WOOL. The present article will be devoted to the SHEEP with reference to its wool-producing properties, and as the subject of the art of the grazier. The natural history of sheep is given under OVEÆ, in NAT. HIST. DIV. The treatment of the fleece when removed from the animal is spoken of under WOOL AND THE WOOL TRADE: see also WOOLLEN MANUFACTURE.

The sheep belongs to the class *mammalia;* to the order *ruminantia* with four stomachs, and the organs of digestion disposed for chewing the cud; to the tribe *capridæ*, with horns persistent, and placed on an osseous nucleus; and to the genus *ovis*, with or without horns, but these when present uniformly taking, to a greater or less degree, a lateral and spiral direction. The forehead of the sheep is arched, and protruded before the base of the horns; there are no lachrymal ducts, the nostrils are lengthened and oblique, and terminate without a muzzle; there is no beard properly so called, the ears are small, and the legs slender. The hair is of two kinds, one hard and close, and the other woolly—the wool preponderating in proportion as the animal is domesticated. The sheep is principally distinguished from the goat by his convex forehead, by his spiral horns not projecting posteriorly, and more especially, and that in proportion to the care which is bestowed upon him, by the preponderance of wool over the hair, with which, in despite of every effort, the Cashmere goat is covered.

Different names are given to the sheep, according to its sex and age. The male is called a *ram* or *tup*. After weaning he is said to be a *hog*, a *hogget*, or *hoggerel*, a *lamb-hog*, or *tup-hog*, or *teg;* and if castrated, a *wether hog*. After shearing, and when he is probably a year or a year and a half old, he is called a *shear hog*, or *shearling*, or *dinmont*, or *tup;* and when castrated, a *shearling wether*. After the second shearing, he is a *two shear ram*, or *tup*, or *wether*. At the expiration of another year, he is a *three shear ram*, &c.

The female is a *ewe* or *gimmer lamb* until weaned, and then a *gimmer* or *ewe hog* or *teg*. After being shorn, she is a *shearling ewe* or *gimmer*, or *theave* or double-toothed ewe; and after that, a *two* or *three* or *four shear ewe* or *theave*. The age of the sheep is reckoned, not from the period of their being dropped, but from the first shearing.

The teeth give certain indications as to the age. The sheep has no incisor teeth in the upper jaw; but there is a dense elastic cushion or pad, and the herbage, firmly held between the front teeth in the lower jaw and this cushion, is partly bitten and partly torn asunder. The sheep has the whole of the incisor teeth by the time that he is a month old, and he retains them until the fourteenth or sixteenth month. They then begin to diminish in size, and are displaced. The two central ones are first shed, and the permanent ones supply their place, and attain their full growth when the animal is two years old. Between two and three, the next pair are changed; the third at three years old; and at four, the mouth is complete. After this there is no certain rule, until, two years more having passed, the teeth one by one become loosened and are lost. At six or seven years of age the mouths of the ewes should be occasionally examined, and the loose teeth removed. By good pasture and good nursing in the winter, they may produce lambs until they have reached the ninth or tenth year, when they begin rapidly to decline. Some favourites have lingered on to the fifteenth or sixteenth year; but the usual and the most profitable method is to fatten and dispose of the ewes when they are five or six years old, and to supply their places by some of the best shearling ewes.

The rings at the base of the horns afford very imperfect indications of the age of the sheep. Even when untouched, they are little to be depended upon.

The history of the British sheep will be most naturally divided according to the quantity and quality of the wool of the different breeds, and the quality of the flesh. The covering of the original sheep consisted of a mixture of hair and wool; the wool being short and fine and forming an inner coat, and the hair of greater length, projecting through the wool, and constituting an external covering. When the sheep are neglected or exposed to a considerable degree of cold, this degeneracy is easily traced. On the Devonshire moors, the mountains of Wales, and the highlands of Scotland, the wool is deteriorated by a considerable admixture of hair. Even among the South-downs, the Leicesters, and the Ryelands, too many *kemps* occasionally lessen the value of the fleece. It is only by diligent cultivation that the quantity of hair has been generally diminished, and that of wool increased in our best breeds.

