A treatise on the diseases and management of sheep; with introductory remarks on their anatomical structure; and an appendix containing documents exhibiting the value of the Merino breed. Of sheep, and their progress in Scotland / by Sir George Steuart Mackenzie, bart.

Diſsection of the large Vein of the face showing the method of bleeding.

Fig. 1.

Diſsection of the Vein in the Leg

Fig. 2

A

TREATISE

ON THE

DISEASES AND MANAGEMENT

OF

SHEEP;

WITH INTRODUCTORY REMARKS ON THEIR

Anatomical Structure;

AND

AN APPENDIX,

CONTAINING DOCUMENTS EXHIBITING THE VALUE OF THE MERINO BREED OF SHEEP, AND THEIR PROGRESS IN SCOTLAND.

BY SIR GEORGE STEUART MACKENZIE, BART.

INDOCTI DISCANT, ET AMENT MEMINISSE PERITI.

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TO THE

NORTHERN ASSOCIATION

OF

GENTLEMEN AND FARMERS,

BREEDERS OF SHEEP.

.....

GENTLEMEN,

I CANNOT dedicate this little volume more properly than to men who, to liberal ideas and enlightened views, have joined a noble zeal in purſuing and improving a mode of occupying our mountain paſtures, which has prodigiouſly encreaſed the value of a very extenſive tract of country, and made a very large addition to the reſources of the empire.

It may be thought by ſome, perhaps, that enough has been written on the diſeaſes of ſheep; and that I preſume too much in offering any thing on the ſubject. Although I feel that I ſtand in need of much indulgence, yet I hope that you will not paſs ſuch a ſentence on my humble endeavours to be of uſe to thoſe who are about to enter on the buſineſs of ſheep-farming.

I had ſome thoughts of executing this work ſeveral years ago, but relinquiſhed them on my not finding any of my medical friends ſufficiently diſengaged to aſſiſt me in the diſſections which I thought neceſſary. In the mean time, on the ſuggeſtion of my learned and worthy friend Dr. Coventry, I took advantage of my being Convener of the Prize Committee of the Highland Society, and propoſed the premium which called forth many valuable eſſays on the diſeaſes of ſheep, which, after having been compreſſed into one memoir, by Dr. Duncan, junior, have been publiſhed in the Tranſactions of the ſociety. Having peruſed that memoir, I was fully convinced that a more intimate knowledge of the anatomy of ſheep than ſeemed to be poſſeſſed by the authors of the eſſays, who were not medical practitioners, was neceſſary before any regular ſyſtem could be formed for preventing and curing the diſeaſes to which theſe uſeful animals are liable. I, therefore, lately made another attempt to obtain the aſſiſtance of a perſon well qualified for the taſk; and it gives me great pleaſure in informing you that Mr. James Wardrop, whoſe abilities are too well known to require any eulogium from me, has kindly afforded me the aſſiſtance I required. To him you are indebted for the firſt part of this volume. The reſt did not require much labour; and as far as my ſcanty knowledge of medicine and surgery has enabled me, I have endeavoured to execute the taſk I aſſigned to

myſelf, with brevity and diſtinctneſs. The anatomical obſervations are, purpoſely, very general; but, it is hoped, ſufficient to give a correct idea of the different parts moſt eſſential to life. Had the obſervations been more minute, they might have appeared tedious, and probably have deterred thoſe for whom this volume is chiefly intended, from entering at all on a ſtudy which is of more importance to ſheep farmers than is generally allowed.

Owing to the very extenſive ranges which ſheep are permitted to have on large farms, it is difficult to diſcover a ſickly animal, before its diſorder has made ſo much progreſs as to render every attempt to remove it quite unavailing. On that account it becomes of very great importance to feed and manage ſheep in ſuch a manner as to expoſe them in the leaſt poſſible degree to any thing which might injure their health. But before we can prevent diſeaſes, we muſt underſtand their nature. We have not yet arrived at a ſufficient degree of knowledge for enabling us to diſtinguiſh the diſeaſes of ſheep with accuracy, or to trace them to their origin. Thouſands of theſe animals have been opened after death; but although we have been told that the liver, the ſtomach, or other viſcera, have been affected, we find the appearances of the parts indiſcriminately and arbitrarily referred to the diſeaſe under which the animal was pre-ſuppoſed to have been ſuffering. Unleſs there has been a careful obſervation of the ſymptoms by which an animal has

betrayed an inward complaint, an examination of the appearances which preſent themſelves on diſſection is almoſt uſeleſs. Before we can accurately diſcover the nature of any diſeaſe, we muſt obſerve the early, intermediate, and laſt ſymptoms, and then ſearch for the cauſe, by diſſection. It will be neceſſary too, to kill ſome animals labouring under the firſt ſymptoms, in order that the ſituation of their cauſe may be diſcovered. When we are told that the general appearance of the body of a ſheep which died of *braxy*, was that of an inflamed, or mortified maſs, we are not conducted to the original ſeat of the diſeaſe. While one perſon inſiſts that an affection of the liver is the cauſe of the rot, and another maintains that that malady originates in the lungs, we are not ſatisfied. Sometimes both the liver and the lungs are found to have been affected, and then we are ſtill farther from the object of our ſearch.

By knowing the functions of the different organs, and their connection with various parts of the body, we may ſometimes diſcover that ſome apparently very trifling circumſtance may have been the cauſe of the moſt formidable diſeaſes. Whilſt thoſe who have the beſt opportunities of obſerving ſheep, are ignorant of the uſes and actions of the different parts of their bodies, we cannot expect to make much progreſs in acquiring knowledge of the cauſes of the various diſeaſes to which theſe animals are ſubject. In the management of horſes, we ſee the beneficial effects

which have followed a diſplay of their anatomical ſtructure; and almoſt every groom can tell the cauſes of any particular ſymptom of diſeaſe. I have humbly endeavoured to pave the way for ſhepherds to acquire a competent knowledge of the ſtructure, and uſes of the moſt important parts of the animal in whoſe health they are ſo much intereſted; and I truſt that others who have more opportunities, and are more ſkilful, will follow up the ſubject, and collect ſuch facts and obſervations, as will enable us to manage our flocks without having recourſe to the aſſiſtance of vulgar prejudice.

My friend Dr. Duncan is right when he prefers good management to doctoring; but to arrive at that, we must be able to underſtand the cauſes of what we wiſh to avoid.

The following pages are by no means meant to ſupply that want of knowledge I have deprecated. They are meant merely to ſerve as an introduction to a more extenſive work, which I do not conſider myſelf qualified to undertake, but which, I hope, will be executed by a perſon fully competent for ſuch a taſk; and to preſent, in a condenſed form, what, in my humble opinion, is the beſt information we have, reſpecting the diſeaſes which moſt commonly affect ſheep in this country. I have tranſcribed an entire memoir by M. Pictet, on the foot rot, being confident that it will be very acceptable to thoſe who have Spaniſh ſheep, which are ſaid to be very liable to that diſeaſe; and I have

freely taken from other ſources, whatever I thought uſeful; and I hope that you will agree with me, when I repeat, *nec aranearum ſane textus ideo melior, quia ex ſe fila gignunt; nec noſter vilior, quia ex alienis libamus ut apes.*

In the Appendix, I have collected ſome of the moſt intereſting documents which exhibit the value of the Merino ſheep. Mr. Culley, in the laſt edition of his uſeful treatiſe on live ſtock, has given a ſuccinct hiſtory of that breed, collected from various ſources. Being deſirous to detail the progreſs and valuable qualities of the Merinos, to thoſe who may not have had opportunities of attending to them particularly, and who may be induced to take up this volume, I have ſelected the accounts which have been given from time to time, of his majeſty's flock; and have added ſuch information reſpecting the Merinos in Scotland, as cannot fail to be highly intereſting to thoſe who are active in introducing this valuable breed.

Wiſhing, heartily, that ſucceſs may attend your individual exertions, and that the objects of the aſſociation may be attained to their full extent,

I remain,

Gentlemen,

Your faithful and obedient ſervant,

G. S. MACKENZIE.

TREATISE

ON THE DISEASES, &c. OF SHEEP.

.....

PART I.

TREATISE

ON THE

DISEASES &c. OF SHEEP,

.....

PART I.

Organs of Digestion.

All animals which chew the cud have more than one ſtomach. Sheep have four ſtomachs. In theſe animasl, the food, after being maſticated in the mouth, is carried by the gullet directly down to the firſt ſtomach, which lies upon the left side. This is the largest, and is generally called the paunch. On the inſide it has a vaſt number of blunt pointed eminences which give it a general roughness, and extend the ſurface to ſeveral times the ſize of the paunch itself. The food, after remaining here a certain time, and being macerated and mixed with the particular fluids which are poured in upon it, is forced up again into the mouth, and is there further prepared for digeſtion by chewing. This is what is called chewing the cud, or rumination. After this the food is sent down the gullet into the

ſecond ſtomach, the gullet having an opening common to it, and the firſt ends exactly where the two ſtomachs meet. There is also a smooth gutter, with riſing edges, which leads into the ſecond ſtomach, from thence to the third, and then to the fourth. Thus the animal has the power of directing the food, into whichever ſtomach it pleases.

The ſecond ſtomach, which is the leſſer, is called the Bonnet, or King's Hood; and conſiſts of a great number of cells, or excavations, on the internal ſurface, reſembling a honeycomb. The food is here further macerated, and is then puſhed forwards into the third ſtomach, or *Many Plies*, ſo called becauſe the internal ſurface riſes up into a great number of folds, which lie above one another.

From the third ſtomach the food paſſes into the fourth, called the *Reid*, or *Red*, which is the common name it has received from its colour. It reſembles the human ſtomach, or that of a dog. It is the fourth ſtomach of the calf, with the milk curdled in it, that is commonly taken for making rennet. (See plates 1ſt. and 2d. with the explanations.)

There are other animals which feed on the ſame ſubſtances with ſheep, that have no ſuch mechaniſm in their digeſtive organs. Horſes, particularly, have only one ſtomach, in which the graſs is macerated, and the nutritious part extracted; the reſt is diſcharged very little altered. From this difference in the ſtructure of the ſtomachs of theſe creatures, a ruminating animal, or one with four ſto-

machs, will be ſatisfied with one third leſs of food than another of equal bulk; and graziers are well acquainted with this. The reaſon is, that ruminating animals have many and ſtrong digeſtive organs; all their food is fully prepared; and almoſt wholly converted into a nutritious fluid, which is mixed with the blood. But the ſtomach of a horſe is not fit for this; ſo that he requires a much greater proportion of food, in order to extract the ſame quantity of nouriſhment.

The guts of ſheep are of conſiderable length in proportion to the bulk of the body. It is a general remark that the length and capacity of the guts are different in different animals according to the nature of their food. All animals which live on vegetable food, have not only their ſmall guts conſiderably longer, but alſo their great guts more capacious than ſuch creatures as feed on other animals. The reaſon of this ſeems to be, that as animal food is not only much more eaſily reduced into the nutritious fluid called chyle, but more prone to putrefaction, a long retention of it might be followed by the worſt effects; therefore, ſuch creatures as ſubſiſt on animal food, require ſhorter and leſs capacious inteſtinal canals than thoſe which live on vegetables; which being leſs capable of being diſſolved and converted into an animal nature, there is a neceſſity for animals which feed on them being provided with a long and capacious canal, in order that the food may be conſiderably retarded in its paſſage, and be more com-

pletely changed. The digeſtion of the ſheep, like that of the cow, and ſome other animals, is accompanied by a particular kind of action or proceſs, called rumination; the intention of which ſeems to be, that the food may be ſufficiently comminuted, and thus be more extenſively acted upon by the ſtomach. It is not obſerved that a lamb or calf ruminates while it feeds on milk alone; but the operation takes place as they begin to eat ſolid food. As long as the young animals feed on milk, the food deſcends immediately, along the gutter already mentioned, into the fourth ſtomach, without ſtopping in any of the firſt three. The rumination does not take place till after the animal has eaten a conſiderable quantity; after which it lies down, if it can do ſo conveniently, and then begins to chew the cud; though the operation will alſo take place in a ſtanding poſture. In the action, a ball is obſerved to riſe from the ſtomach with great velocity; this is chewed very accurately, and is then ſwallowed; another ball is forced up and chewed; and ſo on, till the whole of the food which the animal has eaten, has undergone the operation. By means of rumination, the animal extracts a much larger proportion of nouriſhment from the food, than thoſe animals which do not ruminate; and hence ſheep and cows are contented with much worſe fare, and leſs of it, than the horſe.

After the prepared food leaves the ſtomach, it meets with the bile, which is prepared and ſecreted

by the liver. In a hollow of the liver is placed the gall bladder. Theſe, with the pancreas, or ſweetbread, connected with the upper part of the alimentary canal, and the ſpleen, are organs all ſubſervient to the proceſs of digeſtion. As the food converted into chyle, paſſes along the guts, it is abſorbed by veſſels opening into them for that purpoſe, and carried by them into the blood. The guts have a conſtant motion, and a muſcular power, by which the food is carried through all their windings; and they are kept from entangling by the membrane called the meſentery, or web. After having been deprived of all its nutritious parts, the food becomes reduced into what is called fœces, or excrement, which is expelled by an exertion, occaſioned by a natural feeling excited by the matter having been brought to a ſtate rendering it dangerous to be retained.

Contents of the Chest, or Thorax.

The cavity of the cheſt, or thorax, as it is called by anatomiſts, is ſeparated from the abdomen by a ſtrong muſcle, called the diaphragm, which is ſpread acroſs the inſide of the body. The cheſt contains the heart and large blood veſſels, and the lungs. The ſtructure of the heart in quadrupeds much reſembles that in man. It is incloſed in a firm bag, or capſule, called the pericardium, from its ſurrounding the heart. The ſhape of the heart is conical,

and is placed in a line with the breaſt bone, or ſternum. It is hollow within, and is divided into four diſtinct cavities, which either communicate with one another, or which have openings leading from them into the blood-veſſels. Two of theſe cavities, called the right and left *auricles*, are ſituated at the baſe of the heart, and receive the blood from the veins, and propel it into the ventricles. The other two, called the right and left *ventricles*, receive the blood from the auricles, and then propel it into the arteries. (Plate 2d. fig. 2d.) The *veins* collect the blood from the different parts of the body, and before they arrive at the heart, they are formed into two large trunks, (plate 2d. fig. 2d. a a) and there terminate in the right auricle. From the right auricle the blood is thrown into the right ventricle, and the right ventricle propels it through an artery called the pulmonary artery, which conveys it into the lungs. Through the lungs it is circulated, and undergoes thoſe important changes produced by breathing.

Thus changed in its qualities, it is returned by veins, called the pulmonary veins, into the left auricle, (f) and from that into the left ventricle, (g) by which it is forced into the great artery called the aorta, which, by means of branches, diſtributes the blood over the whole body. This is what is called the circulation of the blood. The rapidity with which it goes on varies much in different animals, and in different ſtates of health of the ſame animal.

There are therefore two ſets of blood veſſels to be found in quadrupeds, the ſame as in man, the *arteries* and *veins*. The veins are formed at the termination of the arteries, and convey the blood, after it has been diſtributed over the body, back to the heart. The arteries are diſtinguiſhed from the veins by their pulſation; for the impulſe of the motion of the left ventricle of the heart is communicated to the large trunks of the arteries. But the motion of the blood is gradually retarded, as it paſſes towards the extremeties of the arteries; and before it enters the minute ramifications of the veins, the pulſe is altogether deſtroyed; in the ſame manner as water thrown on a piece of ſponge, in an interrupted, ſtarting ſtream, flows through it in an equally continued courſe.

The principal trunks of the arteries are contained in the centre of the body, where they are leaſt expoſed to danger, and derive ſupport and defence from the bones along which they paſs. The largeſt go to the different viſcera within the great cavities; the next in ſize to the muſcles and ſkin; and the ſmalleſt to the bones. Another ſingular proviſion for the ſafety of the principal arteries is, that they always paſs along a joint on the ſide towards which it bends. Were they on the oppoſite ſide, they would be in continual danger of being ruptured by the bending of the joints. In a few places the arteries become ſo extremely minute as altogether to exclude the *red* blood, carrying only a colourleſs fluid.

In a dead animal, the arteries are diſtinguiſhed from the veins by their whiteneſs, and the thickneſs of their coats; thoſe of the veins being much thinner, and of a blueiſh colour.

The Lungs.

With the circulation of the blood, the function of reſpiration is immediately and neceſſarily connected. This function conſiſts in an animal inhaling the air of the atmoſphere, by means of certain organs, and then expelling it. The organs deſtined for this office are called the lungs, or lights.

It has been mentioned that a veſſel, called the pulmonary artery, ariſes from the right ventricle of the heart, and diſtributes its blood through the lungs. By the obſtruction of the blood in the organs of reſpiration, the animal is forced to dilate them for the admiſſion of air, and immediately after to expel it by contracting them. For this purpoſe the thorax is furniſhed with muſcles, by the motion of which that cavity and the lungs are alternately dilated and contracted.

The blood by paſſing thus through the lungs, undergoes changes indiſputably neceſſary to life; all animals dying in places from which the air is excluded. Being thus changed, the blood is carried by the pulmonary veins back to the heart, and, as has been mentioned, is from thence circulated over the whole body by a large veſſel called the aorta.

The blood, when it paſſes through the arteries, is of a florid red colour; but when it returns by the veins it is of a dark colour. It has this appearance when it is conveyed into the lungs, from whence it iſſues with its colour revived. Hence it is evident, that it receives ſomething from the air in the lungs. When air expired from the lungs is examined, it is found to have loſt that portion which conſiſts of the gas, or air, called oxygen, which, from its abſorption by the blood, has been called vital air. No animal can live in air deprived of oxygen or vital air; and from this, the danger in keeping animals crowded in cloſe buildings ariſes.

