, near Wakefield, has been one of the best farmers in the West Riding of Yorkshire. We happen to have seen some extraordinary specimens of his flock, embracing, perhaps, more of the qualities of the two breeds than could be conceived possible. There was considerable size, a heavy fleece of the finest wool, large frame, plenty of fine-grained mutton, with early maturity, and a fair mixture of fat and muscle. These are qualifications seldom realized in one animal. What is more, they were precisely like each other. The result seemed uniform; and though they cannot be considered as stereotyped characteristics, yet they are qualities preserved with considerable tenacity, and, we are assured, not at all obliterated by continuing to breed in and in with the crosses. Be this as it may, the result is pretty certain; and a good flock of Southdown ewes, put to a Leicester ram, may, with pretty considerable accuracy of calculation, be depended upon as a successful cross of sheep,—fashionable to the butcher and wool dealer, profitable to the farmer, and more to be depended upon to meet a market than, perhaps, any other class of sheep, if we take the average of the run of seasons. We have heard of the reverse. Mr. Johnson has himself succeeded in breeding good produce from Leicester ewes and a Southdown ram; but we think that evidence is entirely in favour of the reverse of this cross.

The Cotswold is sometimes crossed with the Leicester, and with some considerably encouraging results. The fashion with Leicesters, as we shall presently show, is to feed them at one year old. For this

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purpose they are somewhat small,—their weight seldom exceeding, and not often reaching, twenty pounds per quarter. The Cotswold gives *size*; and thus we may expect to see the Leicester increased, perhaps, two pounds per quarter in the spring, if the tendency to fatten is not diminished by the cross, which seems not to be the case. We have seen a few specimens, but hardly sufficient to be able as yet to form an opinion so accurate as to speak with any great degree of confidence. Mr. Peter Stevenson, of Rainton, a sound experimentalist, has for two years persevered in sending for Cotswold rams to his Leicester ewes; and the lambs have shown the fattening propensities of both, with an improvement in frame and size,—both great objects to the grazier and the breeder.

A cross of a wider difference is that of the *Leicester and the black face*. This, though an union of breeds apparently so dissimilar, is one of a well-established character, and is both profitable and successful. The hardihood and good mutton-qualities of the one, added to the feeding qualities of the other, produce a cross of a very valuable kind. Mr. Dickson mentions a specimen, slaughtered by him, weighing 39½ lbs. per quarter, and having 12 lbs. of wool, selling at 1s. 3d. per lb., nearly as fine as the Leicester. These, though wonderful exceptions, are indications of the thorough success of the cross, which is now very extensively adopted on the hill sides of Scotland; and vast numbers of the sheep, valuable both for wool, mutton, and hardihood, are now consuming the green crops of the north. So general has now become the system, that it is calculated that there are 15,000 true bred Leicester ewes employed in breeding rams for the purpose of crossing in Scotland.

To form some idea of the result of the cross, it may be taken as follows:—The sheep, at from eighteen to twenty-four months old, will average 21 lbs. per quarter, and the wool may be 5 lbs. per fleece, worth 1s. per lb. They are fed on seeds in summer and turnips in winter. They are a hardy, profitable race, which feed with considerable facility; and they always command a ready sale in the market. The ewes are kept entirely pure, and are intended for black-faced breeders; or a black-faced Highland ram is kept for the ewes intended to breed store gimmers.

The Leicester sheep used are by no means of the very highest breed. They are good, useful animals, but by no means delicate; and somewhat lower in the scale of pedigree than would be admitted in the catalogue of true Leicesters; but, hardened and acclimatized, they make an excellent cross.

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The cross between the *Leicester and the Cheviot* is also in favour, and is one which has been perhaps longer practised than that of any other breed. The crosses are fast swallowing up the pure Cheviots, as far as sales at the markets are concerned; and fully two-thirds of the sheep with Cheviot blood are now crosses with Leicesters. The size, the fatting propensities, and the early maturity obtained by the cross, and modified by the hardiness of the mountain breeds, render the union peculiarly valuable. An increase in the market-value of from 2s. to 2s. 6d. per head is secured by the new infusion of blood. If a breeder has 500 or 1,000 sheep, it will make a difference of possibly £150, or more, in his receipts; and this at little extra cost, the small amount of better keep, scarcely appreciable in a farm, making all the difference.

Some parties carry the cross further. Not that they breed the crosses between each other, but they again carry the crossed lambs, or hoggs, to a Leicester ram, and this as often as four or five crosses, until the Cheviot blood gives way to the Leicester; enough only being kept to secure sufficient hardihood for the high-lying lands and exposure of the north. These are sold at fifteen or sixteen months old, and will even then weigh 17 to 18 lbs. per quarter. Sometimes they are fattened on their natural hills, and sometimes sold southward to graze,—grass-feeding being more favourable to them than being confined to turnips. We happen to have some grey sandy soil, on which they will die in great numbers, from no apparent cause.

The only cross where the Leicester breed is absent, of which we can report anything remarkably successful, is that of the *Cheviot* and *Black-faced*,—the rams of the former and the ewes of the latter. This cross is calculated for barren pastures, and situations more exposed than can be borne by any of the crosses before enumerated. The sheep are particularly hardy. Indeed the union of two such hardy breeds can scarcely tend to diminish that peculiarity; while the quality of the mutton of both seems to be retained. It is a cross which requires perseverance. The first is not always entirely successful. Carried back to the pure Cheviot ram, it improves at every stage; until rapid feeders, good mutton, better wool than either of the parents, and larger weights, are amply secured. Careless breeders may soon select a bad specimen of both to breed from; but when the largest and broadest of both sire and dam are selected, the cross is eminently successful, and is in great favour with the grazier, the butcher, and the consumer.

Complications of crossing are not very successful. It is almost im-

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possible to obtain uniformity by any complexity of breeds; and all attempts should be on a small scale, and the results watched and carefully noted. If a Leicester were brought to a cross between the Cheviot and Highland, no one can tell what the result would be; probably, from the contentions of the counteracting blood, it would be a hard feeder. A struggle would probably grow in the vital processes very unlikely to tend, on the whole, to improve the physiological tendencies required by the grazier; and some they might probably destroy. A cross between the Teeswater and the Leicester, carefully bred for a long period, might give both size and feeding qualities to the smallest class of Cheviots; but it is doubtful if the two first-named breeds were not originally identical, and that cross is by no means a violent one. The same may be said of the Lincoln; but we should by far prefer our own bred cross with the Cotswold at once, as attaining all that is desirable by a more direct and certain means.

We now approach the *management of breeding ewes and rams*, and shall first apply our attention to the Leicester breed,—not only because they require the most attention and care, but because their management will, with little modification, apply to the best plans adopted for almost every other breed.

From the last week in September the ewes begin to be better kept. Either they are put on aftermath or clover stubble, or what is by far the best, on rape. If a numerous produce is the great aim, a most wonderful and almost talismanic effect may be thus produced. It may be depended upon, that an increase of full thirty per cent. of lambs may be attained by keeping the sheep on rape at the time and just before the ram is admitted to the ewes. We have witnessed the most remarkable instances of this. We have known flocks, in a run where lambs were not a remarkably plentiful "crop," where the only single lambs were from those ewes which had been twice served by the tup, and the last service had been after the rape was done, when all the rest were double, with the exception of threes and even fours. We knew a small farmer who had thirty-four lambs from fifteen ewes so fed. The two cases of single lambs were those which had "come over," as we before intimated.

A ram, when shearling or two shear, will serve sixty ewes, or even eighty, if proper care be taken. The too common mode is to allow him to run with the ewes at large. This is a great waste of the animal's virile powers; and when as many as the last-named number of ewes are given him, another course should be adopted. A shepherd

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should be left in entire charge, a pen or pair of stocks, as it is indifferently called, provided, and the ram kept confined in the house, or in a very small croft. An active, lively ram should be sent with the ewes, and should have an apron tied about the crop, so as entirely to cover the genitals. If his breast is smeared with red it is no disadvantage, as it more distinctly marks the ewes. When an ewe is observed in full season, she should be brought to the stocks, and served by the ram with whom she is intended to produce, and immediately carried away.