The filaments of wool taken from a healthy sheep present a beautifully polished and even glittering appearance. That of the neglected or half-starved animal exhibits a paler hue. This is one valuable indication by which the wool-stapler is enabled to form an accurate opinion of the value of the fleece. The mixture of hair in the wool can often be detected by close examination with the naked eye, but most readily by the assistance of a microscope.

Among the qualities which influence the value of the wool, *fineness*, and the uniformity of that fineness in the single fibre and in the collected fleece have hitherto held a first place. This fineness, however, differs materially in different parts of the fleece. It prevails on the neck, the shoulders, the ribs, and the back. It is less on the legs, thighs, and haunch, and still coarser on the neck, the breast, the belly, and the lower part of the legs. The fineness of the wool is considerably influenced by the temperature. Sheep in a hot climate yield a comparatively coarse wool; in a cold climate, they carry a closer but a warmer fleece.

The fineness of the fleece is also much influenced by the kind of

food. An abundance of nutriment will increase both the length and the bulk of the wool. This is an important consideration with the sheep-breeder. Let the cold of winter come—let it continue for a considerable period, yet if the sheep be well kept, although the fleece may lose a little weight, this will be more than compensated by its fineness and increase of value. If the sheep, however, be half-starved while he is exposed to unusual cold, the fibre of the wool, although perhaps somewhat finer, will be deficient in weight and strength and usefulness.

What is called *trueness of staple*, or the fibres being of an equal size, is of much importance in the manufacture of wool, for whenever the wool assumes an irregular and shagged or *breachy* appearance, there is a weakness in the fibre and will be an irregularity in the manufacture, especially if the fleece is submitted to the operation of the comb. Connected with this, and a most important quality, is the *elasticity* of the woolly fibre—the disposition to yield, or submit to some elongation of substance, some alteration of form, when it is distended or pressed upon, and the energy by means of which the original form is resumed as soon as the external force is removed.

Referrible to this elasticity or yielding character of the wool is its *pliability* and *softness*, and without which no manufacture of it can be carried to any degree of perfection. The last quality which it is necessary to mention is its *felting* property, that quality by which it may be beaten or pressed together and worked into a soft and pliable substance of almost any size and form. It would seem that the process of felting is of far older date than that of weaving, and it is still continued not only by the nomadic tribes of south-eastern Europe and of Asia, but it is made occasionally to vie with the finest productions of the loom.

Microscopic observations have unravelled the whole mystery of felting, and of the employment of wool in almost every form. The fibre, examined under a powerful microscope, appears like a continuous vegetable growth, from which there are sprouting, and all tending one way, from the root to the other extremity, numerous leaves, or serratures, assuming the appearance of calices or cups, and each terminating in a sharp point. It is easy to conceive how readily one of these fibres will move in a direction from the root to the point, while its retraction must be exceedingly difficult, if not impossible. It was a fibre of Merino wool that was first submitted to microscopic observation, and the number of these serrations or projections counted. There were 2400 in the space of an inch. A fibre of Saxon wool finer than that of the Merino, and of acknowledged superior felting quality, was substituted. There were 2720 serrations. A fibre of Southdown wool, in its felting power well known to be inferior to that of the Saxony and the Merino, was placed in the field of vision. There were only 2080 serrations in the space of an inch, or 640 less than the Saxony exhibited. The Leicester wool is acknowledged to possess a less felting property than the Southdown. There were only 1860 in the space of an inch. Latterly the length of staple and the lustrous character of the wool have become qualities of high order, so that the long-wools of Lincolnshire are now of greater value than the short-wools of Sussex.

We now proceed to take a rapid survey of the different breeds of sheep, commencing with the *Southdowns;* for by them or their congeners the first woollen manufactory at Winchester was supported. As latterly improved by the Ellmans, Lugars, Rigdens, and Webbs, it has exerted an extraordinary influence for good on all short-woolled breeds of sheep in the country. The flock of Jonas Webb in particular has furnished rams to all the best breeders of short-woolled sheep; and the high estimation in which his breed is held was proved at its recent sale, when 960 sheep of all ages sold for nearly 11,000*l.*

The Southdown sheep have succeeded admirably in all the southern districts of the kingdom; but the northern hills have occasionally been too cold for them. Crosses between the Southdown and almost every breed of middle-wool sheep have answered well; while in counties where it could have been least expected, the old breed is in a great measure superseded by the Southdowns.