The lungs occupy by far the greateſt part of the cavity of the cheſt; and they are divided into different portions called lobes. They are ſoft, ſpongy maſſes, compoſed chiefly of an infinite number of cells ſcarcely perceptible to the naked eye, and which all freely communicate with each other, and with the windpipe, or trachea. Into theſe cells the air paſſes during inſpiration.

The Brain and Nerves.*

The brain is a ſoft pulpy ſubſtance. Beſides the covering of ſkin and bones, it has particular membranes ſurrounding it, called *Dura Mater*, *Tunica Arachnoidea*, and *Pia Mater*. It is proportionably

* See plate 3d and explanation.

ſmaller in all quadrupeds than in man. It is divided into two portions; the outermoſt being very ſoft, and of a reddiſh, grey colour, and is called the bark, or cortex; the other is called medulla, which is white, and of a firmer conſiſtence.

The brain is ſupplied with the fineſt branches of numerous blood veſſels, which penetrate through the membranes.

The delicate ſtructure of the brain can hardly be deſcribed without actual inſpection. There are a variety of parts to be obſerved in it, to which anatomiſts have given names; and to which ſome alſo have attempted to aſcribe particular functions. Theſe inveſtigations, however, are, we fear, beyond the bounds of human underſtanding. There are certain cavities in the brain which particularly deſerve notice. They are called ventricles, and are four in number. They are very irregularly ſhaped cavities, ſituated in the medullary portion of the brain; and their ſurfaces are kept conſtantly moiſtened with a fluid which ſometimes collects in too great quantities, and forms one ſpecies of the diſeaſe called *ſturdy*.

The nerves riſe out of the brain. They have the appearance of white cords, and, like the blood veſſels, are diſtributed over every part of the body. They form the medium of communication between the mind and the external world. The nerves are alſo the organs of motion, and from them comes the power of muſcular action. When a nerve is ſtimulated,

the muſcle in which it terminates is convulſed; when it is compreſſed or divided, the muſcle to which it went, loſes all power, or is palſied. The action of ſome of the muſcles depends on the will of the animal, and is called voluntary action; others are actuated by an internal power, and the action is then termed involuntary. On the firſt depends the motion of particular parts of the body, and the locomotive faculty; on the ſecond depends the circulation of the blood, the function of reſpiration, digeſtion, the motions of the inteſtines, and other actions neceſſary to life.

The Teeth.

The age of a ſheep may be known by examining the teeth on the forepart of the under jaw. They are eight in number, and appear during the firſt year, and are all ſmall in ſize, and pointed (plate 2d. fig. 3d.) In the ſecond year, the two middle ones fall out, and their place is ſupplied by two new teeth, which are eaſily diſtinguiſhed by their being of a larger ſize. (fig. 4.) In the third year, two other pointed teeth, one from each ſide, are replaced by two large ones, in ſuch a manner that there are four large teeth in the middle, and two pointed ones on each ſide. (fig. 5.) In the fourth year, the large teeth are ſix in number, and only two pointed ones remain, one at each end of the range. (fig. 6.)

In the fifth year the remaining pointed teeth fall out, and are replaced, ſo that the whole ſet are large. (fig. 7.) In the ſixth year, the whole front teeth begin to be worn by being conſtantly rubbed one againſt another. In the ſeventh and eighth years, and ſometimes ſooner, ſome of the front teeth fall out or are broken, as in fig. 8.

PART II.

.....

Of Wounds, &c.

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Wounds of the fleſhy parts not being in general very difficult to cure, it may be proper, although ſheep are never much in the way of ſuch injuries, to put it in the power of the ſhepherd to ſave the life of a valuable animal, when any accident happens.*

The treatment of wounds in brutes differs but very little from the manner of healing them in the human body. The operations of nature are the ſame in both; and from theſe are derived the principles which direct the management of wounds. The cruelties which are practiſed by ignorant and unſkilful perſons, in applying their noſtrums, and knives, and pincers, and cords, and burning irons,

* The obſervations which follow will apply to other animals as well as ſheep, and on that account may be the more uſeful.

to poor dumb creatures, call loudly for the intervention of common ſenſe and humanity.

It is not intended to enter into all the minutiæ of poſſible caſes of wounds, and to preſcribe a mode of treatment for each. This would require a very large volume, and a ſeries of diſcuſſions, which would only tend to perplex and diſguſt thoſe for whom this work is chiefly intended, without being of any material uſe. All that is propoſed is to direct the ſhepherd how to act in ordinary caſes, in which a reaſonable hope of ſucceſs may be entertained.

When the fleſhy part of a muſcle is cut in the direction of its fibres, there is hardly any retraction of the divided parts. But when a muſcle is cut acroſs, there is a great retraction, and the wound, according to the vulgar expreſſion, gapes. Thus a very deep and ſevere wound may, externally, appear to be trifling, and one of leſs conſequence may be thought alarming, when no danger is to be apprehended.

An effuſion of blood follows the infliction of a wound, in a large, or ſmall quantity, according to the ſize and number of arteries and veins which may have been injured. When the blood veſſels are not conſiderable, and are completely divided, they retract amongſt the muſcular fibres, and the blood ſoon ceaſes to flow from them. When the blood has ſtopped, another fluid oozes out, and this and coagulated blood, are the applications which

nature makes for the cure, and which, in trifling wounds, generally prove effectual. But in extenſive and ſevere wounds, another proceſs goes on, if not prevented. A few hours after the infliction of the wound, the parts become red, ſwelled, and hot; and ſymptoms of fever are perceived. All the ſymptoms increaſe rapidly; and if the inflammation goes beyond the degree neceſſary for ſuppuration, mortification ends the pain. But if ſuppuration comes on, all the bad ſymptoms abate.

The cure of wounds is effected by adheſion, or by ſuppuration. When the ſides of a wound, recently inflicted, are brought into accurate contact, and kept together, they adhere very ſoon, and the wound heals with little or no trouble. But when a wound has been neglected, and in caſes of laceration and contuſion, this method of cure cannot be accompliſhed, ſuppuration muſt then be truſted to, and it muſt be brought on by every poſſible means. During the proceſs of ſuppuration the cauſes of inflammation are removed, and a ſupply of new fleſh is produced wherever a vacancy has been made. This new fleſh ſometimes grows in ſuch abundance as to render the removal of part of it neceſſary. It is in this caſe called fungous, or proud fleſh.

Simple Incised Wounds

Are thoſe made by ſharp cutting inſtruments, and are uſually attended, when conſiderable, by an ef-

fuſion of blood. If the effuſion of blood be great, and if from its florid colour and ſtarting, it appears to proceed from an artery, it muſt be quickly ſtopped. If there are no means of applying preſſure in the courſe of the wounded artery, between the wound and the heart, the fore finger ought to be introduced into the wound, and when the jet of blood is felt, it may thus be ſtopped until the wound be made large enough to admit of the artery being tied. An inſtrument called a *tenaculum*, which is nothing more than a ſharp pointed hook, is the moſt convenient for ſecuring an artery. A double thread being waxed, and an open knot made upon it, it is put over the inſtrument. The artery is then laid hold of by the point of the tenaculum, and drawn out a little, the knot is ſlipped over it, and firmly drawn, and the ends of the thread are allowed to hang out of the wound. Every bleeding veſſel may be ſecured in the ſame manner; and this mode of ſtopping the effuſion of blood is always to be preferred, as a cure is thus much more quickly and ſafely carried on than when ſponge, or puff-ball, or rags, are ſtuffed into a wound; or when any aſtringents are applied. Such things prevent the cure being effected by adheſion.

When the bleeding is ſo very profuſe as to render immediate applications ineffectual, it may be ſuffered to proceed till the animal dies; or ſome more ſpeedy termination may be put to its exiſtence. Bleeding is always moſt plentiful when the veſſels

have been only partially cut. If a ſmall veſſel thus partially divided be diſcovered, the flow of blood may often be ſtopped by the veſſel being cut quite through. When the bleeding is inconſiderable, it will ſoon ceaſe.

Should the ſituation of a wounded blood veſſel be ſuch as to render the application of a ligature impracticable, the bleeding may, in many caſes, be ſtopt by preſſure on the orifice from which the blood iſſues. The preſſure muſt be confined to a very ſmall ſpace; and the beſt mode of applying it is to place a linen compreſs, about a quarter of an inch ſquare, on the orifice, or mouth of the bleeding veſſel, and to preſs it with one finger.

Whenever the blood has been ſtopt, or when it ceaſes of itſelf to flow, the firſt thing to be done is to examine the wound, and to remove all extraneous ſubſtances that may have lodged in it. If theſe cannot be got out eaſily, ſuppuration muſt be truſted to for bringing them away. The ſides of the wound muſt be brought together as cloſe as poſſible. If this cannot be done by bandages and ſticking plaiſters, recourſe muſt be had to the needle. The one uſed on this occaſion muſt be crooked, and flat. A double waxed thread being put through the eye, the point of the needle is to be introduced at ſome diſtance from one edge of the wound, and puſhed as near to the bottom as poſſible, and then brought out at the other ſide. The needle being now taken from the thread, the ſides of the wound are to be preſſed together,

and the thread tied ſo as to retain them. The number of ſtitches is to be regulated according to the ſize, and ſhape of the wound. One is commonly uſed for every inch in length, but more muſt be made if the edges of the wound do not appear to be in perfect contact. If adheſive plaiſter can be put on, ſtraps of it ſhould be employed to ſupport the ſtitches, and prevent them from tearing the fleſh. A piece of linen ſpread with emollient ointment is to be laid over the whole; and if a bandage can be conveniently, and ſecurely, applied, it will be of very great uſe. By this treatment, a ſimple wound may be healed by the firſt intention. If there be any ligatures, they may be gently pulled after three or four days, when, moſt commonly, they will come eaſily away. At the ſame time, if the wound has adhered, ſome of the *ſutures* may be removed, and perhaps all of them. The firſt dreſſing ſhould not be changed for three or four days; and the ſtraps of plaiſter ſhould be renewed every day, or every ſecond day, till the parts are firmly united.

In managing a wound, ſhepherds ſhould be careful in examining it; and if by inflammation and ſwelling, the dreſſings and bandages become very tight, (a circumſtance which frequently happens,) they ſhould be immediately removed, and a poultice applied; or the parts may be fomented. Dangerous ſymptoms often occur from very trifling wounds. But if following the directions already

given be not attended with ſucceſs, it is but a chance that any other treatment will be effectual.*

Punctured Wounds.

In theſe the orifice is very ſmall in proportion to the depth of the wound. Of this kind are wounds made by any pointed inſtrument, ſplinters of wood, thorns, the teeth of animals, &c. They are much more dangerous than ſimple inciſed wounds; and this is owing to their always exciting a much greater degree of inflammation, and to the difficulty of getting the ſides to adhere uniformly. When the orifice heals before the parts below, very troubleſome collections of matter are formed. In ſuch caſes poultices are uſeful. Fomentations, with a decoction of camomile flowers, will alſo be of much ſervice, and are perhaps preferable to poultices.

* If a more intimate acquaintance with the nature and cure of wounds be desired, gratification may be obtained by conſulting any of the elementary works on ſurgery.

The prejudices of ſome people will not allow them to believe that there is even the moſt diſtant analogy between the ſtructure of inferior animals and that of the human frame. There are ſome who deſpiſe information, merely becauſe a method of cure, adopted for ſimilar diſeaſes in the human body, is propoſed for the diſorders of brutes. Some ſymptoms of this may be ſeen in page 189 of Mr. Hogg's Shepherd's Guide, where he diſbelieves the aſſertions of Mr. Stevenſon, a very reſpectable ſurgeon, becauſe he deſcribes what Mr. Hogg never ſaw; and propoſes a method of cure not conſiſtent with the Ettrick Shepherd's notions of medicine. I am aware that the reference to books on ſurgery for further information on the nature and cure of wounds, will appear abſurd in the eyes of ſome people who diſregard all knowledge, but what they can gain by their own experience; a method of acquiring it, the moſt dilatory and expenſive which can be followed.

The method of applying them is, to dip a piece of flannel into the decoction when very hot, then to wring it, and apply it to the parts; dipping the flannel again, when the heat has gone off.

Lacerated and Contused Wounds.

Under this head may alſo be included the bites of dogs, &c. In ſuch wounds the parts are torn asunder, or bruiſed ſo as to have their continuity deſtroyed.

Although in theſe caſes, there is leſs appearance of danger than in any already deſcribed, yet, in reality there is much more to be dreaded. From lacerated and contuſed wounds, there is not uſually any conſiderable flow of blood, and ſometimes there is no effuſion whatever; a circumſtance by which the danger of wounds is too often ignorantly eſtimated. The parts on which the injury has been inflicted, having had their texture completely deſtroyed, ſometimes mortify and fall off; or are reduced into matter and ſloughs, and thus a cure is obtained by ſuppuration. But inflammation often comes on ſo ſeverely as to cauſe a rapid mortification of the ſurrounding parts. When mortification begins in the human body, its progreſs may, in many inſtances, be arreſted. But in the caſe of an inferior animal, it is, perhaps, impracticable to

employ the ſame means for ſtopping it. Here, therefore, it is only neceſſary to point out the means of bringing the wounded parts to ſuch a degree of inflammation as will cauſe ſuppuration.

When the wound has been cleaned, and freed from all extraneous ſubſtances, ſuch parts as are almoſt completely torn, or ſqueezed off, ſhould be removed. A large warm oiled poultice is then to be folded in a bag made of thin linen, or muſlin, and laid gently on the wound and neighbouring parts, and ſhould be changed twice a day. Unleſs the injury be exceedingly ſevere, this treatment will, moſt probably, bring on ſuppuration, and the mortified parts will ſeparate. When this has happened, and when the inflammation has abated, the wound may be dreſſed once a day with a plaiſter of hog's lard. The wounded animal ſhould be allowed to move about as little as poſſible, and food ſhould be ſparingly given to it.

Wounds of the Joints

Are very difficult to manage. The cure may be attempted by keeping the air from the wound, and bringing the ſides into contact by means of ſticking plaiſter. If a great degree of inflammation appear, poultices ſhould be employed. An extenſive wound in a joint may be conſidered as incurable.

Poisoned Wounds.

Not unfrequently ſheep are bitten by ſnakes. As the wound inflicted by theſe reptiles is very ſmall, the injury is never perceived till the poiſon has entered into the ſyſtem. Sheep are often obſerved to become ſickly and to ſwell. Theſe ſymptoms are often attributed to braxy and rot, when, in reality, an adder or viper has occaſioned the miſchief. When it is ſuſpected that a ſheep has been bitten by a ſnake, doſes of oil ſhould be given, or, if at hand, ſmall, but frequent doſes of volatile ſalts mixed with water.

One of the French journals of 1802, contains the following article, "Snakes have encreaſed this year ſo much in number on the large commons, that the proprietors have ſuſtained great loſs by them. Theſe reptiles, particularly in the ſpring, ſuck the milk of the ſheep, and when the wound they inflict is deep, the two teats dry up, ſo that the ſheep which continue to be fruitful, can no longer ſuckle their young; but when the wound is ſlight, the wounded teat only dries up. In ſeveral of the commons in the department of Landes, there are flocks the ſheep of which have been ſucked in the proportion of four to one."

Sprains.

The uſual treatment of ſprains is to keep the part conſtantly moiſt with goulard water.

Sprains in the feet of horſes, have been relieved by placing the limb in a pail of hot water now and then. It is very probable that this treatment may be ſucceſsfully practiſed, when a ſimilar accident happens to ſheep*.

Fractures.

The mending of a broken bone, though ſomewhat tedious, is by no means difficult, when the ſkin covering the fracture has not been torn. Let the limb be ſtretched, and the broken ends of the bone placed very accurately in contact with each other. A piece of ſtiff leather, of paſteboard, or of thin wood, wrapt in a ſoft rag, is then to be laid along the limb, ſo that it may extend an inch or two beyond the contiguous joint. Whichever of theſe ſubſtances be employed, it ſhould be carefully ſecured in its ſituation by a bandage of linen, or flannel, an inch and a half broad, and two yards long, or more if neceſſary. After having been firmly rolled up, it ſhould be paſſed ſpirally round the leg, beginning at the foot, and carrying it up to above the end of the ſplint.† The ſplint ſhould be worn during ten days or a fortnight, and the bandage ſhould be continued till the leg has acquired its former ſtrength. When any conſiderable ſwel-

* I have tried this on the human foot with ſucceſs.

† The term ſplint is applied to pieces of wood joined together with leather, or any thing applied to keep broken bones in their places.

ling appears, the bandage ſhould be carefully ſlackened, and tightened again when the ſwelling abates. When a bone is broken in more than one place, all the pieces ſhould be placed in their natural ſituation, and ſecured, and healed in the ſame manner.

It ſometimes happens that a fracture is rude, and that part of the bone is protruded through the ſkin. In ſuch a caſe, a wound muſt be made of ſufficient length to allow the bone to be replaced, or a portion of the fractured extremities cut away with a ſaw. The bandage and ſplint are then to be applied as already directed, and the wound muſt be dreſſed, as often as ſhall appear neceſſary from the quantity of the diſcharge, with hog's lard, or ſimple cerate.

When a bone has been cruſhed, amputation is the only reſource, which can, with confidence, be pronounced ſafe; but this is an operation which probably will not be attempted. There is, however, a very fair chance of ſucceſs in laying the limb open, and removing the whole of the injured part of the bone. Although the ends of a divided bone be at a conſiderable diſtance, new bone will fill up the ſpace, provided the limb be kept perfectly ſteady.