There are physiological objections to this; but when eighty ewes are provided it is indispensable, and when twenty to thirty guineas are given for the loan of a ram for one season, it is not unreasonable to expect him to discharge more duties to the flock than is possible by running at large. When the flock comes in season very rapidly the ram serves them only once; if not, they are served twice, and then turned away for a fortnight, when they are brought back to the teaser; and he is then smeared with a blue or black colour, to distinguish those who come once. When the ewes are not named, which, we are sorry to say, is too often the case, they should all be numbered, and a register kept of the ram and his breeding, and the date of each ewe being served. This is not only an invaluable record in the case of pedigrees, but it is still more useful as being a guide to housing, when near the period of lambing; and, though the doggrel distich is true that—

> "There was never a shepherd, that ever begun,
> Can tell whether they go nineteen, twenty, or twenty-one,"

still a very important classification is secured by those who have their register, who cannot house the whole flock, especially in a time of severity and difficulty.

When the active process of gestation has commenced, care should be taken to prevent the ewes getting too fat. If they do, inflammatory disease, absence of milk, and general risk, are sure to be the consequences.

A run in the pastures, from October to the end of January, with a little hay in foul weather, is far more wholesome keep than any very nutritious or stimulating food. To put ewes on turnips with fat sheep, is of the two a more dangerous evil than absolute pinching. We had rather see ewes lean than fat in February. Assuming them to be calculated to lamb late in March, a few turnips may be given them on the grass from the month of February; and when within a month of lambing, the most stimulating and invigorating food should

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be given. By far the best is about a gill of corn per day each animal, being supplied morning and evening in troughs. This fills the system with strength and vigour to get over the lambing season, and makes them abundant in milk to provide for the offspring. As ewes are subject to the tick, it is desirable to water them in the course of the autumn or winter in a mode similar to the one hereafter described.

The average period of gestation is, as we have seen, from twenty-one to twenty-two weeks; and about a fortnight before that period expires, the ewes, as described in the register, should be separated from the rest, and placed in a grass croft near the house. They should have shelter afforded from the north and east winds by temporary houses made of hurdles and straw, in which the unlambed ewes may be confined in stormy weather,—with smaller houses in which the newly-dropt lambs may be separated from the rest, and kept free from danger.

Small as is the expense of this process, we are sorry that it is not always attended to. For the lambing season a croft of winter-freed grass, or what is even better, uneaten fog should be preserved; and of these there should be three or four,—one for the ewes likely to lamb first, in which should be the large shed, and one for the recently-dropt lambs, in which should be the small huts. To save the grass, in a time when, from a harsh spring or other reasons, it is unusually scarce, the ewes may be driven daily to the turnip-field, and taken off at night. It is a place which, as affording them exercise, is very beneficial.

The best food for the ewes, after the lambs no longer require shelter, is Italian rye-grass or rye. The mode of cultivating it is given in the Journal of the Royal Agricultural Society of England.* Nothing will grow more rapidly after being eaten down, and nothing will teach the lambs to eat sooner than this forward rye. The corn should still be continued along with Swede turnips; while the advent of fine weather, and the diminished wants of the lamb, will be the criteria for deciding when the practice ought to be discontinued.

As in our treatise on the "Cow," we shall reserve our observations on parturition for the chapter on Diseases; for though it can scarcely be classed as a disease, still it requires that kind of treatment which diseased animals generally have afforded to them; and as such will best appear in that chapter.

At the risk of a little tautology, we cannot help referring to the

* See "Milburn's Prize Essay on Early Spring Feed," R. A. S. Journal, Vol. ii., p. 2.

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management of the *house lambs* intended for the London market by the Dorset breeders. These ewes being more willing to take the ram at an early season, are put to, so as to drop their produce at Michaelmas. Old ewes are invariably selected; that is to say, those which have had lambs once or twice before. As soon as they are dropped they are carefully separated from the ewes, and placed in a lamb-house or barn, with chopped hay or straw for food. The ewes are taken to them to suckle three times a-day, remaining with them no longer than is necessary for that purpose. The ewes are supplied with the very best food that can be had for them; and chalk is laid for the lambs to lick inside their house. As soon as possible, the lambs are tempted to eat chopped clover, bruised corn, bran, and split peas; and after the first lot are drafted off to market about Christmas (or from that to Candlemas), the remainder are suckled by the mothers.

The *weaning* of lambs is a delicate operation, and one that requires great caution. Mr. Smith, of Burley, whose practical knowledge well earned him the prize for his Essay on the management of sheep, says the ewes should be taken from the lambs, and not the lambs from the ewes. It is always best, however, to place the ewes and lambs together in a pasture most suitable for the lambs. The ewes should be carried out of hearing of the lambs to a poor pasture, and milked for a few days, until the lactiferous system ceases to secrete, and then it is best to send them to a cool upland, if possible.

The season for weaning lambs reminds us of the sad ignorance often displayed on this highly important part of a farmer's proceedings. Too few sheep are often kept to afford the sole charge of a shepherd, and so to admit of the perfect division of labour; and when even a shepherd is specially kept, he is too often ill-acquainted with the duties of the office. They are generally ill-educated, little acquainted with animal physiology, and full of superstition. The farmer has to run the risk of employing persons, not who pay premiums for education in the branch of art they practise, but who are paid for attending to their duties, and, in the course of payment, catch just as much knowledge as will enable them to obtain more pay from some one else, or from the same individual. This is a fact often lost sight of, in discussions on the wages of the labourer in husbandry, and in reflections on the capabilities of that class of men. A tradesman, a carpenter, a shoemaker, a tailor, not only foregoes some four, five, six, even seven years of service and pay, and gives a premium to be taught a trade,—his tools cost him a considerable

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amount,—and yet his pay, as a journeyman, is contrasted to disadvantage with the farm-labourer, both as to his wages and his qualifications.

But it is not always the servant who is to blame. It often happens that the master himself does not thoroughly understand the principles of natural history as applied to these animals. The lamb for the first few weeks of its existence depends on the supply of food from its parent alone. It is the very source, and contains all the elements, half assimilated, of blood, of muscle, and of bone. At this stage the supply of the mother is often neglected. She is exposed to cold, and suffers hunger. The milk which nature drains from her system is exhausting her powers, and yet no shelter nor extra food is afforded. This is not the shepherd's fault, and he is not to blame if she dies, or sheds her wool, or becomes unfit to rear her young. A little corn, or cake, or artificial assistance, would have strengthened the ewe, and supplied the lamb with its full modicum of necessary food.

As soon as the lamb begins to eat, its auxiliary to nature's food is often badly attended to. A pasture is selected for the mother as unsuited for lacteal purposes as it is unfit for teaching the offspring to feed, which thus prolongs the dependence of the latter upon the former.

As the increase of vegetable food eaten by the lamb takes place, the supply and the use of the milk diminish. And if a peculiarity of constitution of the mother exists, or if any damage takes place to the udder, or if nature has been overtaxed soon after lambing time, she will become dry, despite of the efforts of the lamb.

At this stage they are often depastured on over-eaten seeds. The bowels of the lamb are tender, and they can ill resist the purging effects of this improper pasture; and hence the shepherd often has scour in the unweaned lambs, and applies the shears and medicine—but, they die. He has not discovered that the lamb is weaned, and has an improper pasture. It is with its mother, and he neither knows nor cares whether she has milk or not. Medicine and shears do not avail, and his lambs die of scour.

Nor at weaning time is a better provision made. The master does take care to put them in a somewhat worse pasture, in order to check the flow of milk, and to render the operation a less risking one of the dam; but, unless he is careful, he is injuring the produce.

Once place weaned lambs in over-eaten seeds, and the whole flock

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takes the scour, followed by flies, and maggots, and medicine, and death.