We pass from Sussex, Hampshire, Berkshire, Wiltshire, where a black-faced short-woolled sheep, much improved by the Southdowns, prevails, into Dorsetshire, and we find a very different and valuable breed of sheep. They are white; the face long and broad, with a tuft of wool on the forehead; the shoulders low but broad; the chest deep; the loins broad; and the bone small; a hardy and useful sheep. Their chief peculiarity is the forwardness of the ewes, which supply the market with lamb when it produces the highest price.

A very profitable variety is found in a cross between the Southdown and the Dorset sheep. The carcase is increased, and the wool is rendered more valuable.

Returning through Somersetshire, we again meet with the Southdowns, either pure or materially improving the native breeds. In Gloucestershire, the short-woolled sheep have given way to the Cotswolds.

In Herefordshire we still meet with a few flocks of that breed of sheep, which was in former times the pride of the agriculturist—the Ryelands. They are small, polled, with white faces, the wool growing close to and almost covering the eyes, the carcase round and compact, the animal quickly fattening, and the superabundant fat accumulating within. They are hardy, and peculiarly free from disease, and particularly distinguished by the fineness of their wool.

Shropshire contains now a valuable characteristic breed of short-woolled, large-framed sheep, which have of late years achieved a high reputation.

The Cheviots extend from Westmoreland far into Scotland. They differ essentially from both the black- and the dun-faced breeds by which they are surrounded. The following is a description of the pure breed, thirty years ago, before they began to be crossed by the Leicesters:—"The head polled, bare and clean, with jaw-bone of a good length; ears not too short, and countenance of not too dark a colour; neck full, round, and not too long, well covered with wool, but without any coarse wool depending beneath; shoulders deep, full, and wide; chest full and open; chine long, but not too much so; straight, broad, and wide across the fillets; horns round and full; the body in general round and full, and not too deep or flat either in the ribs or flanks; the fleece fine, close, short, and thick-set, of a medium length of pile, without hairs at the bottom, and not curled on the shoulders, and with very little coarse wool on the hips, tail, or belly."

There are many flocks of pure Cheviots, but in the majority of the flocks there is a cross of Leicester blood.

The other breed of short-woolled sheep which contend with the Cheviots in number and value, is the *black-faced Scots*. They extend from Lancashire to the very north of Scotland. The males are mostly horned, the horns of a spiral form, but the females are frequently without horns. The faces and legs are always black or mottled: they are covered with wool about the forehead and lower jaw: the fleece is long and somewhat coarse. The carcase is peculiarly compact; so much so, that on account of the shortness, roundness, firmness, and handsomeness of the carcase, it is called the *short* sheep, in opposition to the Cheviots or *long* sheep. Great numbers of these sheep are sent to the London market. The weight of the carcase does not differ materially from that of the Cheviot, and the fleece weighs about three pounds after it is washed. These sheep have been improved by selection, but have derived little advantage from any of the crosses that have been tried.

We now arrive at the *Long-woolled Sheep*. The following description of the *New Leicester* by Mr. Culley will, to a very considerable degree, serve for all the varieties of the long-woolled sheep. The head should be hornless, long, small, tapering towards the muzzle, and projecting horizontally forwards. The eyes prominent, but with a quiet expression. The ears thin, rather long, and directed backwards; the neck full and broad at its base, but gradually tapering towards the head, and particularly fine at the junction of the head and neck. The neck seeming to project straight from the chest, so that there is, with the slightest possible deviation, one continued horizontal line from the rump to the poll. The breast broad and full; the shoulders also broad and round, and no uneven or angular formation where the shoulders join either the neck or the back, particularly no rising of the withers, or hollow behind the situation of those bones. The arm fleshy through its whole extent, and even down to the knee. The bones of the legs small, standing wide apart, no looseness of the skin about them, and comparatively bare of wool. The chest and barrel are at once deep and round in the ribs, forming a considerable arch from the spine, so as in some cases, and especially when the animal is in good condition, to make the apparent width of the chest even greater than the depth. The barrel ribbed well home. No irregularities of line on the back or the belly; but on the sides the carcase very gradually diminishing in width towards the rump. The quarters long and full, and as wide as the fore-legs. The muscles extending down to the back, the thighs also wide and full. The legs of a moderate length; the pelt also moderately thin, but soft and elastic, and covered with a good quantity of white wool, not so long as in some breeds, but considerably finer.