Operation of Bleeding.

This operation is moſt conveniently performed on a large vein, whoſe branches are ſpread over the face of the ſheep. The vein may be felt diſtinctly

coming from the neck, and paſſing over the edge of the lower jaw to the cheek,* about two inches from the corner or angle of the jaw, or oppoſite to the third of the grinding teeth. When the operation is to be performed, the ſheep is to be held between the limbs of the operator, and the croup placed againſt a wall to prevent the animal from recoiling; the left hand is to be placed under the head, and the under jaw graſped in ſuch a manner, that the fingers come upon the right ſide of the jaw, ſo as to preſs upon the vein, a little below where it is intended to be opened. By thus preſſing on the vein, the flow of blood is prevented beyond the place where the preſſure is applied; and the blood, conſequently, can find no other courſe but through the artificial opening about to be made. The operator with the lancet or knife,† opens the vein by making an inciſion *obliquely* acroſs it at the place where the trunk is largeſt, and where it is moſt diſtinctly felt through the ſkin. The oblique direction of the cut, is found to anſwer better than either one made directly along the courſe of the vein, or one acroſs it. While introducing the inſtrument, it is of great conſequence to keep the vein from rolling under the ſkin, and eſcaping from the point; this is beſt accompliſhed by making the inci-

* Although the vein be deſcribed as coming from the neck, for the ſake of diſtinctneſs, the courſe of the blood is from the branches to the trunk.

† The lancet is the beſt inſtrument. In the plate, a caſe is repreſented having a knife, or ſcalpel, at one hand, and a lancet at the other. Such inſtruments are made by Mr. Moyes, cutler, College-ſtreet, Edinburgh.

ſion cloſe to the point of the finger which preſſes upon the vein. In diſeaſes of the head requiring bleeding, and in particular inflammations of the eyes, it is most adviſable to open the vein of the cheek; but in diſeaſes of other parts, blood may alſo be procured from a large vein that runs along the fore leg. This vein paſſes from the foot along the back part of the leg to the ham, and then goes obliquely over to the fore part of the limb. It is neareſt the ſurface and ſufficiently large a little above the knee, and may, at this place, be eaſily opened. The operation may be beſt performed by ſecuring the other three feet of the animal; and the operator, by graſping the limb above the place where the vein is to be opened, cauſes it to ſwell, and after it is diſtinctly felt, makes an inciſion in the manner recommended when the vein of the cheek is to be opened. (See plate 3d and explanation.)

Operation of Castration.

When the delicacy of the organs of generation is conſidered, it is a matter of aſtoniſhment that lambs ſo ſeldom ſuffer, from being cut in the rude manner in which the operation is uſually performed. Great loſſes are, however, ſometimes experienced. It often happens that ſome hundreds of lambs die on one farm, while none die on another in the neighbourhood. This may frequently be accounted for, by ſome ſlight difference in the manner of perform-

ing the operation adopted by different ſhepherds, or by ſome accidental overſight in the management of the animals who have undergone it. By uſing a very few precautions, and by paying a little attention in performing the operation, all danger may be avoided.

The younger the lambs are when caſtrated, there is the leſs riſk of loſing any of them. Perhaps the beſt rule is to cut them as ſoon as the teſticles are large enough to be eaſily got hold of. Some ſhepherds wait till the youngeſt of their lambs are old enough, and then there are many ſo old, that the operation upon theſe becomes dangerous. It is beſt to take up the lambs as they become fit, however few they may be, which are ready at one time; and in this way much hurry and confuſion may be avoided. To this plan it may be objected, that it will give a great deal of trouble in collecting the ewes often, and may injure ſuch as are heavy. As to trouble, ſuch an objection is not worth anſwering. But as there may be ſome danger in driving heavy ewes too often, that objection can only be partially removed. The ewes ought to be gathered in ſmall parcels, and taken to the neareſt fold, where the heavy ones may be ſeparated, and the reſt taken to the place where the lambs are to be cut. Two collections will be ſufficient; and if attention be paid to remove the tups in time, to prevent any late lambs being dropped, the ſhepherd will know exactly when he may gather the ewes for the laſt time. When the lambs have been cut, they ſhould be put by them-

ſelves for a little while, and not allowed to run about in ſearch of their dams. After a lamb has been caught, it ſhould be held a little till its agitation is over. It is then to be lifted and held at a convenient height for the operator.

Different modes of operating have been recommended. Mr. Hogg mentions ſlitting the ſcrotum; and it is ſtated in the memoir drawn up by Dr. Duncan from the communications to the Highland Society, that the top of the ſcrotum, (by which is to be underſtood its inferior part,) ſhould never be cut away; and from this it may be preſumed, that this practice, which has in ſome caſes been found to ſucceed well, was condemned by all thoſe who ſent papers to the ſociety.

In one mode of ſlitting, the ſcrotum is divided about half way through, about an inch above its loweſt point. It is poſſible that the blood will unite the divided parts before inflammation comes on, and thus a bag is formed for matter to lodge in; and there being no way for it to get out, it will certainly do miſchief. In another mode, a knife is thruſt in, and the ſkin ſlit up. But in every caſe there is a riſk of the lips of the wound cloſing and confining matter which may be formed. It is very probable that collections of matter in the ſcrotum are the cauſe of the numerous deaths which happen on many farms, while they are attributed to electricity in the air, and many other things, which ſervants are prompt in bringing forward as excuſes, and

which maſters are too ready to believe. The method ſo pointedly condemned in the Tranſactions of the Highland Society does not appear to be the worſt. By taking off a part of the ſcrotum, the teſticles are eaſily ſtarted, and ſhould matter form during the cure, it can eaſily get out. It has been practiſed frequently on the lambs of my flock, in the following manner. A part of the ſcrotum being cut off, merely ſufficient to allow the ſtones to paſs, the operator ſtarts them by means of his fore fingers and thumbs, preſſing on the abdomen with his other fingers. Having removed the ſtones, in the uſual manner, with his teeth, he ſpits into the ſcrotum, and preſſes the ſides of it together, drawing it gently forward at the ſame time. He then pulls the tail, and cuts about half of it off. Spitting into the ſcrotum may be ridiculed, but the application is harmleſs, and may aſſiſt in retaining the ſides together till the lips of the wound adhere. The bleeding of the tail undoubtedly contributes to prevent too violent an inflammation, and for that reaſon the docking is deferred till caſtration is performed, unleſs pinding renders the previous removal of part of the tail neceſſary. Since this ſimple method has been employed, there has not happened one inſtance of a lamb dying in conſequence of the operation.---- After all the lambs have been cut, and allowed to ſtand by themſeves for a little while, the ewes are let out, and as ſoon as every one has found her lamb, they are allowed to walk away to their paſture, but are not driven.

But a neater mode of performing caſtration is that which follows. The animal being well ſecured, the ſcrotum, or bag containing the teſticles, is to be graſped by the left hand in ſuch a manner as to preſs them forward, and render the ſkin lying over them quite tenſe. Two inciſions are then to be made through the ſkin, at the bottom or inferior part of the ſcrotum, ſufficiently large to allow each ſtone to paſs when preſſed out. The teſticles are then to be puſhed out one after another, and extracted in the uſual way; or, which is a more ſurgical, and a leſs painful method, the cords may be cut through about half an inch above the body of the teſticles. By cutting, profuſe bleeding might be expected; and, in ſuch an event, the veſſels would have to be ſecured as already directed; and it would become neceſſary to examine the lambs from time to time, and catching them might be attended by bad effects on the wounds. But from recent experiments made on full grown lambs, and rams of four and five years old,* no bleeding of any conſequence takes place. On the whole, this ſeems to be the ſafeſt and leaſt cruel method of operating.

Operation for Sturdy, or Water in the Head.

The diſeaſe called ſturdy, might have been arranged with the others about to be treated of. But as the cure

* I had ſix old rams cut in the month of November laſt, and they all recovered.

depends on a peculiar operation, I have thought it beſt to conſider it in this part of the treatiſe.

The cauſe of one ſpecies of ſturdy has been already mentioned. The collection of water in the ventricle of the brain is deemed an incurable diſeaſe, and probably is ſo. The other, and moſt common, ſpecies of the diſeaſe, ariſes from animalculæ, called hydatids. In this caſe the water is contained in cyſts, or bags, unconnected with the brain, on which, however, if not prevented, it acts fatally by preſſure. It would appear too, that a long continuation of the preſſure occaſions part of the brain to be completely diſorganiſed, and converted into a ſubſtance, the examination of which may afford ſome inſtructive hints to anatomiſts, but which is foreign to our preſent purpoſe.

Very ſoon after water has begun to collect, either in the ventricles or cyſts, the animal ſubjected to the diſeaſe ſhows evident and deciſive ſymptoms. It frequently ſtarts, looks giddy and confuſed, and as if at a loſs what to do. It retires from the reſt of the flock, and ſometimes exhibits a very affecting ſpectacle of miſery.

Various methods of relieving the preſſure on the brain have been propoſed, and when put in practice by ſkilful and patient hands, moſt of them have ſucceeded. It would be ſuperfluous to enumerate and deſcribe them all, as a method has been found of perforating the cyſt, which has ſucceeded perfectly in

numberleſs inſtances; and which, from the eaſe with which it may be performed, very ſtrongly recommends itſelf. Yet the operation is one which, from reaſoning on the peculiar delicacy of the brain, never would have been adviſed. We are indebted for it, it would appear, to Mr. James Hogg, who tried the experiment to rid himſelf of trouble, while a herd boy. He laid hold of every ſturdied ſheep which came in his way, and (being employed in knitting ſtockings,) he thruſt one of his wires up the animal's noſe, and forced it through the ſkull into the brain. In thoſe caſes in which wiring proves fatal, it is probable that the inſtrument does not reach the cyſt. There may, indeed, be ſome portions of the brain more delicate than others, and, on the whole, however general the ſucceſs of this operation may be, it muſt be conſidered as hazardous. Deſperate diſeaſes, however, require deſperate remedies.

The more delicate and nice operations of trepan, and extraction of the cyſt, are fit to be in the hands of ſkilful ſurgeons. But with ordinary ſervants, the bungling of either, which would be fatal, would occur ſo frequently, that only the ſimple operation of wiring ſhall be deſcribed by the explanation of plate 4th. (which ſee.)

An anatomiſt may make many intereſting diſcoveries, while attending to the diſeaſe and the effects of the operation That in almoſt every caſe part of the brain is diſplaced and deſtroyed, has been aſcer-

tained. If it ſhall be found that in animals which recover, the brain is reproduced, ſo as to fill up the ſpace which had been occupied by the cyſt, the fact will be curious and important.

PART III.

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DISEASES.

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Red Water.

This, and the following article, are copied from Mr. Stevenſon's account of them.* "Red water commonly makes its appearance about the beginning, or end of winter, and firſt affects about the breaſt and belly. It conſiſts in an inflammation of the ſkin, that raiſes it into bliſters, which contain a thin, reddiſh, and watery fluid. Theſe continue for a ſhort time, break, diſcharge this matter, and are followed by a blackiſh ſcab. When the ſheep are expoſed to cold, or wetneſs, the ſkin being fretted makes the bliſters riſe; or they often ariſe from cold affecting the animal internally, thus producing a ſlight fever, which throws out theſe veſicles on the body, ſimilar to the ſcabby eruptions which appear about the face, and more particularly the mouth of thoſe perſons affected with cold. The

* Tranſactions of the Highland Society.

blood in this diſeaſe is but little affected, although a little of it oozes into the veſicles on the ſkin, and communicates to them that reddiſh tinge which gives origin to the name. Red water is a diſeaſe that but ſeldom appears in this country, and it is almoſt never fatal. In cases where the diſeaſe is violent, a little blood ſhould be taken. The ſheep ſhould be placed in a fold by itſelf, the bliſters ſlit up, and a little infuſion of tobacco put into them; and the following medicine may be given for three or four mornings ſucceſſively.

Take of flower of ſulphur, ... 2 oz.
honey, treacle, or ſyrup, . . 3 oz.

mix them, and divide them into ſix dozes, of which one may be given every morning in half a pint, Engliſh, of warm water. If this is found unſucceſsful, half an ounce of nitre, mixed with the foregoing receipt, will be attended with good effects, after which a doſe of ſalts may be given, and the body waſhed with lime water."

Erysipilas, or Wild Fire.

"This, like the laſt mentioned diſeaſe, alſo affects the ſkin, and is apt, if not attended to, to ſpread very quickly among the flock. It is attended with more inflammation than the last; and but ſeldom with bliſters over the body. It commonly appears in Auguſt and September, and does not continue above

eight days at a time, although thoſe ſheep once affected with it are liable to relapſe. In former times, it was a practice with ſhepherds to bury thoſe ſheep affected with this diſeaſe, at the door of the fold with their feet upwards, which they believed acted as a charm to drive it from the flock. It is neceſſary, for the cure of this diſeaſe, to follow the ſame method recommended in the red water. An ounce of ſalts, diſſolved in warm water, given every morning, for three or four days, anſwers remarkably well to begin the cure, when the laſt mentioned receipt, with the addition of the nitre, may be continued, till the diſeaſe diſappears."

The only thing in theſe preſcriptions which ſeems liable to objection, is giving ſalts in warm water. The effects of the medicine will be more powerful, and more beneficial, when the ſolution is adminiſtered cold. For waſhing the body, goulard water is the beſt application.

Scab, or Itch.

This infectious, troubleſome, and deſtructive diſeaſe is well known. It ſeldom appears among ſheep which have been ſmeared, and when it does, it proceeds, moſt probably, from the touch of a diſeaſed animal, of a ſtone, or a tree, or paling, on which ſcabbed ſheep have rubbed themſelves. A ſheep is never, even ſlightly, affected, but it pro-

ceeds to ſcratch itſelf, and to rub its ſides and buttocks againſt every thing it meets. As ſoon as the diſeaſe is diſcovered, the whole flock among which the ſcabbed animal has been paſturing, ſhould be carefully examined, and every one which has an appearance of being fretted on the ſkin, muſt be taken away to be cured. Several ointments have been propoſed for the cure of this diſeaſe, and that of Sir Joſeph Banks ſeems to have been moſt approved of. His preſcription, however, can only be made by an apothecary, a perſonage not always at hand, and who may not always have ſheep ointment ready when wanted. Every apothecary has abundance of mercurial ointment at all times, and if a ſhepherd purchaſes a quantity of it to keep by him, with a little oil of turpentine, he may always have it in his power to make up ointment when he requires it, and of ſuch a degree of ſtrength as he may judge proper.

The following directions may be found uſeful;

Take of ſtrong mercurial ointment, 4 libs.
oil of turpentine, ... ½ pint, Eng.
hog's lard, tallow, or butter, 4 libs.

melt the hog's lard, or butter. Allow them to ſettle, and pour off the clear liquid; then add the mercurial ointment, ſtirring the whole well, till it be melted and incorporated, and then add the oil of turpentine. Keep ſtirring the mixture for a minute or two, that the mercury may be completely mixed, and then pour the whole into ſome ſhallow veſſels,

that the ointment may cool quickly. If the mercury ſhould appear to have ſunk when the ointment is cold, it may be rubbed a little with a ſmooth flat ſtick, on a plate. But there will ſeldom be any occaſion for this, if the proceſs be well managed. A very effectual and a much cheaper ointment may be made as follows:—

Take of corroſive ſublimate, . . 8 oz.
train oil, ... 6 gallons, Eng.
rosin, (black or yellow) 2 libs.
tallow, ... 2 libs.

let the corroſive ſublimate be reduced to a fine powder, and mixed with a portion of the oil. The roſin, tallow, and remainder of the oil, are to be melted together over the fire, and the ſublimate afterwards added.

If this mixture ſhould be thought too thin, the proportion of oil may be diminiſhed, and that of the tallow increaſed. Were one or two pounds of powdered white hellebore to be added, it would improve both the conſiſtence and efficacy of the ointment. One pound of ſublimate, at 10s. will, in this way, go as far as 50 pounds of mercurial ointment, at 3s.*

If the wool be not taken off, either of theſe ointments, or that of Sir Joſeph Banks, is to be laid on, in the ſame manner as ſmearing ſtuff, beginning with a line along the back; one is to be laid on each ſide, and one down each leg. The neck, in-

* Mr. Manderſton, apothecary, Roſe-ſtreet, Edinburgh, makes up a ſtrong ointment with corroſive ſublimate, which is very convenient, as it may be diluted to the required ſtrength with oil and tallow.

ſide of the thighs, and belly, ſhould have a ſhare. In every caſe, however, the wool ſhould be ſhorn, except during very cold weather, and the animal waſhed and bruſhed with ſoap and water, before the application of the ointment, which may now be applied all over the body. The mercury will have more effect, and leſs of the ointment will ſerve, when all filth, and looſe ſcabs have been removed by the waſhing. What is recommended in another part of this work, viz. anointing the ſheep after being ſhorn, will be found a very effectual means of warding off the ſcab, and every diſeaſe of the ſkin.

The Leg Evil, or Black Leg,

Is a very formidable diſeaſe. It begins at the hoof, or knee, which ſwells, and makes the ſheep quite lame. The limb is uſually covered with ſmall bliſters, filled with a blueiſh fluid, and the ſkin is of the ſame colour, and ſoon breaks out in ſores. This diſeaſe being infectious, care muſt be taken to remove every animal affected by it from the flock. The wool being removed, the diſeaſed limb ſhould be well waſhed and cleanſed with ſoapy water. The ſores ſhould be dreſſed with ſome cauſtic ointment. Perhaps baſilicon, mixed with red precipitate will be found very uſeful. A little burnt alum, in powder, may be put upon the ſores, and the whole limb ſhould be wrapped in a cloth ſpread with the ſcab ointment, thinly laid on.