Now, a hard old grass pasture, or a second crop of mown clover, will be perfectly safe. It is not the excellence of the pasture, as regards its quantity, which is to be feared, but the quality; for if the land be rich, with grass newly-grown seeds, the scour is certain to follow. Some flock-masters, who have not red clover nor poor grass land, will send their lambs to a poorer soil to graze, until their bowels have become accustomed to purely vegetable diet.

Should scour take place, it is often difficult to stop it. The bowels must be relieved of the dry food, and the system hardened by tonics. A dose of a quarter-of-an-ounce of flower of sulphur in old milk will generally succeed in stopping the disease, if it be properly attacked in its early stages.

Another neglected circumstance, in weaning lambs, is the want of removing the mothers far away, so that they may not hear the bleating of their lambs. Humanity and interest alike require this precaution. The ewes should be taken to a cool, plain, and rather poor pasture, out of hearing of the lambs; otherwise, the excitement and agitation will do them considerable harm. On the second day they should be all carefully examined; and those with swollen udders should be milked. It is no bad plan to wash the udders with cold water. The third day a similar process should take place throughout the whole flock. On the fifth day another and final examination may take place, when they will have forgot their lambs, their milk will be re-absorbed, and they will not appear to remember the loss of their offsprings, about which at the time they made such lamentations.

It is an excellent plan to have a few wethers or barren ewes to put in the field with the lambs after weaning. They teach them to select their food; they draw out the instincts of the young lambs, and materially assist in drawing and training. A pen should be provided in the corner of the field; and to dip as soon as possible after weaning is by no means a bad practice.

As soon as the ewes are shorn, and before the weaning, it is very desirable to have the lambs dipped. If deferred till after weaning, there is often much fretting excited in the lambs, and they seem to suffer more by far than when they are subjected to the process during the period when they are remaining with their dams.

It is often necessary again to dress the lambs in the autumn, and so keep them from the annoying and irritating effects of insects which

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seem to grow upon them, despite every care, unless they are subjected to frequent remedial applications.

If sale at one year old is intended, the lambs should be kept on artificial food, from the very season of weaning; but this will be a process more likely to be discussed in the following chapter.

CHAPTER IX.

MANAGEMENT AND FATTENING.

The question for stock-feeders used to be—how to raise the greatest possible amount of animal food per acre at the least cost. But, somehow or other, the question, as regards that at least, has assumed a somewhat new form. The time was when the largest and the fattest sheep commanded the best price. To take a small and not over-fed joint of mutton into one of the large towns of Yorkshire or Lancashire—to Birmingham, Wolverhampton, or Leicester, was to run the risk of having the commodity neglected. But now it is different. The half-bred Scot or the Down, or at least half-Down, is the only kind of mutton which will meet a market with favour.

The time was when a large joint of fat mutton was put over a dish of potatoes. The meat went to the head of the family; the potatoes, saturated with the fat and gravy, were a savoury meal of the junior members. Thousands in the manufacturing and mining districts have for years been brought up in this way. But now they will have the small fleshy joints, with less fat; or they will buy them at an inferior price. The feeders of the larger kind of sheep are therefore in a worse position. The "good sheep" from 22 to 28 lbs. per quarter—once the favourites—have now to go a-begging, and the feeders of small half-bred animals obtain almost as much money for their once-despised but now fashionable breed. This will soon react on our best breeds; and it will cease to be an axiom that it is an advantage to gain the most pounds of food at the least cost; but it will be the production of that kind of food which will realise the best price; therefore, peculiar rather than good quality will be the desideratum, and the demand for beauty and symmetry will give way to the requirements for early maturity and disposition to feed. The general feeling will thus run wild after the ungainly forms of

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black and grey-faced "rannocks," and set defiance to domestication and low fences.

Those who wonder what could be the object of the high banks of Norfolk, and the hedges at the top, will be succeeded by men who wonder what men could mean by such low and useless fences as disgrace all our newly improved farms. The facts of the case are beyond dispute. We will suppose a farmer purchasing a score of the Leicester and Cheviot hogs at the same period, feeding them the same time on the same food, and the results will be somewhat as follow:—

	£.	s.	d.	£.	s.	d.
20 Leicester hogs, at 33s., bought in spring . . .				33	0	0
Then say 7 lbs. each of wool, at an average price of 1s. 1d. per lb., 7s. 7d. each, or	7	13	8			
Sold off fat, say at Christmas, weighing 24 lbs. per quarter, at 5d. per lb.	40	0	0			
				47	13	8
The 20 sheep will leave for food and profit . . .				14	13	8
20 Cheviot hogs, at 20s.				20	0	0
Then say 3 lbs. of wool each, at 1s. 1d.	3	5	0			
Sold off fat, 18 lbs. per quarter, at 6d.	36	0	0			
				39	5	0
The sheep will leave for food and profit . . .				19	5	0

Nor is this all. The case may be put in a much stronger light. The Cheviots and half-breds will live and thrive on a poorer quality and smaller quantity of food. And why? Because the taste will not allow them to be fed so fat. It is old flesh or muscle, small joints and light fat, which is the real desideratum in the manufacturing towns where the great bulk of our sheep is disposed of.

Thus we have smaller capital employed, less risk, more kept, inferior pastures stocked, a more ready market and greater profit by the fattening of those which were once considered the inferior breeds of sheep. Public taste in shape of appetite, and public taste in the matter of symmetry and beauty, are at variance; but the former will triumph, for it will pay the best.

To the breeders of Leicester and of the sheep peculiar to Lincolnshire, called improved Leicesters—to the Cotswold, and all this class of sheep,—this is a "heavy blow and great discouragement." The pains and care and struggles of centuries are being put aside by the luxurious tendencies of our manufacturing population, and we hardly see our way clearly as to what they can do. It was hoped that when the alleged cause of the change—the failure of the potato—had passed

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away, the people would return to their old habits; but, as Sam Slick says, "once accustomed to a luxury, and he is done—you will never get them to give it up." The potato is at least cheaper and more plentiful, but the large, fat mutton is not returned to. It still sells at an inferior price, and we fear it is likely to do so.

What are the breeders to do? There are two classes,—those who breed pure, and those who breed cross animals. The former are the best men of the day in showing fine specimens: they cannot charge shape and quality—a *beau ideal* is before them, and woe to him who violates it! But they must adapt themselves. They might at least have a smaller animal,—they must sell him before he gets so fat. Their breeds will be mature when very young,—they must sell their hogs at one shear, and by rapid changes adapt their animals to the wants of the market.

But to those who are less scrupulous, a cross with a Southdown—the ewes being of the latter, and the ram of the Leicester breed—will produce a very remarkable cross. A Bamboroughshire compact ewe, with a Cotswold ram, we have not seen bred; but we venture to predict a useful and saleable cross.

Let the breeders of the northern breeds look out to improve symmetry and beauty by judicious and patient selection. Why not always breed from the best? Why not buy the gimmers, and hire the rams, which won the Highland Society's prize, for a few years, and make the old despised north sheep symmetrical?

Though there is every probability of the most favoured kinds of sheep, as they have been viewed of late, going downwards in public estimation, because they did not grow the kind of mutton which sells best in the market, yet still all our great agricultural societies adhere to them as the best kinds. The Leicesters are at the head of every prize list; and though the great improvements in the Southdowns have given them of late a much higher range in public estimation, and they are supposed to be a local rather than a general breed, still they are gradually advancing in public favour.

Mr. Lawes instituted a series of inquiries as to the abstract food and increase in weight of these sheep in themselves, and also as compared with the Hampshire Downs, assuming the Sussex Down to be the type of the original South Down sheep. The latter is the sheep of Mr. Jonas Webb, R. Ellman, and the Duke of Richmond: the former is a heavier frame and larger weight, and is also a fatter and more early mature sheep than the latter.