Such is the Leicester sheep as Bakewell made him. He found him as different an animal as it was possible to conceive—flat-sided, large-boned, coarse-woolled, slow to fatten, and his flesh of little value. Were there room for its insertion, a detailed history of the different steps of the changes would be most interesting to the reader. The means were simple, and the effect was almost magical. The principle was, that "like produces like;" and therefore he selected a few sheep with aptitude to fatten, with a disposition to produce an unusual quantity of valuable meat, with little bone and offal, and with quietness of temper; and from these he exclusively bred. He cared not about near or distant affinities, but his object was to increase every good point, and gradually to get rid of every bad one. They were not different sorts of sheep that he selected, but the best of the breed to which he had been accustomed.

His sheep were smaller than those of his neighbours, but they retained every good point, and had got rid only of the bad ones. The alteration was rapid as well as great in his own flock, and the practice which he introduced of *letting* some of his rams quickly extended the benefit of his system far and wide. The first ram which he let was in the year 1760, at 17*s.* 6*d.* for the season. In 1789 he let one ram for 1000 guineas, and he cleared more than 6000 guineas in the same year by the letting of others. After that, so great was the mania, or desire for improvement, that Mr. Lawrence calculates that 100,000*l.* were annually spent by the midland farmers in the hiring of rams.

The chief value of the new Leicester breed consists in the improvement which it has effected in almost every variety of sheep with which it has been crossed, in which its influence has corresponded among

long-woolled sheep with that which the Southdowns has exerted on breeds allied to it in the character of their wool.

The largest of the other breeds of long-woolled sheep was the Lincolns, "hornless, with long, thin, and weak carcases, large bones, weighing from 20 to 30 lbs. a quarter; the wool averaging from 8 to 14 lbs. the fleece; the sheep a slow feeder, and the flesh coarse-grained." This is the account of them given by a good, but a prejudiced observer—Mr. Culley. In fact, while Bakewell and his admirers were almost neglecting the fleece, the Lincolnshire farmer was quite as inattentive with regard to the carcase. Both parties were wrong. The old Lincolnshire sheep yielded a wool which in quantity and in quality was unrivalled, while the Leicesters could boast of a disposition to fatten which the other could never equal. At length the attempt was honestly made to amalgamate the valuable qualities of the two breeds. In consequence of the cross, the wether attained its maturity a full year sooner than it was accustomed to do, and the fleece became finer and improved in colour, but it was shorter and more brittle, and not fitted for some of its former purposes. On the whole, a great improvement has been effected both in the carcase and the fleece; and so satisfactory did this prove, that it is now difficult to find any sheep in Lincolnshire that have not been crossed with the Leicesters. This cross is deeper on the wolds than in the marsh lands, which may serve to account for the difference of the fleece in the two. The breed of these sheep generally has been greatly increased since the introduction of the turnip system. The lustrous character of the wools has given them a high value in the manufacture of woollen fabrics, corresponding to those made of Alpaca wool, with which they are mixed.

Among the long-woolled sheep that have been improved by the admixture of the old and new long-woolled breeds and the altered system of husbandry, the inhabitants of Romney Marsh must not be forgotten.

The Cotswold sheep, of Gloucester, were a long-woolled breed, yielding in the 15th century a description of wool much valued on account of the fabrics in the construction of which it was employed. Even they, like the rest, have amalgamated themselves with, and been in a manner lost among, the Leicesters. They were taller than the present sheep, flat-sided, deficient in the fore-quarter, but full in the hind-quarter, not fattening so early, but yielding a long and heavy fleece. Many of these good qualities have been preserved, and to them have been added that which is of so much importance to the farmer—the capability of rearing and fattening so many more sheep on the same quantity of land, and of bringing them so much earlier to the market.

This will be the proper place to speak of the *shearing* of the sheep, or the separation of the fleece from the animal. The animal is first washed in some running stream. Two or three days are then allowed for the drying of the wool previous to its being shorn, the sheep being turned into a clean pasture, and remaining there until the fleece is dried, and that the new yolk, which is rapidly secreted, may penetrate through it, giving it a little additional weight and a peculiar softness. As soon as the sheep is shorn, the mark of the owner is placed upon it, consisting of lamp-black and tallow, with a small portion of tar, melted together. This will not be washed away by any rain, but may be removed by the application of soap and water.