Maggots.

When, on the examination of a ſheep, or lamb, which appears harraſſed and reſtleſs, the tumours under which the maggots are concealed are obſerved, they ſhould be freely opened, that the vermin may be picked out. The ſore may be anointed and covered with a rag ſpread with ſmearing ſtuff. This dreſſing being daily changed, a recovery is made in a few days. Means of preventing the attacks of flies, which depoſit the eggs from which the maggots iſſue, will be pointed out when the management of ſheep is conſidered.

Sore Nipples.

Lambs very often die of hunger, from their dams refuſing them ſuck. The cauſe of this is ſore nipples, or ſome tumour in the udder, in which violent pain is excited by the ſtriking of the lamb. Waſhing with ſugar of lead and water, or ſpirits, will remove the complaint.

Foot-rot.

There cannot be a more complete and diſtinct account of the foot-rot, than that contained in a

memoir by M. Pictet, which has been tranſlated, and printed in the Philoſophical Magazine, from which it is now tranſcribed.—" I think I ſhall render a ſervice to the proprietors of ſheep, by calling their attention to a malady, which, to my knowledge, has not been deſcribed by the veterinariſts of any country; and which, to the preſent moment, appears to have been unknown in France. The following is the occaſion upon which I obſerved it.

" In the month of May, 1804, I received from Piedmont a flock of 200 ſheep, of various mongrel breeds, of the ſecond and third generations. The animals came to hand in good condition, but ſome of them were lame. The flock was placed, with a hundred other mongrels, on a low mountain, the paſturage of which is healthy, and of good quality. We did not pay very great attention to the lame ſheep, becauſe, in general, upon a journey, they cripple often from fatigue alone, and their lameneſs goes off after reſting a while. I never yet received a lot of Spaniſh ſheep, among which there were not a few lame ones at their arrival; but this defect was never of long continuance. In the preſent caſe, however, the lame animals became worſe and worſe, and every day others of them began to grow lame, while none of the others grew any better. Not ſuſpecting any contagion, we attributed this affection to the rocky nature of the paſturage, to the frequent journies which the ſheep took from a rivulet to go and feed; and, alſo, to the circumſtance that the ſheep

fold was not frequently enough renewed. We took precautions againſt all theſe various cauſes; and yet the malady continued among the ſheep. At the end of ſix weeks every one among them was lame. and ſome of them were affected in all their four legs. They crawled upon their knees while feeding, and the worſt of them fell off very much in their appearance. It now became indiſpenſably neceſſary to aſſiſt this flock by every means in our power. We removed them to the diſtance of ſix leagues. Their removal was not effected without great trouble, and was very tedious; we alſo had recourſe to carriages for conveying the moſt diſeaſed among them. But in ſpite of all our care many fell victims to the diſeaſe, unable to bear the fatigue. The different individuals of the flock preſented all the varieties of the diſeaſe, which may be reduced to three principal ones. The animals, in the firſt ſtage of the diſeaſe, were only a little lame, appeared without fever, and preſerved their appetite. Upon inſpecting the foot, there was only a ſlight redneſs diſcovered at the root of the hoofs, or a ſlight oozing out of matter round the hoof; ſometimes only a ſlight degree of heat in the lame foot, without any apparent irritation.

The ſheep which had the malady in the ſecond degree, were lame all fours, had a fever, appeared dull, fed ſlowly, and were often on their knees, if the fore legs were attacked. Upon inſpecting the foot, there was an ulceration, as well at the root

of the diviſion of the hoofs, as at the junction of the horn to the leg, accompanied by a fœtid whitiſh ſanies.

Such animals as were in the third degree of the diſeaſe had a continual fever; they were meagre and ſorrowful, roſe up with difficulty, and loſt their wool. The ulceration of the feet was venomous, and reſembled a white gangrene. Purulent collections were formed under the hoof, and made their appearance at the junction of the horn and the ſkin. Among ſome ſheep the hoof was detached, or entirely deſtroyed; and the fleſh of the two diviſions of the foot was one complete ulcer. In others the hoof had kept on, becauſe the flowing of the purulent matter made its appearance at the ſole, and had gnawed and completely deſtroyed it. In this caſe the interior of the foot, after turning it up to look at it, offered only a putrid maſs filled with worms, contained in the horn of the hoof; the fleſh and ligaments appeared completely deſtroyed, and the bones of the feet were carious; the ſmell was cadaverous and inſupportable.

We endeavoured, at firſt, to claſſify and ſeparate the animals, according to the ſtage of the diſeaſe. The antiſeptic lotions, ſuch as red wine, vinegar, extract of bark, and oak bark, were employed; as alſo the fumigations of nitric acid, to weaken the putrid tendency, and ſecond the effects of the remedies. I heard, from Piedmont, that the vitriol of copper, in powder, as a drying cauſtic, was very

uſeful at the commencement of the diſorder, in checking its progreſs. We employed it, without any remarkable ſucceſs, upon ſuch animals as were only ſlightly attacked. It is probable that the contagious influence, which we had not yet learnt to guard againſt ſufficiently, had deſtroyed the effect of this remedy. The acetite of lead, or ſaturnine extract, was employed with more advantage. Antimonial beer was uſeful in drying the wound, and the *lapis infernalis* in burning the bad fleſh, which was ſpeedily reproduced after the inciſions, which accompanied the complete clearing of the feet.

The treatment of a flock, in this miſerable ſituation, is extremely perplexing. Four ſhepherds, and ſeveral aſſiſtants, were employed in taking care of the 300 lame ſheep; and it was an extremely diſagreeble buſineſs for all of them. The animals were examined every day, one by one; and ſuch of them as were unable to go to paſture were fed in the ſheep cot, where the forage was carefully ſpread out for them, becauſe the ſick animals had neither ſtrength nor inclination to pull it out of the racks. It was neceſſary to renew the litter often, and to perfume the ſheep cot ſeveral times a day, a precaution which prevented the ſmell from becoming inſupportable to thoſe who dreſſed the ſores. This was not all,--the lambs had made their appearance before we had overcome the diſeaſe; ſeveral of the poor ſheep miſcarried, or produced lambs, which were ſo weakly that they could not live; others of the lambs died

for want of milk, and thoſe which ſurvived took the diſeaſe, all which encreaſed our difficulties. The diſeaſe raged with all its violence for three months; and during a whole year many of the animals continued lame. If we calculate the loſs of the animals which died of the diſeaſe, the loſs of the lambs, and the great expences attending ſo tedious a cure, we may be convinced that the ſcab itſelf, terrible as it is, is a leſs troubleſome malady than the foot rot, when it is contagious and general in a flock. Before pointing out the method of preventing, and curing this evil, I ſhall mention a fact, which will ſhow how far it is contagious, and of how much conſequence it is to increaſe our precautions, in order to get rid of it. The rams, who were upon the mountains at the ſame time with the diſeaſed flock, took the foot rot. They were ſeparated from the reſt of the diſeaſed animals; and, at the end of four months, after having paſſed through all the uſual operations, they appeared to be cured. They ſtill had tender feet, however, and walked with pain; but as the hoof was well recovered, and there was no appearance of ulceration upon it, they were driven to the neighbourhood of a Spaniſh flock. They were placed under a pent houſe, ſeparated from the ſheep cot by a wall. Some of theſe rams continued to eat out of the racks, on their knees, which we attributed to the ſole of the foot not being yet conſolidated; but, at the end of fifteen days, we perceived that an oozing out of purulent matter had

again commenced at the junction of the horn of the hoof. They were then tranſported to an infirmary, to be ſubmitted once more to the ſame treatment. The ſtraw upon which they had lain was not taken away; and the Spaniſh flock having afterwards been ſent into the pent houſe, the foot rot began to ſhow itſelf among them in about fifteen days. The rigorous meaſures and precautions followed, and the treatment I am about to recommend, hindered the diſeaſe from proceeding any farther in this flock than the ſecond degree, otherwiſe I do not believe that a ſingle beaſt would have eſcaped.

Precautions and Treatment.

" At all times, upon receiving a ſtrange flock, it is adviſable to keep them ſeparated, until it is well aſcertained that they are not infected with the ſcab, or any other contagious diſorder. The precaution is not leſs proper in the caſe of the foot rot; for although there may be no crippled animal in a flock newly come to hand, yet there may be one among them which had been imperfectly cured during the journey, and in which the diſeaſe may break out anew. If there are any actually lame at their arrival, they muſt be carefully examined. Sometimes it happens that they may chance to be crippled from ſome other cauſe than the foot rot. On a journey the clay ſometimes gets hard between the hoofs, and thereby lames the animals. A ſingle glance will ſuffice to ſee whether this be the cauſe of the lame-

neſs. Sometimes they are lamed in conſequence of the gland between the hoofs being ſwelled. This is cured of itſelf, or, at worſt, by cutting off the gland; and it is not contagious. At other times the animal is crippled merely from fatigue; for which a little reſt is the obvious cure. But if the diſtrict from which the ſheep came is ſuſpected, all diſeaſes of the feet muſt be examined more cautiouſly than uſual. A heat in the foot is a certain ſign of an abſceſs exiſting in the hoof, to which an outlet ſhould be given. The animal muſt then be ſeparated from the reſt, and the operation performed which I am about to deſcribe.

"If the ulceration is viſible, the place muſt be cleaned with a rag, and goulard water laid upon the ſore, by means of a feather; or the powder of blue vitriol. In order to prevent any dirt, &c. from getting into the wound, the diſeaſed foot ſhould be placed into a little boot, the ſole of which is of leather or felt, and the upper part of cloth, in order to faſten it round the leg of the ſheep. This precaution is not only favourable to the animal, it alſo prevents contagion, which ſeems to be communicated by the pus, or ſanies, which flows from the ulcers upon the litter of the ſheep fold. But where the diſeaſe is ſituated between the diviſion of the hoof, the boot muſt be large enough to allow the foot to be moved in its natural way; for if the two diviſions were locked together, the diſeaſe would feſter inſtead of healing.

" When the diſeaſe is ſeated within the horn of the hoof, it is attended with great pain, without any viſible diſeaſe. The animal does not reſt upon the diſeaſed leg, yet it has all the appearance of being well. Upon putting the hand upon the hoof it is found to be very hot, which is eaſily aſcertained by comparing it with the ſound legs. We muſt then endeavour to diſcover on what ſide the abſceſs, or interior ulcer, is. In order to do this, the foot of the animal muſt be ſlightly preſſed with the thumb all round the junction of the horn, and the ſkin, as well as the ſole of the foot. The ſeat of the abſceſs may be eaſily aſcertained by the wincing motion of the foot. This is the place which muſt be cut with a keen edged knife, ſo as to occaſion the diſcharge of the matter, and lay the fleſh bare. When the wound has bled for ſome time, a feather, wet with the water of goulard, is laid upon it, and the boot above deſcribed put on.

" It ſometimes happens, that upon preſſing the foot with the finger, no place can be fixed upon as being the ſeat of the diſeaſe. This is the caſe when the abſceſs is ſeated below the hardeſt and thickeſt part of the hoof. In this caſe it is neceſſary to make large inciſions, ſometimes without any benefit, before finding the diſeaſe; and, after waiting a day or two, the matter of the ulcer begins to appear, and eats through the horn, in deſcending to the ſole, which then becomes painful at the place where it is neceſſary to make the inciſion. In general we need

not be afraid of cutting into the quick, and bleeding the diſeaſed feet; the horn of the hoof grows again with ſingular expedition. I have often ſeen feet which were completely unhoofed; others, of which part only of the horn was taken away, which healed much ſooner than ſuch feet as were ſcarcely ulcerated.

"It would ſeem that in this diſeaſe the juices which adminiſter to the reproduction of the horn, or hoof, exiſt in greater abundance, in the above places, in diſeaſe, than in health. When the diſeaſe is neglected, and where the ſole of the foot has been gnawed off, and the whole foot ulcerated, I often found that the ſides of the horn had ſent out croſs ſlips, from one ſide of the ſole to the other, thereby becoming a ſort of boot, on which the animal reſted without much pain. Sometimes alſo the horn in growing again aſſumes uncommon ſhapes.

"The dreſſing muſt be repeated every day with the greateſt regularity. It conſiſts in removing the boot, and cleaning the wound with goulard water. The other feet of the animal muſt be examined, as well as the diſeaſed one; for the diſeaſe often paſſes from one foot to another, and it is ſometimes viſible to the eye before the animal is lame in the foot recently attacked. Some drops of goulard water will then prevent the progreſs of the diſeaſe; when the diſeaſe is taken in time, five or ſix days are ſufficient for the cure. If a good deal of horn has been removed, it will require a longer time, until the

horn has grown again, and aſſumed ſufficient conſiſtence for the animal to walk without being crippled. As long as the leaſt matter is perceived, and the wound is not dry and cicatriſed, even although the animal is not lame, it muſt not be thought cured, for it will carry back the contagion to the flock from which it had been ſeparated. It muſt not be allowed to paſture with the reſt until completely healed; and even then all its four feet ought to be bathed with vinegar for a few days, at firſt. Unfortunately, this malady is ſubject to frequent returns. I have often ſeen animals, which appeared to be well cured, which walked perfectly well for fifteen days, and then were again ſeized. Thoſe which have already had it, ſo far from being leſs ſubject to it, are more expoſed to it. This happens from the nature of the treatment. The remedies I have preſcribed can only check the progreſs of the diſeaſe; and until we have diſcovered a purifying ſpecific, we may often ſee the diſeaſe reappear on the ſame animal. It is of great importance to be extremely vigilant in placing the animals in the infirmary, and in taking them away in proper time. In the ſeaſon when the ſheep do not leave the fold, the lame ones are not eaſily diſcovered, and ſometimes not until the diſeaſe is of ſome ſtanding; ſo that the diſeaſe may have been communicated to many others, before the diſeaſed animal is taken away. If the leaſt degree of infection is ſuppoſed to exiſt, they ought to be walked up and down, every day, in an incloſure, in order

to obſerve if any of them is lame. It is alſo neceſſary to remove them from the infirmary as ſoon as the ulceration diſappears, becauſe they may take the diſeaſe again from thoſe around them. Fumigations of nitric acid are ſalutary for preventing the ſmell, and may alſo haſten the cure of the ulcers. The litter ſhould alſo be frequently changed; and when removed, it muſt not be left in a place where the healthy animals are liable to be expoſed to it. When theſe precautions are reſorted to, and the care taken which I have deſcribed, there will be no danger that the diſeaſe will aſſume any ſerious appearance.

"Every thing pertaining to the knowledge of this diſeaſe, which is abſolutely new in France, and, I have reaſon to believe, unknown in Spain, is extremely important to the proprietors of Merinos, or mongrels. I hope thoſe who are in poſſeſſion of any new facts, on the ſubject of the foot rot, will publiſh them. I obtained from a profeſſional man of Piedmont, a ſuccinct memoir concerning this diſeaſe. I ſhall here inſert it."

"Sheep, and particularly thoſe with the fineſt wool, are ſubject to a contagious whitlow, which hinders them from paſturing; and which, on account of the pain and the ſuppuration which it occaſions, gives them a continual fever, which increaſes in the evening. They fall off in fleſh, and loſe their wool, the rams loſe their appetite for copulation, the mothers loſe their milk, the lambs are weak and die of conſumption.

"There are three kinds of whitlow, which ſucceed each other. The firſt is ſeated under the epidermis, between the two diviſions of the foot; the animal is ſeen to halt; if we lay hold of the foot, it feels hotter than uſual, and it has a bad ſmell. Upon examining the place, an oozing out of matter is diſcovered. The ſecond ſpecies of whitlow is ſeated under the horn. In this caſe the lameneſs and the heat of the foot are greater, as alſo the degree of fever. The third ſpecies attacks the phalanges, or the bones of the foot, and is cauſed by inattention to the two former ſtages of the diſeaſe. The cure of this laſt is very troubleſome and difficult. The diſeaſe ariſes from long journeys, paſturing in marſhy places, allowing the ſheep to mix with ſwine, or from lying in damp folds without litter.

Preventatives.---"1ſt. remove, as much as poſſible, the above cauſes. 2d. ſeparate the diſeaſed from the healthy animals the inſtant the infection appears.

Cure for the firſt ſtage of the complaint.---"As ſoon as the ſhepherd perceives the diſeaſe, he muſt dry the place affected very carefully with a linen rag, and ſpread over it vitriol of copper in powder.

"In the ſecond ſpecies of whitlow, it is neceſſary to cut off that part of the horn which is detached from the phalange. We ſhould begin cutting at the point of the horn, and proceed upwards. This operation muſt be performed by paring, ſucceſſively, thin ſlips off the horn; when the horn is completely removed, and the fleſh bare, the receptacle of con-

tagious matter is diſcovered. Sometimes it has gnawed very deep, and then the ulcer muſt be cleaned to the very bottom, by continuing to cut by little and little. In order to clean the wounds thus laid bare, the foot muſt be plunged into water, heated to ſuch degree that we can ſcarcely hold the hand in it. The diſeaſed foot muſt be plunged and replunged into this hot water ſeveral times, letting it remain only a few ſeconds, at each time, in the water. It is then dried with a cloth, and a feather, dipped in muriatic acid, is drawn over the place. The animal muſt be kept in a fold, where there is plenty of ſtraw, for twenty-four hours. Next day it may be put out to paſture, where there are no ſtones or thorns. Every night the feet of the animals muſt be inſpected, and if any ulcers are again formed, the treatment muſt be renewed. They muſt be always dreſſed in the evening, becauſe the repoſe, during the night, greatly contributes to the good effects of the remedies.