One disadvantage was, that they had to be fed on dry food; they

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had oil-cake and clover chaff. At first they had food supplied in given quantities, and proportioned to their weight. The quantity given per day to the Hampshires was one pound of each; while to the Sussex Downs it was only three-fourths of a pound of each per day. The former weighed 113¾ lbs., and the latter only 88 lbs. Swedes were also given *ad libitum*, but from quantities previously weighed. The sheep were fed for twenty-six weeks; the Hampshires consumed 1249 lbs. of oil-cake, 1120 lbs. of clover hay, and 16,995 lbs. of Swedes, and the increase of live weight was 428 lbs. So much for the large sheep. The smaller, or Sussex Downs, in fact, consumed 965 lbs. of oil cake, 926 lbs. of clover hay, and 12,445 lbs. of Swedes, and gave an increase in live weight of 324 lbs.

To put it in a more striking light, it required, to produce 100 lbs. increase in live weight, the following quantities of each kind of food in the Hampshires :—

	lbs.	oz.
Oil-cake	294	0
Clover hay	259	12
Swedes	3941	0
Or a total food of all kinds . . .	4494	12

Whereas the Sussexes required, to produce 100 lbs. live weight, the following quantities :—

	lbs.	oz.
Oil-cake	314	4
Clover hay	304	3
Swedes	4086	0
Or a total food of all kinds . . .	4704	7

The Sussex sheep required, therefore, in twenty-six weeks, 20 lbs. 4 oz. more oil-cake, 44 lbs. 7 oz. more clover hay, and 145 lbs. less Swedes, to produce 100 lbs. live weight, or about 7 per cent. more oil-cake, 17¼ per cent. more clover, and 3¾ per cent. more Swedish turnips, for the same result. The taste indicated a difference in the animals: the Sussex sold at about 3s. 2d. per stone of 8 lbs., the Hampshire only 2s. 10½d. per stone; and after paying their way, and allowing for the purchased food, the cake and hay, the forty Hampshire sheep left a profit, as well as the increase, of 6s. 7½d., and the Sussex of 6s. 0½d. per head. The oil-cake is, however, reckoned at only £6 15s. per ton—a price we are afraid it seldom can be bought for—and the clover hay at £4 per ton. Nothing is charged for attendance.

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As far, therefore, as this was a paying speculation, neither seemed to answer. The Swedes, the attendance, the washing, shearing, and other et-ceteras, would diminish the profit to less than nil; but this was hardly the object of Mr. Lawes. As an experiment, it required that care and control which it is most desirable to give in ordinary experience, and therefore ought not to be taken as an invariable conclusion; but it may go so far as to demonstrate that it may not be always the best to drive too far for the increase of artificial food.

The forty Hampshires consumed 49⅛ tons of Swedes, and the Sussex only 36 1-10th. The latter were, however, much the smaller, and more would be consumed to the acre.

Mr. Lawes, however, puts the case in another light. He says, "Suppose, then, that in both cases 100 tons of Swedes had been eaten, we should have had consumed with them, and paid for by the increase of the animal—

	Oil-cake, lbs.		Clover, lbs.
By the Sussex sheep . .	17,374	and	16,676
By the Hampshire . . .	16,470	and	14,767
	904		1,909

"That is to say, in consuming 100 tons of Swedes (and the dry foods), Sussex sheep would, according to our experiments, have given the increase from 904 lbs. more oil-cake and 1909 lbs. more clover than the Hampshires. To have consumed the quantities of food supposed above, however, in twenty-six weeks, there would have been required eighty Hampshire and about one hundred and ten of the Sussex sheep."

Now this is what we have considered as the real position of the sheep-feeder in our previous article. The larger sheep make more flesh. From a given area of ground they consume less food for the mutton and fat they elaborate and deposit; but being worth less per pound it is really an advantage, in money matters generally, as regards the production of fat and mutton, to graze the inferior kind.

Though the cases experimented upon by Mr. Lawes do to a certain extent make out the principle we laid down, still it admits of exceptionable features. The large sheep in the north are the improved ones. It is the reverse with the Downs—the small are the improved. And this only strengthens our position. It takes the Sussex Downs out of the category of unimproved breeds, and thus places the smaller sheep in a position of undue advantage.

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It is a very serious question whether the farmer will go on, and how long, growing an unpopular kind of mutton. Alas, for the luxury of the age!

Mr. Lawes has carried on his plans, and subjected the Cotswold to the same course. Having, however, originally intended them for a comparative trial with the New Oxfords, but without success, he tried the fifty sheep alone, on different qualities of food, and subjected them to a comparison (as to their fattening tendency) with the two kinds of Downs he had before tried. He commenced with the flock selected by Mr. Garne, on the 24th of October, and fed them on turnips in the field until the 21st of November, when he put them on boards or rafters, and then fed them on oil-cake, clover-chop, and as many Swedes as they could eat. The same proportion of dry food was allotted to the Cotswold in proportion to their weight, which was 113½ lbs. average per animal. The food at first given was 1 lb. per day each of clover chaff, and the same of oil-cake. Near the conclusion of this experiment the oil-cake was increased by one-half. The average weight, on the 1st of December, was 119 lbs. 14 oz.; but there was a difference between the greatest weighted animal of 146 lbs., and the smallest 103 lbs., which showed how vast a variation there may be in a lot pretty nearly equal in appearance.

Mr. Vernon Harcourt showed that great differences of produce would take place in the same field in various parts similarly treated; and Mr. Lawes' experiments show the same results.

In the first month of the experiment, after the weighing alluded to, the increase was in a margin from nil to 22 lbs.; nor could previous weight, or any other element, account for the difference. The weekly average gained per head was 3 lbs. 10 4-14ths oz. during the month.

In the second month the extreme variations of increase were 1 lb. against 22 lbs.; but it is very remarkable that it was not the one which had been the greatest gainer the preceding month, or increased the most, nor *vice versâ*. Though it eventually happened that the one which gained the most was that which realized the greatest amount at the end of the experiment. The average gain in this month was less, being on 3 lbs. 3 7-12ths oz. per head per week.

In the third month the greatest increase was again 22 lbs., and the smallest 3 lbs.; and it is again remarkable that the one which gave the smallest increase in the second month was that which progressed the most in the next. The average gain fell, however, to 3 lbs. 6 1-6ths oz. per week.

In the fourth week the lowest increase was again 3 lbs., and the

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highest 28 lbs.; the latter being the one which stood highest in the second month. The average increase was 3 lbs. 5 oz. per head per week.

Without pursuing the subject further, we may say that the final mean weight, without wool, was 174 lbs.; the highest weight, 214 lbs.; and the lowest weight, 147 lbs. The highest average increase per week was, as we stated, the one before particularly referred to, which averaged 4 lbs. 7 oz.; the lowest average being 1 lb. 14 oz., and the general average 3 lbs. 2½ oz.

The increase in twenty weeks per 100 lbs. of live weight took 259 lbs. 11 oz. of oil-cake, 219 lbs. 1 oz. of clover hay, and 3,608 lbs. of Swedes.

Now, the comparison with the Downs of the two kinds before referred to is as follows:—The

	lbs.	oz.
Cotswolds gained per week	3	2½
Hampshire Downs	2	12
Sussex Downs	2	1¾

But there was a difference in the food. The Cotswold consumed more food—more of every kind than the Sussex Downs; and more, though very slightly, of all but the clover hay, than the Hampshires. But then they had a larger frame, and produced greater results. Taking the 100 lbs. increase, for instance, as the test, as it ought to be, the result is in every way in favour of the Cotswold, as the following will show:—

	Cotswolds.	Hampshires.	Sussex.
Oil-cake . .	239¾ lbs.	294 lbs.	314 lbs.
Clover hay .	219 „	259 „	304 „
Swedes . .	3601 „	3941 „	4086 „

The increase in weight per 100 lbs. was about 2 per cent. greater with the Cotswolds.

The "balance-sheet," always so satisfactory, is not here of the same consequence as the experiment. It is not likely, when the animals are so confined and often weighed, that so much can be defined as clearly to make profit a guiding element. The cost of his sheep he makes £66 10s.; the quantity of purchased food consumed by oil-cake and clover hay, £29 6s. 5½d.—a total of £95 16s. 5½d.; while the proceeds of the sale were £92 3s. 7½d., a small difference of £3 12s. 10d. in the lot, with the manure, for the risk, return for capital, land crop, and Swedish turnips; but they were sold at a "heavy" market, and thus may partly account for the loss.