Few rules can be laid down with regard to the rearing and feeding of sheep that will admit of anything like general application. A great deal depends on the kind of sheep, and the nature of the pasture and the food.

Suppose the larger kind of sheep, and on arable ground. The ewes are generally ready to receive the ram at the beginning of October, and the duration of pregnancy is from about twenty-one to twenty-three weeks, bringing the period of parturition to nearly the beginning of March, at which time most of the lambs will be dropped. The ewes should be fed rather better than usual a short time previous to the male being introduced. Rams are fit to propagate their species in the autumn of the second year, and that is also the proper period for the impregnation of the ewes. The ewe is, after impregnation, suffered to graze on the usual pasture, being supplied, as occasion may require, with extra food, and especially in case of snow, until within five or six weeks of lambing, when turnips are given to her, and continued from that time until the spring of grass renders them no longer necessary. The turnips are laid out for the ewes in the grass fields in certain quantities each day, but by no means so many as they would consume if permitted to feed without restriction, as it is considered to be most important that they should not be too fat when the lambing season approaches. The hogs and the fattening sheep of the previous year, now one year and a half old, are put upon the turnips in October, or whenever the pastures cease to improve their condition. The turnips required for the cattle, or the ewe-flock, are then drawn off in alternate rows, in the proportion of one-half, one-third, or one-fourth, as the convenience of the situation, the goodness of the crop, or the quality of the land may dictate. The remainder are consumed on the ground by the other sheep.

As the period of parturition approaches, the attention of the shepherd should increase. There should be no *dogging* then, but the ewes should be driven to some sheltered inclosure, and there left as much as possible undisturbed. Should abortion take place with regard to any of them, although it does not spread through the flock as in cattle, yet the ewe should be immediately removed to another inclosure, and small doses of Epsom salts with gentian and ginger administered to her, no great quantity of nutritive food being allowed.

The ewes should now be moved as near home as convenience will permit, in order that they may be under the immediate observation of the lamber. The operation of *clatting*, or the removal of the hair from under the tail and around the udder, should be effected on every long-woolled ewe, otherwise the lamb may be prevented from sucking by means of the dirt which often accumulates there, and the lamber may not be able at all times to ascertain what ewes have actually lambed. The clatting before the approach of winter is a useless, cruel, and dangerous operation.

The period of lambing having actually commenced, the shepherd must be on the alert. The process of nature should be permitted quietly to take its course, unless the sufferings of the mother are unusually great, or the progress of the labour has been arrested during several hours. Experience will teach the course to be pursued in that case. If any of the newly-dropped lambs are weak, or scarcely able to stand, the shepherd must give them a little of the milk, which at these times he should always carry about him, or he must place them in some sheltered warm place; in the course of a little while the young one will probably be able to join its dam. The operation of castration should be performed nine or ten days after the birth of the lamb.

Unless the pasture on which the ewes are placed is very good, it will be advisable to continue the use of the turnips. A moderate quantity may be given twice in the day, care being taken that the whole of one quantity shall be eaten before any more is placed before them. This is a better practice than hurdling off certain portions of the field for the sheep, unless the land is perfectly dry. A little hay will always be serviceable while the flock is fed on turnips. It corrects the occasional watery quality of the turnips, and the sheep usually thrive better than if they are fed either on hay or turnips alone. Bran and oats, with oil-cake, have been recommended for the ewes before weaning time, but this is an expensive measure, and its cost can hardly be repaid either by the ewe or the lamb. By the end of March or the beginning of April the turnips are generally nearly consumed, and the farmer is occasionally a little puzzled to find sufficient food for his flock. He should have had some plots of rye to support them for awhile. Rye-grass and clover are very serviceable. Mangold wurzel and Swedish turnips that have been carefully stacked on dry straw will be most useful, for they will retain their nutritive quality until the flock can be conveniently supplied with other food.

At length comes the time for weaning. In a poor country it takes place before the lambs are much more than three months old. In a more plentiful one the lambs may be left until the fourth month is nearly or quite expired. If the pasture is good, and it is intended to sell the lambs in store condition, the weaning may be delayed until six months. Whichever time is selected, it is of essential consequence that the mothers and the lambs should be placed so far apart that they cannot hear the bleatings of each other. The ewes should be somewhat carefully looked after, and if any of them refuse to eat, they should be caught, the state of the udder ascertained, and proper measures adopted.