" The whitlow, of the third ſpecies, is very difficult to cure. The horn muſt be cut, and the fleſh taken off alſo, and the carious bone muſt be then ſcraped, and ſeared with a red hot iron."

" The manner of operating with the knife is extremely well deſcribed in the above memoir. The analogy between the treatment of whitlow in human creatures, and that in animals, ſhows how efficacious the immerſion in hot water is, as recommended by the author; and the careful cleaning of

the ulcers, upon which he inſiſts, is extremely important. I entreat that intelligent agriculturiſts may communicate to the public their obſervations, from time to time, on this diſeaſe, and the beſt method of cure."

'To the diſtinct account of the foot rot contained in the above memoir, nothing can be added. But the method of cure deſcribed by M. Pictet and his friend, does not ſeem to have been either expeditious or radical. Although M. Pictet appears not to approve of the application of blue vitriol, yet there can be little doubt of cauſtics being uſeful in the firſt inſtance. It is probable that the tardineſs of the cure was owing to the very ſlight dreſſing put over the ſore. It is likely too that the cure would have been haſtened by the adminiſtration of ſome cooling medicine internally. The following mode of treatment is humbly ſuggeſted to thoſe who may be ſo unfortunate as to diſcover this diſeaſe among their ſheep. Let the animal, in the firſt place, get a doſe of glauber ſalts. The ulcer having been laid open and cleaned, it is to be waſhed with weak cauſtic ley of pot-aſh, or ſoda, and filled with ſcraped linen, dipped in oil; or, what is better, goulard cerate. The dreſſing of cerate is to be continued, every evening, until granulations of fleſh appear to be filling up the ſpace formerly occupied by the matter of the ulcer; and if it ſhould be neceſſary, the waſhing with cauſtic ley may be repeated. Common cerate may then be applied, and ſhould the fleſh

grow too luxuriantly, a little red precipitate and burnt alum may be duſted upon it. When a wholeſome ſuppurative diſcharge has taken place, gentle preſſure may be applied to bring the ſides of the ſore towards each other, taking care always to give free vent to the matter. The limb ſhould be carefully waſhed with vinegar and water.* This treatment is recommended for moſt ulcers to which ſheep or other animals may be liable, from wounds of the ſkin having been neglected, or other cauſes.

The different kinds of matter which iſſue from ulcers are,

Pus, or the matter of ſuppuration; it is thick and yellowiſh white.

Sanies, is a thin green coloured matter.

Ichor, is reddiſh, and very acrid.

Sordes, is a gluey kind of matter.

The three last have a much more diſagreeable ſmell than the firſt.

Rot.

This diſeaſe never attacks ſheep on dry lands. It has been obſerved to affect ſheep which were before healthy, almoſt immediately on their being ſent

* Having lately obſerved one of my Merino lambs halting, and apparently lame in both fore feet, I examined them carefully and obſerved that the hoof was growing inward. Having pared it, I let the animal go, and it ſeemed to be very much relieved; but two days afterwards I again obſerved the lameneſs, and on examining the feet, I felt them very hot. I did not perceive any ſwelling, or oozing out of matter. I was convinced,

to feed on ſoft wet paſtures. Mr. James Hogg and others aſſert that the rot is cauſed by a ſudden fall in condition. As theſe gentlemen do not mention what, in their opinion, occaſions this ſudden fall, we may ſafely preſume that it is not meant to aſcribe it to any other cauſe than hunger. But hunger is not properly a diſeaſe, and its effects on the animal economy are very different from rot, whether the privation of food be ſudden or gradual. Beſides, we often hear of ſheep having been buried in ſnow for weeks together, a ſituation in which they muſt be ſubjected to a ſudden fall in condition, for want of food; but we never hear of ſheep which have been ſo buried becoming rotten. This of itſelf is ſufficient to overſet Mr. Hogg's theory, notwithſtanding that it is announced with an unuſual degree of confidence. We learn of Mr. Hogg himſelf, that ſheep die of the rot while in good condition, and even when very fat; and the whole account he gives of this diſeaſe ſeems to contradict his ideas reſpecting the cauſe of it. Others have aſſigned bad and unwholeſome food as the cauſe of rot. A ſudden fall in condition may accompany the diſeaſe without having induced it. A ſheep may continue to fill its belly, and yet fall off. It is the cauſe of the tranſition from fatneſs to leanneſs, and not the tranſition

however, that foot rot was beginning, and I ſucceeded in preventing its further progreſs by frequently dipping the feet into hot water and putting a pledget of tow, ſoaked with ſimple ointment, having a tenth part of ſugar of lead mixed with it, into the diviſions of the hoof and anointing the whole foot with it.

itſelf, that ought to be looked to. If that cauſe be hunger, rot will not be the conſequence, but the uſual effects of ſtarvation will follow. It is well known that on healthy paſtures, whether ſo rich as to keep ſheep fat, or ſo poor as only to bring them into ordinary condition, the rot is not known. Soft rank graſſes, whether abundant or ſcarce, invariably occaſion the diſeaſe. Mr. Hogg ſays, that it is the diſeaſe which creates an appetite for ſuch graſſes, and not the graſſes which cauſe the diſeaſe. But he has not been acquainted with the various experiments that have been made by bringing healthy ſheep to graze on rank graſſes; nor with ſome accounts on record, of ſheep travelling from one place to another, and by chance reſting on rank meadows, and being almoſt immediately ſeized with the rot. Indeed it is now ſo well underſtood that rank graſſes act as a ſort of poiſon on the ſtomachs of ſheep, that the rot is very eaſily avoided. All the ſpecies of rot may be reduced to one, and all the ſymptoms may be referred to unwholeſome food. This being the caſe, the cure, in the firſt ſtages of the diſeaſe, does not preſent many difficulties. The firſt object is to free the ſtomach and inteſtines from their pernicious contents by means of a purgative, ſuch as common or glauber ſalts, and when that is accompliſhed, wholeſome food will moſt probably complete the cure. But when the diſeaſe has advanced it becomes very complicated, and has been deemed incurable. The complication of diſorders,

which are always obſerved in the advanced ſtages of the rot, might be expected where bad food is ſuppoſed to be the cauſe of it; for this muſt vitiate the blood, and different organs may then become diſeaſed. Accordingly we find the liver, the lungs, and the whole ſyſtem affected, and water is frequently found in the belly.

It is very probable that conſumption of the lungs is a common diſeaſe among ſheep; and that it has, in many inſtances, been miſtaken for rot. Mr. Stevenſon, indeed, has conſidered the lungs to be its chief ſeat. Cold is the moſt frequent cauſe of conſumption, although inflammation may be excited by other means.

Sheep are ſometimes born with little tumours, called tubercles, on their lungs; and theſe appear to be the original ſeat of the diſeaſe in them, as in the human ſubject. Theſe tubercles being inflamed by cold or other means, ſwell and become filled with matter. Sometimes they are coughed up in this ſtate; but moſt frequently they degerate into ulcers, which ſpread and conſume the ſubſtance of the lungs. When the lungs are affected in any caſe of rot, it is a hopeleſs buſineſs to attempt a cure, eſpecially if they are ſuſpected to be ulcerated. But as it may often happen that ſuch tubercles as have filled with matter may be coughed up, mere difficulty of breathing need not deter us from attempting a cure. But the liver muſt be conſidered as the principal ſeat of the diſeaſe; and as it

is the organ which prepares the bile, which aſſiſts digeſtion, we ought, by all means, to endeavour to reſtore it to a ſound ſtate. With reſpect to the fluke-worms formed in the livers of rotten ſheep, their production cannot be fully explained; and it would be improper to enter into any detail reſpecting them here; it is ſufficient that we know that they do exiſt in diſeaſed livers, to be convinced of the propriety of deſtroying them if poſſible.

Purgatives are probably the moſt proper medicine to adminiſter firſt, in all the ſtages of the diſorder, when a cure is to be attempted.

The medicine to which we may look with greateſt confidence in the advanced ſtages of rot, appears to be mercury. It would, perhaps, be improper to adminiſter this internally. The ſafeſt and moſt effectual method of applying it, is in the form of the common blue ointment, and a trial of this is ſtrongly recommended to thoſe whoſe flocks are liable to rot. It ſhould be applied to the bare ſkin on the region of the liver, and the ſize of a nut rubbed on till it is all dried up, twice a day, for a week or ten days. This, in conjunction with wholeſome food, will, in all probability, prove to be the moſt effectual treatment. Mercury is well known to be a ſpecific for the diſeaſed liver of the human body, and on that account, we may preſume that it will be efficacious in the cure of the ſame organ in ſheep, and it is alſo recommended as the moſt effectual means of deſtroying the fluke-worm.

The poke, or ſwelling under the jaws, does not appear to be a ſymptom peculiar to the rot. Cattle are ſubject to ſimilar ſwellings, and in them they are often ſo large as to prevent the animal from ſwallowing. It is not improbable that the poke may ſometimes have the ſame effect on ſheep. Mercury will probably remove it. Conſumption of the lungs, and the effects of hunger, ſeem to be confounded with the diſeaſe properly called rot, and we muſt wait till future obſervations enable us to diſtinguiſh the ſymptoms before a more particular account of theſe different diſorders can be given.*

Sickness, or Braxy,

Is a diſeaſe, the ſymptoms of which can ſeldom be obſerved till all hopes of cure muſt be given up.

* Since writing the above, I have read the following note, p. 147 of Dr. Coventry's Introductory Diſcourſes.

"Rot is a word which has been employed to expreſs a variety of diſorders afflicting this animal, with no ſmall confuſion and detriment. Indeed, in few inſtances, has ſenſeleſs indiſcrimination done more miſchief; for means inept and injurious have been had recourſe to, where ſkilful and timely interference would have had the happieſt effects. Sheep are ſometimes ſaid to have the rot, when they labour under *phthiſis pulmonalis*, which they do but rarely, or under diſorders of the liver, as *hepatitis chronica*, and that ſtate of the ſame organ produced or attended by the *faſciolæ hepaticæ*, *hydatides*, &c. which affections of the liver are not unfrequent. But the moſt common rot is ſtill another, and a very diſtinct diſorder, reſembling, in many points, and probably the very ſame in its nature, with *ſcorbutus* in the human ſpecies, or that '*miſeranda lues*', that direful ruin of the general health and conſtitution, which ſilently ſupervenes from deficient or depraved aliment; and from which, as numerous obſervations teſtify, every flock, every ſufferer may be recovered by ſimple means ſeaſonably uſed; but againſt which, in its advanced ſtage, all remedies prove of no avail. Perhaps, as the laſt ſymptoms of debility are very ſimilar, and are moſt taken notice of by ordinary obſervers, the different kinds of rot might conveniently enough paſs under the names of pulmonic, hepatic, and general rot."

Sheep have been ſeen eating heartily as if in perfect health, and ſuddenly to ſtart and fall down dead, and when opened immediately, the putridity of the whole carcaſe occaſions a ſtench, often ſo intolerble as to force moſt people, however curious, to abſtain from an examination of the body.

The diſeaſe in all its varieties is inflammatory, and from the great tendency of the inflammation to run into mortification, it may be termed a putrid diſorder. The progreſs of the inflammation in general excites great pain, but when mortification begins the pain ceaſes, and thus we may account for ſheep appearing well, and ſuddenly dying. The cauſes of the inteſtines becoming inflamed in this diſeaſe may be very various. Coſtiveneſs from eating hard dry food, drinking cold water when the body is overheated, or its being plunged into water while in that ſtate, or ſuddenly drenched by rain, or chilled by a ſhower of ſnow, may all contribute to bring on this dangerous malady. When a ſheep is obſerved to be reſtleſs, lying down and riſing up frequently, and at intervals ſtanding with its head down, and its back raiſed; and when it appears to run with pain, inflammation of ſome of the viſcera may be ſuſpected. Bleeding ought immediately to be performed, and not ſparingly; and an ounce of glauber ſalts diſſolved in a quart of cold water, ſhould be adminiſtered. On the ſecond day, a clyſter of broth with a good deal of ſalt, ſhould be thrown up to clear the lower inteſtines, and as much nitre as

will lie on a ſhilling ſhould be diſſolved in an Engliſh pint of cold water, and given in three doſes, one in the morning, another at noon, and the third in the evening. This ſhould be continued till the animal appears to recover, and, if neceſſary, the bleeding ſhould be repeated. Whatever food is given, whether cut graſs, or turnips, or other ſucculent food, ſhould be ſprinkled with ſalt. Braxy ſeldom attacks ſheep which are allowed a proper proportion of freſh ſucculent food during the winter.

It is of great importance to collect caſes of different diſeaſes, and to deſcribe the ſymptoms, and mode of treatment accurately. Mr. Stevenſon has begun this important work, and it is hoped that he and others equally capable of diſcriminating the ſymptoms, and deſcribing the treatment, will proſecute the labour. The following are the caſes of braxy which Mr. S. has collected under the name of ſickneſs. He gives the name of braxy to dyſentery, under which title his caſes will alſo be copied.

.....

Case 1ſt.

In the month of November, the 18th, if I recollect right, 1802, a young ſheep was brought home by the ſhepherd, affected with ſickneſs. The wool was clapped, the eye was languid, red, and watery. There was great heat over the body. The mouth was dry, the breathing quick, and ſomewhat

difficult. The pulſe beat frequent and ſtrong; and its limbs ſeemed ſcarcely able to ſupport it.

The tail was cut acroſs in two places, when a conſiderable quantity of black thick blood flowed from it. As no glauber ſalts could be had, a handful of ſalt was given it, diſſolved in warm water, from a tea-pot; it was put into the houſe, and the door ſhut. In about half an hour it was laid down upon ſome ſtraw, and appeared very weak. On approaching it, it roſe, but could ſcarcely walk. The tail was ſtill dropping blood. In two hours after, it was ſtanding, and ran away to the other ſide of the houſe when it was approached. The eye was rather more lively, the tail had ceaſed bleeding, and it walked without any difficulty. In two hours more, it was eating ſome hay that had been given to it, and the ſalt had purged it very freely. It was kept in the houſe all night; and next morning, when let out to the park at the back of the houſe, it eat a little. The wool was ſtill clapped, but the eye was lively, and the burning heat was gone off the ſkin. The purging continued all day. It was again put into the houſe at night. Next morning, when let out, it ſeemed quite well,---eat very well during the day; and next day was ſent to the flock. It had no relapſe.

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Case 2d.

On the 7th December, 1804, another ſheep was brought home, the ſhepherd had ſeen it affected in

the morning, but it was not brought home till after dinner, on account of the diſtance. When brought home, it could not ſtand, which we attributed to the tying of its feet, for the purpoſe of being carried home, a diſtance of nearly four miles.

The eye was duſl, wool clapped, pulſe quick and ſtrong, mouth dry, breathing very quick, and a kind of palpitation at the heart. When the ſhepherd laid it down from his back, it made ſome water, which was red like blood.

On cutting the tail, two or three drops only, of blood, black and thick like tar, followed the inciſion, which, however, ſoon ſtopped. The vein on the inſide of the fore leg was opened, from which alſo, no more than two or three drops came, of the ſame black and grumous appearance. The ear was alſo cut in the inſide, but little or no blood came from it. An ounce and a half of glauber ſalts were given, in half a mutchkin of warm water, and an old blanket thrown over it. In three quarters of an hour, the tail was bleeding very freely, but the other places had ſtopt. The animal was lain down and could not riſe. The pulſe was quick, and it was apparently very ſick. In the evening, about two hours after, it was much in the ſame way, only the ſkin was not quite ſo hot.

It got a little meal boiled in water, and the blanket was left on it during the night. On looking at it next morning, it was riſen, but ſcarcely able to walk. The tail had bled a conſiderable quantity, and it

would not eat. The wool was clapped to its body, and it ſtill had a very languid appearance, (probably from the blood it had loſt.) It got a little more boiled meal and water, and the ſalts had operated. In the afternoon it was eating a little boiled hay; and from this time gradually recovered, without any other application. It continued very weak for about eight days when the wool was riſen to its uſual appearance, and it was ſent to join the flock.

As the ſickneſs did not appear in the flock, I had no opportunity of again trying the practice at that time.

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CASE 3d.

In the beginning of March, however, 1804, at which time, the weather was very cold, a young ſheep or hog was brought home in the afternoon gaſping for breath, pulſe very quick, eye quite blood-ſhot, ſkin remarkably hot; had been obſerved not eating in the morning, and ſeemed even then remarkably languid, but made no motion as if affected with pain.

On cutting the tail acroſs, a few drops of blood, like tar, followed, but ſtopt immediately, the ear was cut, the neck vein was opened, the vein on the fore part of the belly, as was alſo that on the fore leg, from none of which above a drop or two came. A doſe of ſalts was given, and it was covered with a

blanket. On going to look at it, about an hour afterwards it was dead. On opening the body, the fourth ſtomach was found mortified, over all its upper and fore part, which extended to the place where it joins the bowels, which were all quite red, as were the ſtomachs in a leſſer degree. The internal coat of them all was very looſely attached, and the ſmell was extremely diſagreeable; there was a reddiſh or livid appearance over the whole body, which aroſe partly from the blood not having been drawn from the animal, but more particularly from the previous inflammation that had exiſted. The right auricle of the heart was quite full of the ſame dark kind of blood as came from the inciſions made before death, and the whole fleſh was quite ſoft.

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CASE 4th.

On the 14th November, 1803, a young ſheep was obſerved affected with ſickneſs, belonging to a friend, during the time I was on a viſit at his houſe. He had ordered it to be killed, alleging that ſickneſs was uniformly fatal; but was eaſily perſuaded to try ſomething for its relief, as, if it ſucceeded, it might be advantageous in caſes of a ſimilar kind.