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There is one curious fact, in this and the preceding experiments, which we cannot help noticing. Mr. Lawes observes that there is some general uniformity observable in the quantities of food in their fresh state, consumed by all the three kinds of animals, per 100 lbs. live weight weekly. "But when the quantities of the respective foods are calculated each to their contents of dry substance, it is found that the total quantity consumed to a given weight of animal, within a specified time, is all but absolutely the same for the three breeds."

Now this opens to our view a wide field of the most difficult and delicate investigation. Are all breeds to be considered so nearly similar, that they take, per 100 lbs. live weight, nearly the same amount of dry food per week? Of the three dissimilar kinds—at least, two of them—this seems to be correct. How far it is so of the other breeds, time only will decide. But is the farmer to say that they are therefore all alike to him? No such thing. Take the Sussex Down, for instance: it consumed 9 or 10 ounces per week per 100 lbs. weight more of clover hay than the Cotswold; but it consumes several less Swede turnips. Now in some localities, and to some farmers, turnips are difficult and clover hay easy of attainment. Here a class of sheep is indicated, which, if this experiment is an invariable test, will answer his purpose. Besides, weight for weight calculated dry, vegetable matter differs in price very materially; and as this is the real question with the farmer, may he not some day be able to apportion his kind of sheep to his description of food, and thus make profit? We hope so, or what will become of him?

The *fattening of sheep at one year old* must commence with their lambing. Not only must artificial food be given to the lambs as soon as they will eat it—not only must they be tempted to eat it—but they must be supplied with it indirectly before they attempt eating, through the lactiferous system of the mother. Oat, bean, and linseed cake may and ought to be given to the parent animal, so that the offspring may always have abundance of the materials wherewith to form bone and muscle, and even fat. The fattest lamb (other things being equal) not only makes the fattest shearling, but will eat the least amount of food to produce any given amount of mutton.

The late lamented scientific agriculturist and philosophic naturalist, C. Charnock, Esq., gave his ewes rape cake, and so trained the lambs to eat it, and sold them at weights, which the writer hardly dares name, in the following spring. Without discussing whether rape can be equal to linseed, it is very questionable, if these are trained to eat it, whether it

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does not lay on mutton at a far cheaper rate; and the successful use of it by gentlemen of discernment and skill has convinced the writer that it is a valuable substitute, second only to linseed cake, and often sold at half the price. The hogs at weaning require dipping and superior food. The dipping is performed by three men, who make use usually either of Biggs' or Wilson's composition, and an apparatus is furnished. The whole sheep, except the head, is immersed in the dip-water, which usually consists of materials calculated to destroy the tick, and prevent the attack of flies by its smell; while, if rightly made, it will rather nourish than injure the wool. Various combinations of spirits of tar, tobacco water, arsenic, with a mixture of oil or soft soap, are used in various proportions; but by far the best and least troublesome is to buy Biggs' or Wilson's composition.

At weaning time care should be taken not to place the lambs where *sheep have been depastured before.* If this is done, diarrhœa and death will certainly follow. The second crop of mown red clover, or the fog of hard and inferior grass land, is by far the best food; but if this cannot be obtained, a cattle-eaten pasture, but not of the richest kind, will be the most favourable, and the quantity of food given artificially should be slightly increased. Great care is necessary in confining the young sheep on the turnips. The best mode is gradually to accustom them to the watery and succulent, but very valuable sheep-feeding food. By far the safest method is to cart off a few turnips to the grass, and so gradually accustom the sensitive stomach and bowels to the change before they are absolutely confined to the turnips. When they are kept entirely on the grass-land, and confined to turnips as green food, they should be furnished with an almost unlimited allowance of hay in the racks, and a liberal quantity of linseed cake, rape cake, or barley, per day. A quarter of a pound of each will be sufficient, if well mixed with hay, or a gill of barley, according to the price of these materials in relation to each other. The turnips should all be eaten, and fed off in troughs. This is a great saving of food. Gar-

GARDENER'S TURNIP CUTTER.

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dener's turnip-cutter is one which has stood the test of many years, and has not hitherto been surpassed.

By the time the hogs are one year old, and in the March or April after they are lambed in, they will be fit for the fair and the butcher. They are usually shorn before they are sold. For this purpose the *washing* precedes the operation about ten days. A running stream is selected, and if there is not a river sufficiently near, a smaller stream is dammed up to afford the necessary run of water. Two men, usually protected by gutta percha or water-proof clothing, enter the stream. The sheep are thrown in, and the animal, while swimming, is thoroughly washed all over with the hands of the washer,—its own efforts keeping it from sinking. A man will wash three hundred to four hundred per day, if protected as we have indicated. If he is exposed to the full action of the water he will not be able to wash so many. The juices of the sheep form a natural soap, which effectually clean the wool from all dirt and impurity; and care must be taken, after washing, to keep the sheep from all sandy and ploughed fields, or they will nestle and get sand on the skin, and thus spoil the wool. If the weather be fine, in ten days they will be fit for the *shearing*, which is usually performed by the score; and 1s. to 1s. 6d. per score is paid for the clipping, folding up the wool, and making it ready for market.

In cases where sheep are kept as store for one year and fatted the next, less food is usually given. No material artificial feeding is used; they browse on bare pastures for the first year, and have scarcely an allowance of turnips, *ad libitum*, the second. Though not the most profitable, either as regards the flock or the land, in these cases, they have seldom anything but turnips; and as the *growth* of the animal has been effected, it has only to lay on fat and muscle; whereas, in the former case, where hogs were fatted, the food must be given sufficiently in quantity and quality to provide for both.

Various modes of feeding have been adopted to economise time, food, and labour. Mr. Childers established, a long time ago, that house or shed-feeding was a great saving of food. The writer of this treatise was staying with him at Cantley during the experiment, which was most carefully conducted by that excellent man, whose public spirit is more than equalled by his private virtues. The same food was given to each lot—one exposed and the other sheltered in a walled and well-littered yard;—27 stones of turnips, 10 lbs. of linseed cake for each lot, and half a pint of barley per sheep per day, with a little hay and salt to go to, were given; but soon the sheltered sheep

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eat less by 3 stones of turnips per day than those exposed, and ultimately 2 stones more, as well as 3 lbs. of cake per day. The result was, that in three months two field-fed sheep had increased 36 stones 8 lbs., and the shed-fed 56 stones 6 lbs.—a difference in twenty sheep of just 20 stones live weight!

This experiment gave the example for general imitation, and has divided sheep-feeders into several classes; viz.—the field-feeder, who values the consolidation of the animal's kneading, and feeds out of doors. Amateurs, like Mr. Mechi, advocate *board-feeding*, or houses with hollow floors of boards, set on an edge sufficiently near to prevent the sheep's feet from falling through; and one from his Cotswolds may be fat at one year old. But his wheat was throwing out on his light land; and while he was confining his sheep, to save expenditure of food by exposure and exercise, we observed a boy driving them over his wheat crop to prevent its destruction for want of treading. As we disapprove of board-feeding, except under very special circumstances—strong clay land, for instance, or some equally potent physical preventative to the feeding out of doors—we think it fair to give the opinion of a gentleman who warmly advocated it,—we mean the Hon. Captain Dudley Pelham, who, however, is far more sensible than many who advocate the plan, as he recommends its partial adoption only, carrying half of the produce to the shed, and consuming the rest in the field,—a plan far preferable to the carting of the whole—carrying back the manure, and losing the consolidation of the animal's feet,—so invaluable, nay, so indispensable to light land cultivation.

"The sheep," he says, "should be upon gratings, made with oak frames and deal tops, three-quarters of an inch between the bars. Beneath the gratings, which should be supported on either side, without cross-supports, which are inconvenient in emptying the pit, should be a tank or pit in brickwork, or rammed with marl, not less than two and a-half to three feet deep, so as to contain all the manure dropped by one lot of fattening sheep; thus avoiding the necessity of disturbing the animals for the removal of the manure."