The lambs should not be put on too stimulating food. The pasture should be fresh and sweet, but not luxuriant. It should be sufficient to maintain and somewhat increase their condition, but not to produce any dangerous determination of blood to any part.

The Diseases of Sheep.—Commencing with the head, a parasite, having the appearance of a bladder filled with pellucid water, attacks the brain. The origin of it is connected with bad management, being scarcely known in upland pastures or in grounds that have been well drained. As the parasite grows, it presses upon the neighbouring substance of the brain, and interferes with the discharge of its functions; the sheep becomes giddy, is frightened at any trifling or imaginary object; he separates himself from his companions; he commences a strange rotatory motion even while he grazes, with the head always turned towards the same side. This is the characteristic symptom, and as soon as it is perceived the animal should be destroyed, for there is no certain cure, and many of the operations that some persons have described are cruel and inefficient.

A somewhat similar disease, but with which the hydatid has nothing to do, is *Hydrocephalus*, or *water in the head*, generally indicated by a little enlargement of the skull; a disinclination to move; a slight staggering in the walk; a stupidity of look, and a rapid loss of condition. This disease seldom admits of cure or palliation. If any amendment can be effected, it will be by the administration of good food, tonic medicine, and gentle aperients.

Another species of pressure on the brain is of too frequent occurrence —*Apoplexy*. A flock of sheep shall be in apparently as good and fine condition as the farmer can desire. They have for a considerable period grazed on the most luxuriant pasture, and are apparently in the highest state of health. By and bye, one or more of them is, without any previously observed change, suddenly taken ill. He staggers, is unconscious, falls and dies, and perhaps within a quarter of an hour from the first attack. With regard to how many over-fattened sheep is this the case? If there is time for resorting to curative means, the jugular vein should be opened, and aperient medicine administered.

Inflammation of the brain is a frequent consequence of over-feeding,

It is ushered in by dullness and disinclination to move: but presently the eye brightens, and the animal attacks everything within his reach. If it can be managed, the same treatment must be adopted—bleeding, physic, and low feeding.

Hoove is a distension of the paunch with food, and the extrication of gas from that food. The hollow probang should be introduced into the stomach to draw off this gas. Four to five drachms of hartshorn in half-a-pint of water gives early relief to the animal.

There is however a disease of the liver—*the Rot*—far more frequently occurring in sheep than in cattle, and bearing a peculiar and more destructive character.

In the very earliest stage alone does it admit of cure. The decisive symptom, at that time, is a yellow colour of the eye that surrounds the pupil and the small veins of it, and particularly the corner of the eye, which is filled with a yellow serous fluid, and not with blood. There is no other apparent morbid appearance until it is too late to struggle with the malady; on the contrary, the sheep, although perhaps a little duller than usual, has an evident propensity to fatten. The rot is a disease of the liver—inflammation of that organ; and the vessels of it contain *flukes*. They are taken up in the food; they find their way to the liver as their destined residence, and they create or aggravate the disease by perpetuating a state of irritability and disorganisation. The rot is evidently connected with the state of the pasture. It is confined either to wet seasons or to the feeding on ground that is moist and marshy. In the same farm there are fields on which no sheep can be turned without getting the rot, and there are others that never give the rot. After long continued rains it is almost sure to appear. The disease may be communicated with extraordinary rapidity. A flock of sheep was halted by the side of a pond for the purpose of drinking: the time which they remained there was not more than a quarter of an hour, yet two hundred of them eventually died rotten. The fact is, they then received into their system the germs which ultimately assumed the destructive form of those flukes in the liver which destroyed them. In the treatment of the rot little that is satisfactory can be done. Some sheep have recovered, but the decided majority perish in despite of every effort. The patients however may, as giving them a little chance, be moved to the driest and soundest pastures, and there fed as liberally as possible; but, above all, plenty of salt should be placed within the animals' reach, and given to them in the way of medicine.

In the way of prevention the farmer may do much; he may drain the most suspicious parts of his farm. No money would be more profitably expended than in accomplishing this. Some of the little swampy spots which disgrace the appearance of his farm possibly lie at the root of the evil.