The appearance of the ſheep, upon viewing it, was by no means favourable for a trial. The wool was clapped, the eye was red, the pulſe ſtrong and full, the ſkin very hot, breathing laborious, with

conſiderable wheezing, and it was ſcarcely able to ſtand. The belly was ſomewhat ſwelled, and the mouth quite parched.

It was bled as has been deſcribed, in the tail, neck, fore leg and hind leg, belly, and ear, from which there was a little blood got, of a dark colour. As no glauber ſalts could be had, a handful of ſalt was given to it diſſolved in a teapot full of warm water, and it was left in a houſe by itſelf. In half an hour it was laid down, and we thought it dying. On going to it, it roſe, but could not walk. The tail was bleeding pretty freely, and the blood flowing from it was rather of a redder colour, the pulſe was quicker, but not ſo ſtrong, and the other wounds had bled a little; the ſymptoms were not increaſed, but did not ſeem better.

As there happened to be ſome ſalt-petre or nitre in the houſe, we gave it a tea-ſpoonful of it in another tea pot of warm water; but reſerved the half, which was afterwards given, at the interval of an hour, when the heat was rather leſs, and the ſkin ſomewhat moiſt. At the end of the ſecond hour it had made a conſiderable quantity of water, and ſeemed rather more relieved. In two hours more, the ſalt had operated, and the wound ſtill continued dropping. It got a large tea pot full of meal and water. Next morning it looked much better, but would not eat. In the afternoon, however, it eat a little boiled hay, which it lived on for two days, when it was put into a park by itſelf. In two days more it was ſent to join the flock.

CASE 5th.

In the month of April, 1804, when the weather was unſeaſonably cold, on the 12th, a hog was brought in, affected with ſickneſs. It was obſerved by the ſhepherd at mid-day, and was brought home in the afternoon. It was bled in the tail, from which a conſiderable quantity of blood came; it got a doſe of glauber ſalts, and had two teaſpoonfuls of nitre, diſſolved in a chopin of boiling water, of which it got a half-a-mutchkin every two hours. At bed time, the tail continued bleeding, and it ſeemed rather eaſier. On looking at it next morning it was ſtiff, having died in the night.

On opening the body, the general redneſs apparent in ſheep dying of the ſickneſs, was very obſervable. The bowels were all affected, but none of them ſeemed to be the immediate ſeat of the diſeaſe, as no mortification was apparent in any of them. The fleſh of the body was all of a livid hue, and the inflammation ſeemed to be generally diffuſed over it. Black clots were found in the right auricle and ventricle of the heart, and the food in the ſtomachs might have been rubbed between the fingers, like dry ſand or chaff. There was alſo a redneſs obſervable in the brain.

I have had many more opportunities of making experiments upon ſheep affected with ſickneſs, a detail of which, after what hath already been ſaid would be unneceſſary. Taking the average,

however, of thoſe that have been affected, I have been enabled by the practice laid down, to ſave three out of five. The proportion is even greater; but allowing for contingencies, ſuch as their being nearly dead before being brought home, I have ſtated this as the proportion,

Number affected, - - -	25
Died, - - -	9
Recovered, - - -	16

DIARRHŒA.

Purging ſeldom proves fatal to ſheep. It is ſometimes of ſervice to their general health, and ought never to be ſtopt too ſoon. But this complaint ſometimes proceeds ſo far as to bring on great debility, if its violence be not checked. When the flux is moderate, change of diet, from ſoft to dry food, for a few days, may effect a cure. But if the purging be conſiderable, half an ounce of chalk may be given in an Engliſh pint of Cows' milk, a little warmed. The doſe may be repeated at the end of two days, if ſymptoms of amendment have not appeared. If the purging be very violent, and attended by ſtraining, the firſt doſe ſhould be a dram of rhuburb, and after it has operated, chalk may be given. When cured, the animal muſt be gradually accuſtomed to its paſture, otherwiſe the tender rich graſs may occaſion a relapſe.

Dysentery.

This diſeaſe, which may be termed a violent diarrhœa, or looſeneſs, is known in different places by the names, *cling*, *breckſhuach*, and *braxy*. A ſheep affected by it lies down frequently, and riſes again at ſhort intervals. It voids fœces very often, almoſt every time it gets up. It eats little, and does not chew the cud.

When the diſeaſe has advanced a little, the fœces become mixed with blood and ſlime. At a more advanced ſtage, they are black and ſtinking.

Diagnosis.*

Dyſentery is diſtinguiſhed from ordinary diarrhœa by the following characters.

1ſt. Diarrhœa attacks chiefly hogs and weak gimmers and dinmonts; whereas dyſentery is frequent among older ſheep.

2d. Diarrhœa almoſt always occurs in the ſpring and ceaſes about June, when dyſentery only commences.

3d. In diarrhœa there is no fever, or teneſmus, or pain before the ſtools, as in dyſentery.

4th. In diarrhœa the fœces are looſe, but in other reſpects natural, without any blood or ſlime; where-

* Dr. Duncan.

as in dyſentery the fœces conſiſt of hard lumps paſſed occaſionally; the reſt being blood and ſlime.

5th. There is not that degree of fœtor in the fœces, in diarrhœa, which takes place in dyſentery.

6th. In dyſentery the appetite is totally gone; in diarrhœa it is rather ſharper than uſual.

7th. Diarrhœa is not contagious; dyſentery highly ſo.

8th. In dyſentery, the animal waſtes rapidly, but by diarrhœa, only a temporary ſtop is put to its thriving, after which it makes rapid advances to ſtrength, vigour, and proportion.

9th. Dyſentery is commonly fatal, diarrhœa rarely, unleſs the animal has been previouſly much debilitated.

As dyſentery is frequently attended by inflammation, bleeding will be proper, and alſo a purge. Afterwards the following doſes ſhould be daily adminiſtered, until ſymptoms of recovery appear, which will be very ſoon. The day after the bleeding and purging, ½ oz. of chalk, mixed up in warmed milk. Two hours afterwards, a gill of warm water into which has been put half a table ſpoonful of tincture of terra japonica and 30 drops of laudanum. The diet ſhould conſiſt of hay, ſprinkled with ſalt.

Cases of Dysentery*.

On the 12th of Auguſt, 1800, a ſheep was obſerved by the ſhepherd to be affected with braxy.

* Mr. Stevenſon; called by him braxy.

It was brought home and put into an inclosure at the back of the house; the wool was not clapped, but the eye was languid, the mouth dry, the skin rough on being felt; frequent rumbling was heard in the bowels, the pulse felt at the neck, was quick. It had frequent stools, which had a slimy appearance, and were mixed with blood, and a few hard balls were observed to come amongst some of the stools, at each of which it drew up its hind legs, and seemed to suffer pain. As it was in good habit of body, it was bled in one of the veins in the fore leg, and about two ounces of blood, of a dark colour, taken from it. A dose of an ounce of salts was then administered, which in eight hours produced several passages; and the pain in the bowels seemed in some measure to be abated. Next day, five grains of ipecacuanha were given every two hours, for five hours, which still kept up the purging; and considerable sickness was apparent. In two hours after the operation of the ipecacuanha, it began to eat a little, and the skin was somewhat moist. The frequent stools now abated, and there was no more purging, nor was any more blood passed. In six days it was so far recovered, as to be able to join the flock.

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Case 2d.

On the 16th of the same month, 1800, a sheep was brought home, in which the disease had con-

tinued for ſeveral days. The ſtools were very frequent, ſlimy, and mixed with blood, having little feculent matter in them; the wool was clapped; the mouth and ſkin dry, the eyes languid and red; conſtant rumbling in the belly, and the animal could with difficulty ſtand. On laying the hand on the belly, it could be felt in ſome parts, as it were drawn together, and lumps in parts of it. A doſe of half a drachm of rhubarb was given to it, which operated in eight hours ſeveral times, and brought away a quantity of fœces, more of the natural appearance, only thin; and next day eight doſes of ipecacuanha were given, one every two hours. The purging continued, but not ſo much blood or ſlime, for two days, at the end of which, four ounces of logwood were taken, upon which was poured a Scots pint of boiling water. When it had ſtood for 12 hours, a gill, or four ounces of the infuſion was given morning and evening, having 15 drops of laudanum added to each doſe.

In ſix days the ſtools had ceaſed in their frequency, and the feveriſh appearance was gone off, and the animal had begun to take its food. From this time there was nothing more done to it, and in 12 days from its firſt being brought home, it was returned to the flock.

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Case 3d.

In the month of September, 1800, a Sheep was brought into the incloſure, from a neighbouring

farm, the proprietor of which had before witneſſed the ſucceſsful treatment of the other two caſes. The diſeaſe had continued twelve days, and the animal was very much exhauſted. The wool was clapped, and a very conſiderable quantity of blood was paſſed at each ſtool; the mouth and ſkin were dry. It took no food, and the pulſe was quick. A doſe of ſalts was given to it, (an ounce) which operated well. Next day, four doſes of ipecacuanha, were given of four grains each, which alſo operated, and by which the purging ſtopt for ſix hours. There was no appetite, and a number of hardened pieces of fœces were paſſed, mixed with black blood, The heat of the body continued, Two ounces of logwood were infuſed in a chopin and a half of water, and given in the quautity of a gill three times a day, with the addition of fifteen drops of laudanum. This was continued for four days; during which time, however, the blood ſtill continued to be paſſed, with an admixture of a ſubſtance like the matter of an ulcer, and on the 17th day from the firſt attack the ſheep died.

On looking into the belly, the bowels had all an inflamed appearance, and a conſiderable proportion of the lower inteſtine was ulcerated in the inſide; its coats were thickened, and its outſide was of a blackiſh hue. There was a quantity of fetid air in the bowels, which turned a ſilver probe quite black, as it did alſo a ſhilling expoſed to it. The fleſh was was ſoft and red, but the heart, liver, and brain,

were found; the kidneys were ſlightly enlarged and flabby.

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Case 4th.

In Auguſt, 1800, a ſheep was brought home, affected with braxy, the ſymptoms were as formerly deſcribed; it ſeemed much exhauſted, and had been obſerved affected for ſeven days. It got firſt four grains of ipecacuanha every two hours, three times, which purged it a good deal. It was then placed in a ſmall houſe, where was a large caſt iron boiler, which being filled with water, and the door ſhut, from the heat of the furnace below, it ſoon filled the houſe with ſteam, in which the ſheep continued for the ſpace of three hours, when the fire was taken away, and the ſheep remained in the heated houſe all night. There was a great perſpiration over its body, and the wool was quite wet. It was taken out at mid-day, and the infuſion of logwood and laudanum given to it three times a day. It ſeemed a little better and the ſtools not ſo frequent. Wool ſtill clapped. Next night it was ſhut up, and ſtoved again, and ſome flour porridge was given to it, with a little milk. Next day the medicine was continued. The ſymptoms had abated, but the wool clapped; it was not again ſtoved, and the medecines were continued for twelve days before it was quite recovered.

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Case 5th.

In this case the treatment was the same as in the first and second cases; but there was such a degree of debility that the porridge and astringent medicines were continued for nearly four weeks before it was recovered.

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Case 6th.

In August, 1800, a sheep was brought in with braxy, the symptoms very violent. It had a dose of salts, which operated, but it died next day. In this case the bowels were affected considerably higher up, being at the junction of the small and great guts, where mortification had taken place. The lower bowels had a number of round hardened balls in them, and a very disagreeable smell was exhaled.

I deem it unnecessary to mention any more cases, which all occurred in the same year, as braxy has not appeared since 1800, and I have had no opportunity of making experiments on it since that time. The practice in that year was very successful, as five were saved out of seven that were brought home, and a fair trial instituted: but, from carelessness, nearly one out of three, died before any thing was done to them.

Pinding

Is a diſeaſe incident to lambs; or rather is the effect of a degree of purging which ſometimes attacks them when very young. The fœces being of a gluey nature, fix the tail upon the anus, and thus all paſſage from the bowels becomes interrupted. Docking prevents this from happening. The ewe-lambs ſhould be docked a day or two after they are born; but from the conſideration to be found under the article caſtration, it is adviſable not to dock the males till they are cut, unleſs they ſhould happen to be pinded.

Inflammation ſometimes attacks lambs in the *bladder* and *inteſtines*, and proves quickly fatal. When the inteſtines are inflamed, the diſeaſe is called the *graſs ill*. The *louping ill* has not been ſufficiently attended to, nor well deſcribed. It is thought to be a paralytic affection.

The *thwarter ill* is ſo variouſly deſcribed that Dr. Duncan has thought it neceſſary to divide it into ſpecies. But from the deſcription given, it is impoſſible to find out its nature. It appears to come near to apoplexy, and to palſy, and ſome ſymptoms, as locked jaw, and wry neck, bring it near to tetanus, or univerſal ſpaſm.

It is beſt to refrain from attempting to deſcribe diſeaſes which are not underſtood, and to be con-

tented with expreſſing a hope, that ſome medical perſon, in the diſtrict where ſuch diſeaſes are ſaid to prevail, will obſerve them, and deſcribe them carefully.

Staggers

Seems to be a convulſive affection. The animal which it attacks, trembles, falls down, and rolls and twiſts itſelf about. Copious bleeding has been found to cure it. The cauſes are not yet known. Mr. Stevenſon aſcribes it to the deleterious effects of poiſonous graſs, and recommends a change of paſture as the only cure.

What is called *vanquiſh*, or *vinkiſh*, has not been fully deſcribed. It ſeems to be a decline, and is cured by change of paſture.

Jaundice

Is a rare diſeaſe. It is known by the ſkin and eyes becoming of a greeniſh yellow colour. It is occaſioned by the rupture of ſome of the veſſels ſecreting the bile, or conveying it to the ſtomach and inteſtines. The bile being diffuſed through the body, cauſes the colour peculiar to this diſeaſe. Bleeding is uſeful; and a doze of jalap, with perhaps a few grains of calomel, will be of ſervice Exerciſe is very efficacious.

PART IV.

ON THE MANAGEMENT OF SHEEP.

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SHELTER.

Shelter is the firſt thing to be attended to in the management of ſheep. While every good ſhepherd is decidedly hoſtile to their being confined, or to their being forced into ſhelter, whether they wiſh for it or not, it cannot be too ſtrongly recommended to all ſheep farmers, to put the means of avoiding the ſeverity of ſtormy weather within the reach of their flocks at all times. Cloſe confinement injures the health of all animals; and is hurtful in an eſpecial manner to ſheep, which, by nature, are of a roving diſpoſition, and exceedingly fond of liberty. It is certainly a miſtaken notion that fine wooled ſheep are more tender, and more liable to be injured by cold, than thoſe which carry coarſe fleeces; and that they muſt, during the greateſt part of the year, be kept in cots, as is practiſed on the continent. The wool of the fine breeds grows in a manner which renders it more effectual in reſiſting the rigors of winter, than that of the coarſe kinds. The experience of ſeveral perſons who have introduced the Merino ſheep into the Highlands of Scotland, ſeems to hold out the happy proſpect of animals carrying

the moſt valuable wool being ſeen diſperſed over the whole kingdom. The perſeverance of Sir John Sinclair has taught us that the Cheviot Sheep are perfectly well adapted for the climate of the moſt northern parts of Scotland.

Merino ſheep, which have been reckoned the moſt delicate, have been found capable of bearing very great degrees of cold, without being injured in the ſlighteſt degree. Cold, therefore, is not by any means an object of dread to the breeder of any kind of ſheep, except during the lambing ſeaſon, when ſudden and ſevere cold, and chilling rains, are, with reaſon, to be feared by every ſtoremaſter, as they are fatal to newly dropt lambs of every breed.

Drifting ſnow, exceſſive rain, and great heat, are the enemies which, in our climate, chiefly annoy our flocks.

Drifting Snow.

Natural ſhelter is ſeldom to be found in a mountainous country, ſo convenient as to be proof againſt ſudden ſtorms of ſnow. Recourſe muſt therefore be had to art. There cannot be a better method of enabling ſheep to eſcape from drifting ſnow than ſuch incloſures as are mentioned by Mr. Hogg. Circular incloſures, ſurrounded by a wall of turf, will be fully as effectual as thoſe conſtructed of ſtones, and will in moſt places be more economical, both in the original coſt, and ſubſequent repairs.

The ſpaces incloſed ſhould be ample, and on dry ground. If the walls are built with turf, the baſe ſhould be four feet thick, and the top two feet. The height ſhould not be leſs than ſix feet. Two or three openings ſhould be left towards the ſouth; and a drain ſo conſtructed as to take off the wetneſs of the ground, rain water, and that from melted ſnow, ſhould be dug round the outſide, communicating by holes in the wall with the inſide of the incloſure. After having been once or twice driven into theſe incloſures, or rings, the ſheep will of their own accord draw towards them on the approach of ſnow.* The ſhepherd will always find his flock aſſembled in the rings during ſnow, and he will not often have to riſk his life by ſearching for loſt ſheep among wreaths. Clumps of Scotch firs have been found of great uſe on ſome farms; and now, when the rents of ſheep paſtures have become ſo great, (it may be ſaid extravagant,) it is probable that ſheep farmers will inſiſt on ſome ſtipulation being made in their leaſes for plantations. It cannot be expected that tenants are to be at the expenſe of planting trees, which will only begin to be uſeful when half the period of the duration of an ordinary leaſe has expired. Plantations require time to grow, and ſome care and expenſe for their protection when young. It is needleſs to enter here on the ſubject of leaſes. It is enough to obſerve, that to enſure the proſperity of a tenant, and the

* Walls are raiſed in ſome places in the form of a croſs, or of the letter S.

ſecurity of a landlord, they ſhould both be liberal, and inclined to accommodate each other.