Captain Pelham recommends gypsum to be thrown over the gratings to prevent unpleasant smells, and that the sheds should be even cooler than those intended for oxen, 45° being the point he considers to be aimed at, while those of oxen he thinks should be 50°. The size of the pens he recommends to be eight feet by six, and to contain six Down sheep.

The quantity of food eaten by fifty Down sheep he estimates at two tons; and sheep in these sheds he conceives will feed in about

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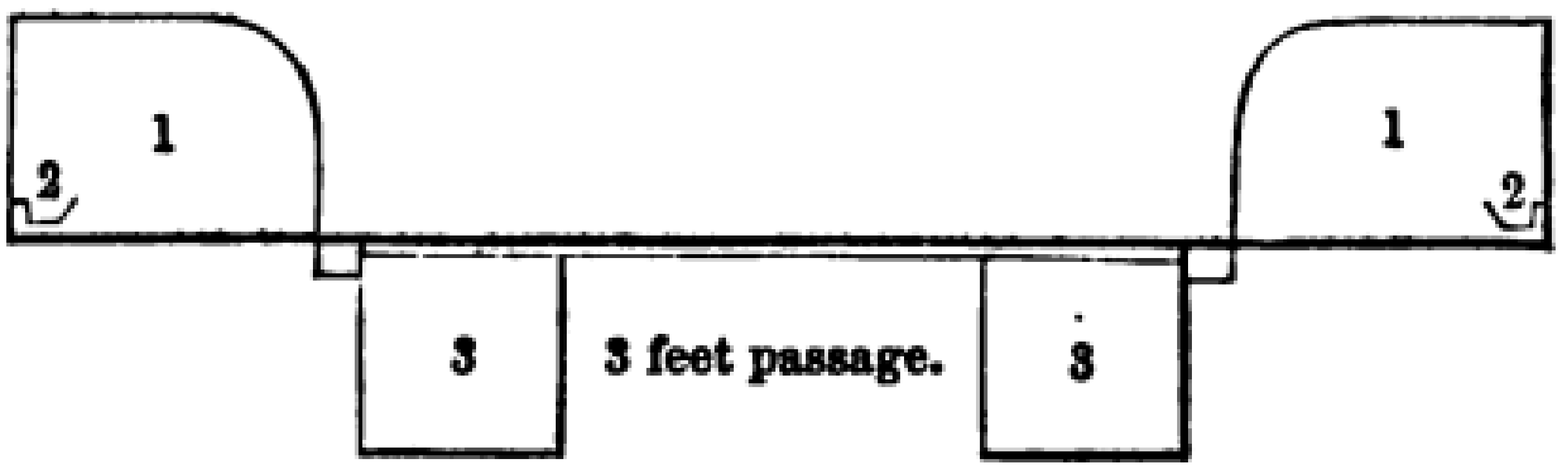
twelve weeks. He has had sheep for three weeks increase at the rate of 4½ lbs., and each animal will make, he calculates, 2 cwt. of powerful solid manure.

Stall-feeding sheep is a step still more in advance even of this, and, though inapplicable to young sheep, is practised with considerable success by Lord Bathurst at Cirencester, and skilfully carried out by Mr. Anderson. The following is a plan of the building, furnished to the writer by that gentleman.

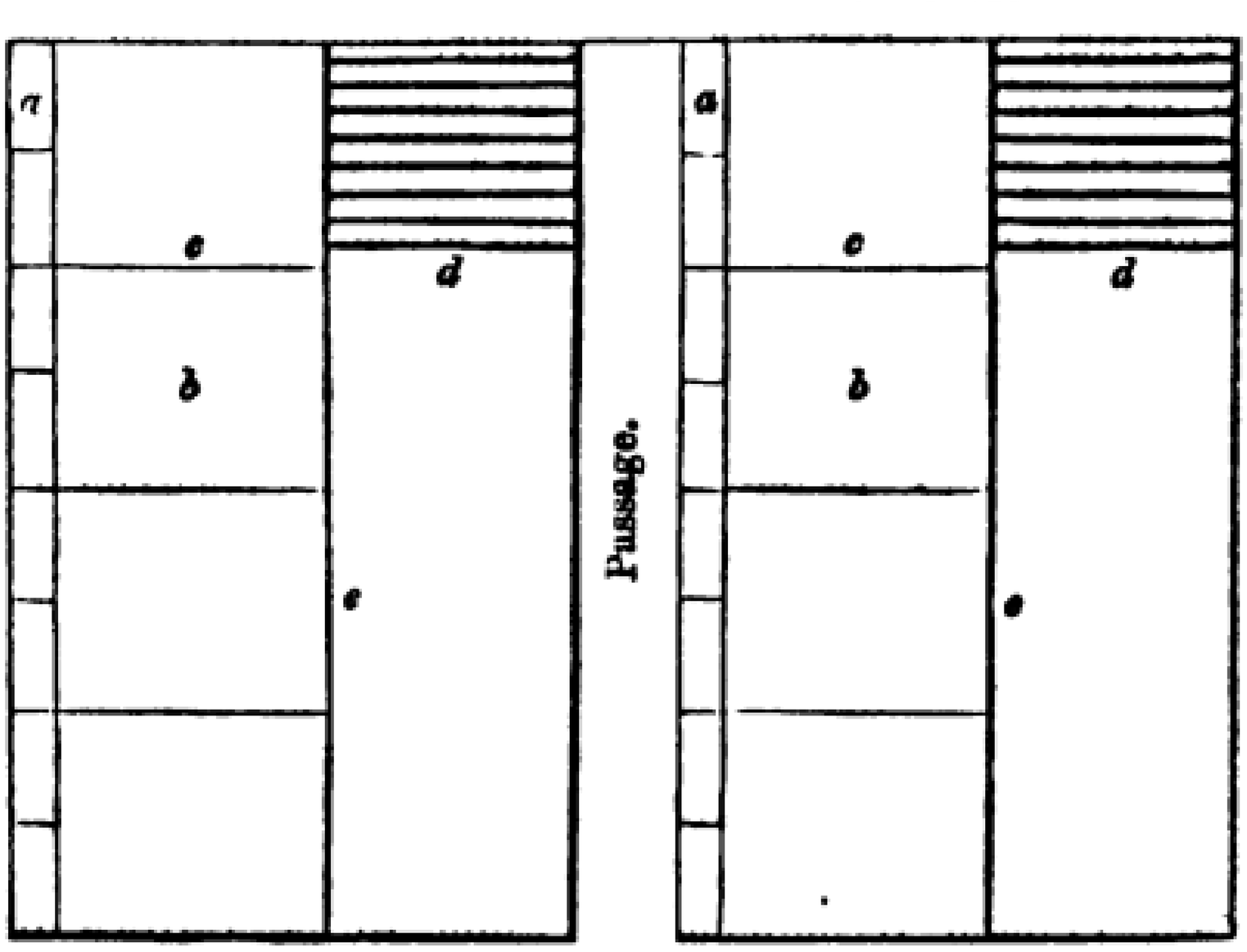
SECTION OF LORD BATHURST'S SHEEP-HOUSE AT CIRENCESTER.



1 1 Board Divisions. 2 2 Troughs. 3 3 Drains.

Scale of 6 feet to an inch.

PLAN OF LORD BATHURST'S SHEEP-HOUSE.



a Troughs divided in the middle. *b* Pens for four sheep. *c* Division Board. *d* Gratings over tank. (Spars of grating two inches broad, one inch interval). *e* Frame to support grating.

The house holds eighty-seven sheep. About two inches of turf or wood-ashes are put at the bottom of the tank, No. 3, to absorb the moisture, and a little of the same ashes thrown over the grating daily, with a little gypsum, and the dung well swept into the tank through

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the grating *d*. If the ewes eat white turnips, the quantity of urine is very great; if Swedes, it is less. When the lambs are cleaned out, the manure is put in a shed, mixed with a little salt and gypsum, frequently turned, when it is mixed with guano, bone-dust, &c., to drill for turnips. Every sheep is led by the hand with a collar and string, which works in a staple, similar to the mode in which horses are led. The sheep here has all the privacy, quiet shelter, and warmth she requires, with the gregarious principle still gratified; and though at first sight it seems unnatural to confine sheep by the head, we have no doubt but for ewes the plan has decided advantages.