Redwater, or the effusion of a bloody serous fluid in the cavity of the abdomen, is a frequent and very fatal disease among sheep. The cause of it is a sudden change from one pasture to another of almost opposite quality, or the moving of the flock from a dry and warm to a damp and cold situation. It is most destructive to lambs if exposed to a hard frost or suffered to lie on a damp and cold soil. The sheep will separate himself from the rest of the flock; he will evince a great deal of pain by rolling about, and frequently lying down, and immediately getting up again; and, sometimes, he dies in less than twenty-four hours from the first attack. The belly will be found swelled and filled with the red water, or serous fluid tinged with blood, from which the disease derives its name. The treatment should consist of mild aperients, with gentian and ginger, and a liberal allowance of hay and corn.

Diarrhœa is a very prevalent disease among lambs, and especially after a change of diet or of situation. When it is not violent, and does not seem to be attended by colic, a little absorbent and astringent medicine, with a few grains of opium, may be administered. The diarrhœa of sheep may be similarly treated, but when the disease is assuming the character of *dysentery*—when the discharge is more frequent and copious, and mingled which mucus, a larger quantity of this medicine should be given, and some blood abstracted if there is any degree of fever.

The diseases of the *respiratory organs* are often of a serious character. During the greater part of the winter the nostrils will sometimes be filled with mucus, and the sheep is compelled to stop for a moment at every second or third bite, and snort violently, and stand with his muzzle extended and labouring for breath. If his general health does not seem to be affected, this will pass away as the spring approaches. If however any of the flock should now appear to be losing flesh and strength, it is too probable that *consumption* is at hand. The only chance of saving or doing them any good will be to place them in some comfortable pasture, letting them have ample food and salt within their reach.

Lambs, when too early and too much exposed, are subject to diseases of the upper air passages, one attended by a ringing cough, and the other by one of a more wheezing sound. Bleeding will always be necessary for the first, with aperient medicine. A mild purgative will usually suffice for the second, or possibly an ounce or an ounce and a half of common salt may be given dissolved in six ounces of lime-water.

Inflammation of the lungs, recognised by the difficulty of breathing, heaving at the flanks, and distressing cough, is a disease of frequent occurrence in sheep. It speedily runs its course, and the lungs are found to be one disorganised mass. Bleeding and purging are indispensable: but as soon as the violent symptoms seem to remit, tonics must follow.

Garget.—Inflammation of the udder is more frequent in the ewe than in the cow. The udder should be well fomented with warm water, and may then be returned to her lamb.

Diseases of the Feet.—The treatment of *foot-rot* essentially consists in paring away all loose and detached horn. This is the corner-stone of skilful and successful practice. All fungous granulations must either be cut away, or destroyed by the muriate of antimony, and the foot well washed with a solution of chloride of lime. The muriate of antimony must then be lightly applied over the whole of the denuded surface. This must be repeated daily until the whole of the foot is covered with new horn.

The Scab is a very troublesome disease, common in the spring and summer. The sheep is continually scratching himself with his feet, tearing off the wool, and violently rubbing himself against every protruding substance. It is a very infectious disease, for every place against which the sheep can rub himself becomes tainted with the poison. The sheep must be housed and shorn as closely as possible, and then well washed with warm water. An ointment composed of one part of mercurial ointment and seven of lard must then be procured, and such a quantity of it as the diseased parts seem to require rubbed in on every second day. Every place in the field and in the fold against which he can possibly have rubbed himself must be well cleaned and painted before he is permitted to return.

Lice and *Ticks* will be best got rid of by the application of the mercurial ointment just recommended.

The Fly.—Several species of fly frequently deposit their ova on the wool of the sheep. If there are any sore places, they are selected for the habitation of the larvæ. The head, as the most exposed part, is the one oftenest attacked, and the sheep are sadly tormented by the fly and the larvæ. The best preservative or cure is the application of a plaster composed of a pound of pitch and a quarter of an ounce of bees' wax, spread on soft leather or linen. The attack may however be generally prevented by the application of a small quantity of spirit of tar to the head, or any bare or sore part. Two or three applications of this will be sufficient for the whole of the summer, and not a fly will approach a sheep thus guarded.