In gentlemen's parks, and on low grounds, where attendance can be conſtantly afforded, there is leſs occaſion for ſhelter. Clumps of trees, eſpecially of ſpruce fir, the foliage of which is cloſer and more ornamental than that of the Scotch pine, will, however, be found extremely uſeful. Dry knolls ſhould be choſen for them. There is one objection to all the pine tribe, that their leaves do not ſo quickly rot on the ground as the fallen leaves of other trees, which form ſoil and encourage the growth of graſs. The prickly leaves of the pine may alſo hurt the fleeces. Theſe conſiderations are of leſs importance than the ſafety of ſheep; at the ſame time they may, in ſome meaſure, be obviated by planting firs only on the outſide, and filling up the clump with birch, a tree which grows quickly and and thrives in very thin ſoil.

As it is neceſſary in ſome ſituations to confine ewes with their lambs during night, in order to defend the latter from foxes and dogs, it becomes requiſite to conſtruct cots and folds. The former ſhould be airy, at the ſame time ſufficiently cloſe to prevent bad effects from rain or ſnow, and the latter ſhould be ſpacious. Cots may be very eaſily and cheaply conſtructed after the manner of Highland cottages, where birch trees, or others having a natural bend, or branches of large trees, can be got. The frame work is conſtructed as follows.---

Two trees, or large branches, are laid together, ſo hat the diſtance between the thick ends may be 12 r 14 feet. The ſmall ends are then mortiſed to- ether and faſtened with a wooden peg. About four eet below this a piece of wood is laid acroſs, morti- ed and faſtened; the ends projecting about a foot on oth ſides. Small projecting pieces are alſo fixed t the height where the roof is to begin. Theſe arts are now called couples, and when a ſufficient umber have been prepared, they are ſet up at the iſtance of ten feet from each other. They are ow joined together at top by ſtraight trees being id along into the forks made by the croſſing of ie ends of the couples. Similar pieces are laid ong the ſides reſting on the projections, and the hole are faſtened by means of pegs, ſimilar to what ip carpenters call tree nails. To form the roof, nall ſtraight trees, uſually birch or Scotch firs, are id acroſs the rails, the thick ends being nailed to ie lowermoſt rail. A rail is alſo faſtened along e inſide of the couples near the bottom. On this id the lower roof rail are nailed ſpars, which are aced cloſe together, but not ſo as to exclude a ee circulation of air. In the front, ſpaces are left en at intervals. The thatch conſiſts of heath, hich is the moſt durable of all others. There is me art required in laying it on, although the ope- tion appears to be very ſimple. The firſt layer nſiſts of heath, having the thick roots cut off, id nicely arranged and faſtened down by long

pieces of wood tied with willow twigs to the frame work. The heath is then laid on without regard to the roots, except having them inmoſt. The thatch is laid on thicker and thicker towards the top, where it is faſtened by means of thin ſliced turf laid along. The whole is diſtinctly ſeen in plate 5th. which repreſents the frame work, and the appearance of a cot which has been conſtructed as already deſcribed. Moveable cots may be made with frames filled with ſtraw, or heath, by means of wicker work; the ſides being made of wicker work alone.

Rain.

As it is impoſſible to ſhelter even ſmall flocks from rain, it is a fortunate circumſtance that ſheep are not very liable to ſuffer from it. During ſummer there is no danger to be apprehended from long continued rain drenching the fleece. But ſhould this happen during winter, weak ſheep will moſt probably ſuffer greatly. Attention to the health and comfort of ſheep at other times, by bringing them to face the ſeverity of winter in a ſtrong habit of body, will be found to be the beſt method of defending them from rain.

Heat.----Flies.

In mountainous diſtricts, ſheep have it in their their power to remove from glens and hollows,

where the rays of the ſun frequently become op-
preſſive. But on low grounds they are too often
left expoſed without having acceſs to a ſhady place,
to the ſcorching heat of ſummer, and to the tor-
ments inflicted by myriads of flies. The ſhades of
trees, cots, and walls, are ſufficient to enable ſheep
to avoid heat; but their enemies will follow them,
and continue their attacks. Some method of keep-
ing off flies muſt therefore be adopted; or, at any
rate, of deſtroying their eggs, which they depoſit
about the roots of the horns, and other parts of the
head, and about the tail. The following ointment
being rubbed about the root of the horns and tail,
will be found to be of great uſe.

Strong mercurial ointment, 1 part.
Roſin, ... 1 part.
Hog's lard, ... 3 parts.

Melt the hog's lard in a convenient veſſel, and add
the roſin. When theſe ingredients are well incor-
porated, add the ointment and ſtir the whole well
till it becomes cold, to prevent the mercury from
making. The roſin is intended to give ſome degree
of adheſiveneſs to the compoſition. The ſmalleſt
article of mercury is fatal to an inſect. A compo-
ſition for defending the bodies of ſheep will be found
under the article *shearing*. Flies ſeldom become
troubleſome till after the time of taking off the
fleece. But when ſheep appear to be annoyed be-
fore that time, the ointment ſhould be applied with-
out delay to the head and tail, well rubbed on. The

proportion of mercury is too ſmall to have any effect on the animal, but is quite ſufficient to make flies change their ſcene of attack, at any rate to deſtroy their eggs. Rubbing the head and tail with a compoſition of one pint of tar and four of train oil, has been found to anſwer the purpoſe well.

Food.

Variety, or frequent changes, in the nature of food, tend to derange the uniform action of the bowels, and to bring on diſeaſes which often prove fatal. During ſummer and winter, ſheep are commonly healthy, when they are not abſolutely ſtarved. It is chiefly in Spring and Autumn when they ſhow ſymptoms of bad health. Sudden changes in the quality of their food, are the cauſes of the general unhealthineſs experienced at theſe ſeaſons of the year. Such alterations are not more injurious than quick tranſitions from plenty to ſcarcity, and from ſcarcity to plenty. When an animal has been highly fed, and accuſtomed for a length of time to eat regularly, any ſudden alteration in its habits ſoon occaſions diſeaſe. On the other hand, nothing is more dangerous to an animal which has been ſtarving, than placing it all at once in the midſt of plenty.

A ſhepherd when about to chuſe a farm, ſhould regard uniformity in the kind of paſture, rather

than whether it be rich or poor. In Noblemen's and Gentlemen's parks, where the graſs is what is uſually called artificial, and conſequently as uniform as it is poſſible for paſture to be, few diſeaſed ſheep will ever be found. On meadows and hills, where ſome parts are moiſt, and others dry, and where the ſoil is of different kinds, the quality of the paſture is often found to vary much. Here the only way to avoid riſk is to adopt the plan of many ſkilful ſhepherds, and to allot different tracts of country to different parts of the flock. There can be no difficulty in dividing a farm in ſuch a way, that the wethers may always be on the ſame ground, and the ewes on their own walk. Sheep cannot endure frequent removals; but are ſtrongly attached to the place of their nativity. Lambs muſt be moved when about to be weaned, but ought never to be herded by themſelves. When taken from their dams, they ſhould be ſent to graze with the wethers. With them the wether lambs may continue, and the ewe lambs ſhould be reſtored to their mothers as ſoon as their milk is gone. If neceſſary the ewe hogs muſt be removed from the old ewes during rutting time.

It has been fully aſcertained that wet grounds, where water ſometimes ſtagnates, are unfit for ſheep paſture, inſomuch that the complicated and fatal diſeaſe, called rot, always attacks ſheep which feed on them. Wet Peaty ground is not ſo dangerous, nor is there much riſk when ſheep go on land over

which water trickles conſtantly. But lands which have been flooded are not ſafe until they become perfectly dry. In the Highlands of Scotland there are vaſt ranges of hills, which, even during the dryeſt ſeaſons, are contiually moiſt; yet they do not appear to be injurious to ſheep by bringing on the rot. On theſe the water is in continual motion, and never ſtagnates.

The neighbourhood of ſtinking pools of water, and of grounds on which rank graſſes grow during the evaporation of ſtagnant water, ſhould always be avoided. Sheep are fully as liable to the rot in ſuch ſituations as the human ſpecies is to ague, and other diſeaſes reſembling incipient rot. *

The greateſt difficulty in the management of ſheep occurs at the periods when the ſeaſons change. Then it becomes neceſſary on hill farms not only to diminiſh the quantity of food, but to give it of a different quality. On the mountains of Scotland, the vegetation of the graſſes and heath uſually ceaſes about the end of October. When ſudden froſts come on before the vegetation of the graſſes has ſtopped, the leaves are affected, ſo that when thaw commences, they become flaccid, and rot. When introduced in that ſtate into the ſtomach of a ſheep, or of any other ruminating animal, they will probably prove injurious. When ſheep are forced by a ſudden fall of ſnow to relinquiſh their ordinary ſuc-

* Some intereſting particulars connected with this ſubject are to be found in a pamphlet on the rot, by Dr. Harriſon.

culent food, the change can hardly fail to hurt their health. Their ſtomachs and bowels, having been accuſtomed to the gentle action required for digeſting ſucculent food, are not in a condition to manage what is dry. The ſlow digeſtion of dry food makes an alteration in the quantity of fluids ſecreted, and the whole ſyſtem is apt to be deranged. The grand object of a ſhepherd, therefore, ought to be, to make the change of food as gradual as poſſible. He muſt not be tempted by fine open weather to delay accuſtoming his flock to an alteration in diet. Winter may come on ſuddenly, and before the ſhepherd be aware of them, bring difficulties which he may not be able to overcome. When a continuation of ſucculent food cannot be afforded, a wiſe and ſkilful ſhepherd will begin, about the end of October, to move his ſheep about, taking them ſometimes to dry, heathy grounds, and ſometimes to places where the paſture reſembles that deſtined for winter uſe. By daily driving them backwards and forwards, the ſheep will not have their uſual allowance of time for filling themſelves; and thus they become, by the ſame trouble, fully prepared for a change both in the quantity and quality of paſture. The movements ſhould be continued until the uſual time for putting the ſheep on their wintering ground. The ſame caution ought to be obſerved in Spring. During winter, the ſtomachs of the ſheep will have acquired a ſtronger action in digeſting dry and hard food. If, in this ſtate, they be ſuddenly filled with

young ſucculent graſs, purging will be brought on; and probably more fatal diſeaſes than diarrhœa, will attack the flock. In ſituations where turnips, or hay, can be raiſed in ſufficient quantities, many dangers and difficulties may be avoided by a proper alternation of theſe as winter food.

The winter management of a breeding ſtock, and of a ſtock for the butcher, are very different things; and yet we ſee many people treating both in the ſame way. While ſheep, deſtined for the knife, are folded on turnip fields, it would be folly to riſk great ewes, or young ſheep, in the ſame manner. In ſuch a ſituation, great ewes are very liable to miſcarry; and both theſe, and young ſheep, from being obliged to lie dirty and wet, often become unhealthy. In general, the animals deſtined to paſs the winter on turnips, are compelled to eat up every morſel; even unwholeſome, dirty and rotten huſks, which they had before left in diſguſt. But as butchers have no objections to take ſheep a little rotten, or otherwiſe diſeaſed, while they are rather diſpoſed to be fat, this, in the opinion of many, may be of no conſequence. But ſuch treatment is highly improper for a breeding ſtock, for which no one ſhould grudge the trouble of carting turnips to a graſs field, or to a cot, ſhould the weather render it neceſſary.

It is very improper to fold ſheep during the night without giving them food. They eat almoſt as much during the night as duriug the day, and ſel-

dom go regularly to reſt. They lie down to chew the cud and to reſt during the day, as well as the night time. Were the natural habits of domeſtic animals more attended to, there would be little occaſion to trouble the breeders of them with books.

Smearing or Salving.

Shepherds vary in their anſwers when aſked why they ſmear their ſheep. Some ſay that it is intended to prevent the ſcab; ſome to cure it; others ſay it is for the purpoſe of keeping off rain; and ſome aſſert that they do it merely to ſoften the wool. But it cannot be denied that a great many ſhepherds have none of theſe objects in view; and that they bedaub their ſheep with tar, in order to make the fleece weigh well; in other words, to cheat the wool merchant. Smearing with a proper compoſition is certainly uſeful in many caſes, both to the fleece and the animal which carries it. It deſtroys vermin, and ſoftens the wool of the cheviot and ſouthdown breeds particularly. It has very little effect on coarſe fleeces; but as they are long and do not curl ſo much as the ſhort ſheep's wool, ſmearing may be uſeful in defending the animals from rain. It is for this purpoſe that black-faced hogs are ſmeared. Some breeds of ſheep yield a great deal of oily matter, which keeps the wool always ſoft. On ſuch ſheep too, a larger quantity of the ſub-

ſtance called Yolk, is found, than on the coarſe breeds.

Nothing is ſo hurtful to wool as tar, in ſo far as the intereſts of the manufacturer are concerned; and nothing is more apt to injure ſheep, as it is of a very irritating nature. It is to be regretted that the intereſts of the wool-grower and of the manufacturer are not conſidered the ſame. The care which attentive ſhepherds beſtow on wool, is amply repaid by the health of their ſheep, and the price they receive. When uſed with moderation, tar is a very uſeful ingredient in the compoſition for ſalving. When laid on in a large proportion, it quits the greaſe with which it was mixed, and accumulates on the ſides and bellies of the ſheep. Tar is always ſo full of impurities that it ſpoils the colour of the wool, and renders ſcouring a difficult, tedious, and expenſive operation. It is therefore the intereſt of the grower to ſeek for a compoſition into which tar enters, which will have all the effect he deſires in ſmearing; and from its being more eaſily waſhed out than the common compoſition, will enable the manufacturer to afford a better price for the wool on which it has been laid. The following compoſition will be found rather better than that in common uſe in the north. There is nothing new among the ingredients; the only novelty is in the method of preparing them. Theſe ſhould alſo be of the beſt quality. Of the different kinds of tar, the American is to be preferred; and the Archangel

thick tar to be avoided. What is of a light brown colour when rubbed on a piece of wood is the beſt.

Take of train oil . . . . . 2 quarts.
of tar . . . . . 4 do.
of butter, or hog's-lard 24 libs. Dutch.

Put the train oil into a pot over the fire, and when it has become pretty hot, put in the tar by ſmall quantities at a time, ſtirring well with a flat wooden ſpatula. When the oil and tar are hot, remove the pot from the fire, and allow them to ſettle for about a quarter of an hour, and then pour off the clean part, leaving the ſediment carefully. If butter is to be uſed, it muſt be purified in the ſame manner, and added to the tar and oil, and well mixed. When the whole has been allowed to reſt for a quarter of an hour, it may be poured into the veſſel in which it is to be kept for uſe, when an additional quantity of ſediment will be obtained. If well made, the compoſition will, in the courſe of twelve hours, acquire a proper conſiſtence, and be tranſparent like a dark-brown jelly. When laid upon the fleece it ſpreads uniformly through it, and the tar does not ſeparate and clot the wool. This ſtuff has been tried on a conſiderable number of cheviot and ſouthdown ſheep, and has fully anſwered the expectations formed of it. At any rate it can be ſafely recommended as better for the ſheep and for the wool, than the ordinary compoſition for ſmearing. Hog's-lard is in every point of view preferable to butter. When it is uſed, it is not neceſ-

ſary to purify the tar ſeparately. The larger the quantity of ſtuff which is prepared at once, the better. A deep pot ſhould be uſed. From American tar, a ſediment, immiſcible with oil, will be obtained; it reſembles pitch in appearance. For the fineſt wool, which is always ſupplied with a large proportion of oily matter, ſalving is unneceſſary. But as the animals which carry it are, alike with other ſheep, infeſted by vermin, they may be relieved from a great deal of torment by the moderate uſe of ſome compoſition which will not hurt the wool in the eyes of the manufacturer. The arſenic water mentioned in another part of this volume, may be uſed; or a compoſition of four parts hog's lard, and one of oil of turpentine. The uſual time for ſmearing is about the end of October, or beginning of November, when the wool is about half-grown.*

Washing.

In order to put wool into a more marketable condition, it is uſually waſhed on the back of the ſheep before it is ſhorn. The animals are made to ſwim once or twice acroſs a river or pond. This practice does not appear to be apt to injure ſheep of any kind; although danger might be apprehended

* I am about to try a new ſtuff for ſmearing, which promiſes to anſwer every good purpoſe, and is very cheap. I ſhall communicate the reſult to the public.

rom plunging nurſe-ewes into cold water. Waſh-
ng is very little attended to in Scotland, and the
nly ſheep that undergo this operation are of the
Cheviot breed. As the fleeces of fine wooled ſheep
re not eaſily penetrated by water, ſo they take a
ng time to dry. Waſhing the wool on their backs
ay therefore be improper in ſome caſes. The only
bjections to waſhing fleeces off the animal, is that it is
pt to derange them, ſo as to render the operation
f ſtapling, or ſorting, difficult. The following ſimple
ethod of cleanſing fleeces removes this objection,
nd cannot be accuſed of being expenſive. Figure
plate 5th, ſhows the profile of a ſtage ſtanding
the water, at the edge of a ſtream or pond. The
xtreme length is eight feet. The breadth of the
age is four feet. A B is a platform, moveable at
e joint A. It has a moveable ſupport D, to which
cord C is attached and tied to the handle E, for
e purpoſe of pulling up the ſupport when the plat-
rm is to be let down. When down, the platform,
hich is full of ſmall holes, is made to reſt an inch
d a half below the upper part of the frame. In
is ſituation it is covered by the water. A fleece
eing ſpread out upon it, is well ſoaked, and a per-
n treads it till as much of the filth as the water
ill carry off, is removed. The treader then ſteps
ck upon the ſtage, and taking hold of the han-
es, raiſes the platform and fleece out of the water.
e now takes a flat piece of board, fig. 2d, and
reſſes the water out of the fleece, after which it is

carried carefully and ſpread upon graſs to dry.* When perfectly dry, it is rolled up in the uſual manner. In ſituations where the bed of the water is not very ſteep, and ſmooth, ſmall wheels will be found the moſt convenient ſupport for the ſtage.