As to the *comparative economy of feeding sheep at one or two years of age*, a deal may be said on both sides. While the early maturity has quick returns and rapid turning over of capital, it is said to have smaller profits. But in these times, when small sheep are decidedly worth more in the market than large ones per pound, and almost as much per head, the balance of favour will hold to the fattening at one year old. The writer of this made a calculation of the difference of produce of mutton to the nation by the two modes in the *Farmers' Magazine*,* showing that during the two years the two-year-old feeding system was in operation, the produce would be, on thirty acres of land, 7,800 lbs. of mutton; and the same area of land would produce 11,600 lbs. in the same period by the one-year-old system, thus showing a gain per annum of 1,900 lbs. of mutton on thirty acres of land to the community.

He further calculated the comparative advantage to the feeder—a question which is of the greatest importance, and will always have the greatest weight; and he showed that with mutton at 6d. per lb. the one plan would leave a profit on the two years—out of which the rent was to pay—of £62 10s.; while that of the one-year-old system will leave a profit of but £59 4s. The figures and calculations are by far too voluminous to enter in this treatise, which is intended only as an epitome; but the change in the demand for small mutton, since the period when these calculations were published,† will somewhat modify the calculation, and give the turn in favour of the one-year-old system,—a course, it will be seen, which is only perfectly right, as more capital will be required in the one year than in the two-year-old system.

The *comparative feeding properties of large and small sheep* of the same county has been a matter of much contention. Nobody will seriously doubt that a large sheep will, other things being equal,

* Vol. XX., p. 105. † July, 1849.

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consume more food than a small one. The question is argued and re-argued between the advocates of Leicester and of Lincoln, as we have seen it is between the Down and the Hampshire breeders. Mr. Shakel, of Reading, made an experiment, which gave the palm to the large and coarser kinds; and we hope it may operate with breeders, both of Leicesters and of Downs, to prevent their aiming at sheep so extremely diminutive. Indeed, the public taste, though in favour of small animals, had rather have more muscle with the fat, than all fat and no muscle. Mr. Shakel purchased 100 large Hampshires at 41s. per head, and an equal number of small Downs at 35s. They had all turnips *ad libitum;* and on being sold out, after about six months' keep, the Hampshires, which cost 41s., sold for 61s. 3d.; while the Downs, costing 35s., sold but for 49s.—showing a difference in favour of the large, and for the extra food doubtless eaten by them, the sum of twelve shillings and threepence per head. The lambs were said to have had the same area of food given them each day, but it is hardly possible but that one might have wasted food, while the other ate all up. It does not *necessarily* follow, however, that larger animals *must* invariably consume more food. That question will depend very materially on the excellence or otherwise of the breed.

CHAPTER X.

DISEASES AND THEIR REMEDIES.

THERE is nothing in the whole range of domesticated animals so difficult to manage as the sheep under disease. In acute diseases the use of remedies seems to be utterly in vain. Disease then seems to be ungovernable. The power of known remedies seems to be exerted in vain; and this is of less consequence now, happily, because the system of management is so well understood, that the animal is always kept fat and ready for the butcher, in order that, on the first symptom of illness, he may be sent off and slaughtered before the disease has affected his vitals, and little or no loss will take place. But if otherwise, let sturdy, or rot, or inflammation take place, and you may administer all the medicines in the world, and no effect will be produced.

The shepherds should—especially during winter, when the animal is much more subject to disease than in the spring or summer—keep

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a most watchful eye over the flock by watching the appearance of every individual member amongst them. If one looks dull, and refuses to eat with the rest; if he hangs off and wanders listlessly to the hedge; or if he contents himself with smelling at his food without eating; or lies down when all the rest are standing or feeding,—the probability is that he is about to cause some trouble; and if allowed to remain a few hours, death may supervene. But if he droops his head, looks round at his sides, and especially if he droops his ears, it is certain he is ill, and he must immediately be sent to the butcher if he is fit to kill.

If the animal be absolutely lean, it may be tried; but, in the majority of cases, it is perfectly useless to make the attempt.

If a sheep looks suspicious, and there is some doubt in the shepherd's mind as to whether it is ailing or not, it is by far the best immediately to take it into the fresh turnips. The roaming propensity of the sheep is soon visible. If it be well, it will instantly begin to devour the fresh food, and may immediately be taken back to its congeners on the break, and left with unconcern; if it refuse, it is best to consign it at once to the butcher. The only care to be taken is to observe that there is no local cause for the complaint. A thorn in the foot, a swelling in the mouth, an awkward tooth, or even a thorn fast in the wool, will often make the appearance of disease, and sometimes possibly induce a little fever; but these local causes of illness removed, the general health will soon be restored.

We now proceed to describe a few of the most common diseases of the sheep; and, before alluding to those which are properly such, we will mention parturition and castration as states not exactly of health, but where medical, and often surgical, care is necessary.

Lambing, as we have said, usually takes place twenty-two weeks after conception. It may happen at twenty-one—it may be deferred to twenty-three; but, within a day or two, the period first named may be fixed as the average. In ordinary flocks it usually takes place between the 25th of March and the 6th or 8th of April,—those not lambed by that time being the animals which have come over, and which will be expected to lamb three weeks later than the rest. Provision should always be made for the shelter of the ewes from the cold and wet weather, which too often prevails at this period; and huts, such as we have previously described, are amongst the best possible arrangements to make, at this season, for the tender and delicate offspring and for the feeble mother. When the flock is suf-

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ficiently numerous, they should be under the care of two shepherds. One should watch and tend them by day, and another by night, and take alternate day and night watches; while the watcher should rouse the sleeper in cases of difficult parturition, weakly offspring, or other casualty. The first symptom of lambing is, that the ewe will single off. She begins to "pain herself,"—to show externally the throes of parturition; and, in more or less time, the first water will come—a fine small bladder filled with a whitish serum. After this it is quite possible she may again commence eating; the lamb comes no more forward, and she may remain for hours a source of anxiety to the shepherd lest all should not be right. By and by she again retires; a thicker bladder comes filled with a yellower liquid, and the feet and head of the lamb either begin to be visible, or to be at least within a short space of the external labia. If difficulty now take place, mechanical assistance should be given;—not violent pulling, but gentle and firm assistance; and, in ordinary cases, this succeeds, and the animal is safely delivered. When she is allowed to rise, the hand may be put in front of the udder, and it will be easy to feel if another lamb may be expected. In case there is, it is best not to suckle the first lamb till the other is produced, or it will get an undue share of the milk, and thus rob its less fortunate brother. If, however, the first lamb be feeble, it is desirable to suckle it as early as possible; otherwise it may be a source of considerable inconvenience.

But parturition is not always a matter so easy. The lamb may come either with only one foot, with the head without feet, or with the hind legs only. The latter is a matter of less consequence than the former cases. In any case, if the uterus be sufficiently expanded no damage will take place; if not, there may be great difficulty. The first effort should be to put the lamb right; a little gentle and judicious putting back will sometimes enable the operator to effect the object. In other cases, where the head is distinctly bent back, we have known a noose put round the under jaw without the slightest difficulty. A crooked-necked lamb will often be a source of difficulty. It will be difficult to lamb; and when it is so it will often baffle all efforts to make it suckle. A very judicious friend of ours, a successful breeder of sheep, informs us that he makes a point of always marking and putting off the mothers of every crooked or "gye-necked" lambs, and thus has very seldom any one in his flock,—traceable possibly, when it does occur, to the tendency to that failing in the male animals which he purchases.

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Sometimes, though very rarely, the mother will disregard or forsake a feeble lamb. If the former is accompanied by indisposition to feed, it is often a sign of illness, and some shepherds go so far as to predict it as symptomatic of death. It may, however, be mere waywardness. The wild animals will forsake a sickly young one; they will gore to death a feeble companion, lest he should become a prey to ignoble animals; and the ewe often so far remembers her undomesticated nature as to neglect, or forsake, or ill use one of her lambs as it approaches her. The best remedy is to smear the outcast well with the matter on the skin of the other, which will sometimes deceive her. If not, she will have to be confined, and the lamb regularly suckled, until a new mother is found. Want of milk is generally the cause of this sad disaster, and it is usually best to attempt to affiliate the lamb on some subsequent ewe, which either has lost her lamb, or has a single lamb only, and plenty of milk. In the latter case, smearing the foster lamb with the matter on the skin of the proper offspring is all that is necessary; in the former, the skin of the dead lamb, put lightly over the living one and foster lamb, will, in almost every case, effect the object.

The *diseases subsequent to Parturition* are inflammation, and even gangrene, of the uterus, puerperal or milk fever, and garget or inflammation of the udder.

After difficult parturition, and where much manual assistance has been necessary, the labiæ of the uterus and vagina are sometimes ruptured. In cases where there is no other hope, a veterinary surgeon will divide the ligatures. We had a most successful operation of this kind performed by Mr. George Holmes, late of Thirsk, and now in India; and we never saw the ewe recover faster, even when no difficulty had occurred. In this case the passage was inadequate for even one of the feet, and would not admit the finger.

When ruptures of the vagina take place, the following dressing will be of service, known extensively as the "Driffield oil," or black oil:—

Take of olive oil	1 pint.
Spirit of turpentine . .	2 ounces.
Sulphuric acid . . .	6 drachms.

They are safest mixed in a stone jar; as great heat will be generated during and just after the mixture. When cool, it may be put in a bottle for use.

If an appearance of mortification or gangrene occurs, a more decided application will be necessary, and the farmer will not be at

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all at home. If the ewe can be then saved, it must be by a veterinary surgeon.

Garget, or inflammation of the udder, is a very common, painful, and sometimes fatal disease. Warm fomentation in the first stage, and being well rubbed with marsh-mallow ointment after each fomentation with a warm, dry towel, will be the best local application, while an internal medicine, composed of

Three drachms of nitre,
Two of cream of tartar,
Dissolved in four ounces of lukewarm water,

may be given with advantage. The black oils may be used, after the first few days, to promote suppuration of the matter formed in the udder, and, after it breaks, a dressing of tincture of myrrh.

Puerperal fever is far more common in the cow than the ewe. In the latter it sometimes occurs. The medicine prepared for acute garget will be found useful, and may be given in general; or, which is better, the following may be administered :—

Epsom salts	½ ounce.
Tincture of opium	1 drachm.
Camphor pulo	½ drachm.

This medicine is recommended by Professor Spooner after *abortion*, —a complaint sometimes incident to ewes when kept exclusively on turnips.

Castration, when performed on *lambs* about a month old, is a very simple operation; and, though often performed in a manner somewhat barbarous, may be elegantly done by a kind of combined knife and forceps, invented by Mr. Nelson, of Highfield, Sheffield.

An attendant holds the lamb with a fore and hind leg in each hand, the back of the lamb being kept close to his breast. The operator cuts off the end of the scrotum, presses on the bag till the testicles protrude, and either seizes the testicles with his teeth, one by one, or more elegantly by Mr. Nelson's forceps,—and no more trouble is necessary than to confine the lambs for a night or two, if the weather be frosty.

Proceeding to the castration of aged *rams*, the operation is more difficult. After ascertaining that there is no rupture, both the testicles, which are very large, are inclosed and held tightly together by iron clams, and the testes are divided in a line with these by the cautery. Other methods are adopted, but this is by far the most popular. Mr. Wilkinson, of Sowerby, uses two sticks united at one end, into which he incloses each testicle, the inner part of the sticks

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being smeared with a solution of sulphate of iron. He then ties the other end of the sticks, and cuts off the testicle. In twelve hours the sticks are removed by cutting the string, and all the vessels are thoroughly cauterized. The mode has struck us as a great improvement on the cautery, and it is certainly more elegant.

We now proceed to diseases of a less symptomatic character, and the first and most dangerous is the *Rot*. On the causes and treatment of this, volumes have been written; but whatever may be the ultimate cause of the flukes in the liver, it seems to be quite clear that drainage is fast banishing the rot out of the country. The main feature of the disease is, that the solids of the body become gradually watery and flaccid. It is, doubtless, owing to some water-grass, and the peculiar state of the system is a favourite nidus in which the fluke is generated,—its germ till then living in a normal state. It has been said that a single feed of the grass will produce the disease.

The best preventive to the disease is an allowance of plenty of dry food, with salt *ad libitum*. We know a farmer, in Cleveland, who saved his flock of Teeswaters in a rot year, which almost denuded that valley of its sheep, without any other exception than his own flock. They had constant access to the hay-stack, and so were preserved amongst the general ruin. When the rot unhappily sets in, it is by far the best to sell the whole of those which are at all fit for the butcher for immediate slaughter.

The *Sheep-pox* was introduced into this country by the Continental sheep, and is a disease very destructive to the flock, and highly injurious to those animals which recover from it. Inoculation has been recommended by Mr. Stanley Carr, and seems to have a tendency to make the disease less virulent. Vaccination has also been adopted; and in an extensive experiment only one-fifth of the flock, of 1,500 and more, escaped the disease by the precaution.

The *Sturdy* is another incurable disease, arising either from water in the head, hydatids in the brain, or other disease of the latter organ. As the fattest sheep are usually attacked, and as the disease is incurable, the animal should at once be sent to be slaughtered; for the mutton is not impaired in the slightest degree.

Diarrhœa is a disease which sometimes becomes epidemic. It is most common in hogs or young sheep, and is often caused by improper food, as will be seen by our remarks on weaning lambs. It generally arises, however, from rapid changes of food. We hardly

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ever knew two teaspoonfuls of sulphur fail of producing the effect, when administered in gruel in time; but if the first stage is over, it will require more vigorous means. A dose of linseed oil, say two ounces, with two grains of opium to allay the irritation of the bowels, will often answer the purpose; but if the disease should still prevail,

An ounce of prepared chalk,
Half a drachm of opium,
Three drachms of ginger, and
Two ounces of port wine,

may be given in a gill of gruel with great advantage.

The *Foot-rot* is one of the most obstinate and powerful local diseases to which the sheep is subjected. If not taken in time, it is difficult to cure; and if the diseased are not kept assiduously from the sound, the disease will be for some time an obstinate attendant on the flock. The infected sheep should at first be carefully examined, and all the diseased parts cut completely away. A dressing should then be applied of the following mixture:—

Corrosive sublimate	1 oz.
Sulphate of iron	1 oz.
Muriatic acid	1 oz.
Sulphate of copper	1 oz.
Coarse turpentine	1 oz.
Sulphuric acid	1 oz.
Spirit of turpentine	1 oz.
Sheep ointment	4 oz.

This mixture, simple as it is, is sometimes a necessary application. The sound portions of the flock should have all their four feet dressed with tar, and should be kept all night on a floor smeared with quicklime. As the diseased sheep approach convalescence, they should be carefully watched, and dressed, if required, daily.

The *Scab* is a disease of the skin, arising from the presence of minute insects, called *acari*. The German naturalists trace the disease to the actual fact of the *acarus* burying itself in the skin of the animals. This insect must be destroyed, and the sooner the plague is detected the better. The following ointment rubbed in, the wool being first shed longitudinally, and at about four inches apart, will often be successful:—

Sand	2 lbs.
Sulphur	1 lb.
Spirit of tar	½ lb.

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The *Blind.*—This is a disease of the eye, and soon becomes epidemic. The eye is at first a little inflamed, and soon becomes opaque. The animal suffers dreadfully, and is reduced both in frame and condition. To smear the eye with tar will relieve the pain, and abate the inflammation; but it will often remove the wool, and cause the animal to be unsightly, if he is for sale at any early period.

Such are the principal diseases of the sheep. To such as inflammation of the chest, bowels, &c., we have not alluded; as the resources of the farmer are here perfectly useless.

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