Shearing.

This uſually begins with the month of June. There is no part of their buſineſs in which common ſhepherds appear ſo ſlovenly as in this. They uſually mangle the fleece, and leave the ſheeps' backs covered with tufts of wool, to the great loſs of their maſters. The cloſer wool is clipped the better. It would appear that ſome ſheep which carry the fineſt fleeces, do not naturally ſhed their wool annually: but ordinary ſheep do, and ought to be ſhorn juſt before the wool begins to ſeparate. Neatneſs in ſhearing can only be acquired by practice. The only rules which can be written are, uſe ſheers of a moderate ſize, and take up very little wool between them. Perhaps it would be an improvement that the ſheers ſhould have blunt points, which may prevent many accidents, and render the operation eaſy and expeditious, by giving confidence to the ſhearer, that he is in no danger of wounding the ſheep. Af-

* If the fleeces be previouſly ſoaked in a weak ſolution of alkali, or of ſoap, or in ſtale urine, the cleanſing will be more perfect. For more expeditious drying, a preſs may be uſed; but there may be ſome riſk of the preſſure felting the wool.

r being ſhorn, ſheep are much expoſed to the tor-
enting attacks of flies and other vermin. They
ould be carefully examined, and all keds, ticks,
c. picked off. The following unguent ſhould then
e well rubbed on every part of the animal. The
ots of the horns may be anointed with the com-
ſition mentioned under the article heat.

Take of train oil, ... 4 gallons, Engliſh.
of tar, ... ½ gallon, do.
oil of turpentine, 1 pint, . . . do. *

Dr. Parry recommends the ſhearing of fine wooled
mbs about the beginning of Auguſt, having found
at the hog fleeces grow finer, when the lamb fleeces
ave been removed. This practice promiſes conſi-
erable profit; an argument in favour of its adop-
on, of a very powerful kind. There does not ap-
ear to be any danger to be apprehended from the
eration at that ſeaſon of the year; and the wool
ill have time to grow to a ſufficient length, for de-
nding the animal from cold, rain, and ſnow, be-
re winter ſets in. The Doctor has attended more
an any perſon in Britain to the ſubject of wool-
owing, and has ſhewn very ſuperior judgment in
onducting his experiments. His recommendation
es no farther than to fine wooled lambs; but thoſe
other breeds cannot be hurt, if theſe do not ſuf-
r any injury from the operation.

At the time of clipping, and indeed at all other
mes, when the flock is collected, every individual

* Inſtead of the tar and turpentine, what is called the ſpirit of tar may
uſed, while the oil of turpentine continues to be ſo high priced.

ſhould be carefully examined; and any wounds or ſores ſhould be cleaned and dreſſed. The feet ſhould be looked at, and every animal which has ſwelled, or ulcerated limbs, ſhould be ſeparated from the flock. Theſe, and all others which ſeem to be ſickly ſhould be kept at home until cured. Sheep ought to be collected and examined more frequently than at the uſual ſtated times.

Yolk of Wool.

Until the experiments of that excellent chemiſt, Vauquelin, were publiſhed, the nature of yolk was unknown. He has found it to be an animal ſoap; and has obſerved that wool which had remained a long time in its own yolk, ſwelled up, ſplit, and loſt its ſtrength; effects which take place alſo in too ſtrong ſoapy water. "If," ſays M. Vauquelin," "the water of yolk cauſes wool to ſwell, and to ſplit in this manner, may it not be poſſible that this accident often takes place on the backs of the animals, eſpecially during damp warm weather, or when they are ſhut up in folds, the litter of which is not often enough removed. It may not be impoſſible alſo that the acridity of yolk may occaſion an irritation in their ſkin, and prove the cauſe of ſome of thoſe maladies to which this organ is ſubject in theſe animals, and which muſt occur chiefly during damp warm weather: fortunately at this ſeaſon they are occaſionally expoſed to rains which

waſh them, and carry off at leaſt a part of this matter. In this reſpect I am inclined to adopt the opinion of thoſe who think that the waſhing of ſheep, during dry warm weather, may be uſeful to their health, and to the quality of the wool."

Although every reſpect is due to ſo good a chemiſt as M. Vauquelin; he could not have formed his opinion of the effect of yolk on the ſkin of ſheep but from analogy. As common ſoap is often uſed with ſucceſs in cleanſing the ſkin, and curing cutaneous diſorders, analogy would lead us to expect that yolk, being of the ſame nature, would be beneficial inſtead of being injurious. And it is obſerved, that fine wooled ſheep are leſs ſubject to diſeaſes of the ſkin, than thoſe which carry coarſe fleeces; the former being well ſupplied with yolk and oil, and the latter having drier wool and little yolk. M. V. thinks yolk a naturally perſpired matter; but it is more probably a combination of the ſalt in ſweat, with the oil of wool.

Putting Rams to Ewes.

The period, during which the rams are to go with the ewes, muſt be regulated by climate, and the quantity of ſpring food provided. It is of great importance that lambs ſhould be dropt as early as poſſible, that they may not only be well nurſed, but have time to get ſtout, and able to provide for them-

ſelves before the winter ſets in. It is alſo of advantage to the ewes, that they may get into good condition before the rutting ſeaſon.

To ſecure a full crop of lambs, a proper proportion of tups ſhould be employed, viz. 4 to 100 ewes. They ſhould be left together only ſo long, that no lambs may be dropt after the middle of May; unleſs in the caſe of rearing lambs for the butcher, when matters may be regulated according to circumſtances.

A good deal of attention on the part of the ſhepherd is neceſſary during rutting time. It frequently happens that a tup will drive a ewe which is in ſeaſon, out from the flock, and ſtand by her for a long time, for days even, without doing his duty. They ſhould be ſeparated as far as poſſible from each other.* Sometimes a tup will follow a ewe not inclined to receive him for a whole day, while others in ſeaſon will in vain ſolicit his attention; nay, he will often be ſo ungallant, as to beat them off. In this caſe ſeparation is alſo neceſſary.

Some people rub the breaſts of the rams with ſome pigment, and remove every ewe which has any mark of it as having been ſerved. This, however is a practice which may occaſion much diſappointment, as tups often leap without accompliſhing their purpoſe. Both tups and ewes ſhould be in the beſt poſſible condition.

Dr. Parry mentions a mode of putting the ewes to the ram, which he believes to have been invent-

ed by Bakewell. At the intended ſeaſon of copulation, the ſexual appetite of the ewes is provoked by a ram, *cui venter et genitalia panno circumteguntur, quo minus oves ineat.* The ewes which are ready being thus diſcovered, are brought in ſucceſſion to the proper ram, which is kept in a yard, or ſmall incloſure, and is allowed to ſerve each only once. In this manner, a ſhearling ram, well fed, may be ſufficient for 100 or more ewes in one ſeaſon. This method is certainly to be recommended where any one ram is greatly ſuperior to others in make, and other deſirable qualities, relatively to a large number of ewes.

Great Ewes

Should be moved about as little as poſſible; and kept from wet ground, dirty cots, and from every thing apt to injure their health, or diſturb them. They are, when heavy, very liable to get awald;* and when the ſhepherd diſcovers them in this ſituation, he ſhould approach them with caution, and lift them gently. When a ewe has miſcarried, it will be proper, if the weather be ſevere, or very cold, to bring her into a cot, and to keep her there till recovered; but during mild dry weather, ſhe will be as well in the open air. When about to yean, the ewes ſhould be on the ſmootheſt and drieſt ground, both for their own convenience, and that of their lambs when

* A common term applied to a ſheep lying on its back and unable to riſe.

dropt. Nurſe ewes ſhould have good paſture, which ſhould not be changed, while they give ſuck.

Lambs,

When obſerved to drop on a place where they cannot eaſily riſe, ſhould be lifted and placed on their feet, but otherwiſe they may be left to themſelves. They may be docked when a day or two old, which ſaves much trouble when the diſeaſe called Pinding attacks them. Docking makes them look very lively, as, while they are at their friſking time of life, their ſtumps have commonly a ſet or cock. The tail, which ſeems to be a uſeleſs, and inconvenient appendage, need not be left longer than three inches. But this operation in the males, if pinding does not happen, ſhould be deferred until the time for caſtration. Ewes which have been docked, are not liable to loſe their lambs by their being entangled by the tail at birth, an accident which happens much more frequently than ſhepherds are aware of.

Lambs that are in health are always lively. Such as do not appear to be inclined to ſport with their fellows, ſhould be looked at, and alſo their dams. Ewes which appear unkind to their lambs ſhould alſo be examined. In theſe caſes ſomething will in general be found to be wrong. Diſtorted, or imperfect lambs, ſhould be ſold, or killed for home conſumption.

Weaning Lambs.

Lambs ſhould be allowed to ſuck during three months and a half, after which they may be taken up, and kept for a fortnight or three weeks at a diſtance from their dams; far enough from them to prevent their bleating being heard. The lambs will ſoon begin to feed heartily on graſs, eſpecially if they be allowed to go with the wethers.

Many are in the habit of milking their ewes after the lambs are taken up. It may be proper to take the milk from them once or twice at the interval of two days; but it is a bad practice to milk them for a length of time, as this hinders their getting into good condition before the rutting ſeaſon.

Vermin on Lambs.

In the event that lambs become troubled by vermin before ſmearing time, the following directions of Dr. Parry will be found uſeful. The *hippoboſca-ovina*, or *tick*, is extremely injurious to ſheep, by making the animal bite and rub itſelf, ſo as not only to hurt the fleece, but to break the ſkin; in conſequence of which the fly is apt to fix on the wool, near the wounded part, and there depoſit its eggs. This troubleſome animal may be, in a great meaſure, deſtroyed by pouring a ſolution of powdered white

arſenic in boiling water, in the proportion of an ounce to a gallon, cold on the back of the ſheep, and letting it diffuſe itſelf down the ſkin on each ſide: in this method, however, ſeveral of the ticks eſcape by crawling to the extremities of the filaments. It will be ſtill better to waſh the lambs in the autumn, whether ſhorn or not, in a tub of a ſimilar mixture. For this purpoſe, three pounds of the ſame arſenic, powdered, may be diſſolved in ſix gallons of boiling water, and the ſolution mixed with 40 gallons of cold water. The whole being then well ſtirred with a ſtick, the lambs may be plunged into it, great care being taken that they do not dip their heads, or taſte the water. The liquor muſt be ſqueezed out of their fleeces back into the veſſel, in order that it may not be waſted. It is ſcarcely *neceſſary* for me to point out the poiſonous quality of this liquid, and how important it is to keep the veſſel locked up, and after the operations are performed, to clean it well; or, rather, never to uſe it for any other purpoſe; and to throw the liquid which remains where not the ſmalleſt quantity of it can be drank by any creature whoſe life we value.

Salt.

There are ſo many facts on record exhibiting the utility of ſalt when mixed with the food of ſheep, that the impoſſibility of procuring that article for the

flocks of Great Britain, is much to be lamented. Lord Somerville has propoſed chalk as a ſubſtitute; but his Lordſhip was not aware that its qualities would prove rather injurious than beneficial. Chalk operates as an aſtringent, and is accordingly found to be very uſeful in ſome diſeaſes. Salt may poſſibly correct acidity; but it does not act as an abſorbent like chalk or magneſia. If common ſalt was to be decompoſed in the ſtomach, by the acid there combining with its alkali, the muriatic acid would be freed, and would, in all probability, do more miſchief than an exceſs of bile. It is evident that chalk will not act in the ſame manner as ſalt; and from every conſideration of its known effects on the ſtomach, it is probable that it will not anſwer the ſame purpoſe.

DESTRUCTION OF FOXES AND BIRDS OF PREY.

Notwithſtanding the very great loſſes which are annually experienced from the ravages of foxes, eagles, and other birds, little ingenuity has been exerted to deviſe means of deſtroying them. It would be better for ſheep-farmers to have fox-catchers than fox-hunters; and with very little trouble every one of their ſhepherds may be made much more uſeful in deſtroying theſe animals than the ordinary fox-hunters, and that without interfering with their attendance on the flocks—nothing more is required than to put the means into their power, and to hold out ſome reward proportioned to their ſucceſs.

Various pit-falls might be contrived for taking foxes; but poiſon is the moſt effectual inſtrument of deſtruction when properly employed; both for foxes and birds of prey. Of the different poiſons uſed for killing vermin, arſenic and corroſive ſublimate are the moſt powerful. Whoever chuſes to adopt the following method of uſing them will not probably have any cauſe for ſeeking a better one.

Take the carcaſe of a ſheep, and having removed the ſkin, faſten it to the ground in ſome open place

with the back uppermoſt. Make croſs inciſions into the fleſhy parts, ſo that the ſquares made by the cuts do not exceed an inch and a half. Separate each piece nearly from the bone, but not altogether. Then make one or two punctures with a pen-knife, an inch and a half deep into each piece, and fill them nearly full of a mixture of equal parts of corroſive ſublimate and arſenic previouſly made into a paſte with honey. Put all the ſquares into their natural poſition, and leave the place.

When a fox, or an eagle, or a parcel of ravens, or crows, attack the carcaſe, they will not find much difficulty in tearing off the fleſh; and in the hurry of competition for the largeſt ſhare, they will gobble up the poiſoned pieces entire, and ſoon die. When a carcaſe is poiſoned without cutting it as here directed, the poiſon is apt to be loſt while the animals are employed in tearing off the fleſh. By faſtening the carcaſe to the ground, the pieces of fleſh will come eaſily off.

Should the ſhepherd be anxious to catch the animals, let him faſten a good ſtrong fiſh-hook of a moderate ſize in each piece of fleſh, which muſt in this caſe, be entirely ſeparated from the bone, and need not be poiſoned. By faſtening the hooks to the ribs of the carcaſe by means of ſtrong wire, both foxes and eagles may be caught. The common pike hooks will anſwer very well, but a much ſmaller ſize will do for birds. Shepherds muſt take care to keep their dogs out of the way; but if any

ſtrange cur ſhould be prowling about in ſearch of a lamb, or a leg of mutton, and ſtumble upon the baits, he will meet the fate he deſerves. It will be proper to ſelect for the baits places where ſheep do not feed, ſuch as bare moſs, or gravel, or ſome banks at the ſides of ſtreams.

MEDICINES MENTIONED IN THE FOREGOING TREATISE.

Ammonia or *Volatile* ſalt, is a ſtrong ſtimulant, and has been found uſeful in caſes when any poiſonous ſubſtance has entered the ſtomach.

Chalk. This is an abſorbent earth, and is very uſeful in correcting acidity, and this removes the irritation of the bowels, which occaſion looſeneſs. It is alſo aſtringent. It requires to be purified by waſhing.

Goulard water, and cerate. When either the extract of lead, or ſugar of lead, are mixed with water, a little vinegar ſhould be added. The ſolution is a valuable application in ſuperficial inflammation, and bruiſes, and diſeaſes of the ſkin. The ſugar of lead is better for the ſhepherd to keep by him than the extract. A drachm of this may be diſſolved in an Engliſh pint of water, with a table-ſpoonful of vinegar. The cerate is eaſily procured.

Jalap, is a ſafe and effectual purgative, but few occaſions for uſing it will preſent themſelves.

Ipecacuanha. This acts as a ſtimulant to the ſtomach. In repeated *ſmall* doſes it is very ſerviceable in dyſentery.

Lime-water is applied ſometimes to ill conditioned ſores, and operates as an aſtringent.

Laudanum. In diarrhœa and dyſentery, it allays pain, and diminiſhes the increaſed action of the

bowels, and is very ſerviceable either alone or joined with other ſubſtances.

Mercury. The various preparations of mercury are very powerful, and eminently uſeful in curing cutaneous diſorders, as well as ſeveral diſorders of the conſtitution. The common ointment is not ſo cheap nor ſo powerful as that made of the preparation called corroſive ſublimate, as an external application. But when it is deſired to introduce mercury into the ſyſtem, friction with common ointment is the ſafeſt and ſureſt method.

Nitre, or *Saltpetre*, when taken in large doſes proves fatal. In ſmall doſes it diminiſhes the heat of the body, and operates both by ſtool and urine.

Rhubarb, beſides its purgative qualities, poſſeſſes conſiderable aſtringent powers, which render it very uſeful in diarrhœa.

Salt, Common. Sea ſalt operates as a purgative, and it is very uſeful in clyſters.

Salt, Glauber's, is a cheap, mild, and effectual purgative, and perhaps the moſt uſeful that can be employed.

Sulphur, operates as a purgative, and promotes inſenſible perſpiration. It is very efficacious in diſorders of the ſkin. It is very penetrating as appears from its making its way through every pore of perſons who take it.

Terra Japonica, Japan earth, or *Catechu.* This is one of the *beſt* aſtringents in the whole Materia Medica, and is exceedingly uſeful in looſeneſs of the bowels.

EXPLANATION OF THE PLATES.

PLATE I.

This plate repreſents the *four* ſtomachs, and the inteſtinal canal of a ſheep, taken out of the body and placed nearly in their relative ſituations. *a*, is the gullet, or œſophagus, leading into *b*, the paunch, or firſt ſtomach. *c c* is the ſecond ſtomach, or honeycomb. *d*, is the third ſtomach, or many-plies; and *e*, is the fourth ſtomach, or red. *f f f* is that part of the alimentary canal called the ſmall inteſtines, or guts, terminating in *g*, which is the large gut. *h* is the termination of the large gut, or what is called the rectum.

PLATE II.

Fig. 1ſt, repreſents the four ſtomachs laid open, ſo as to exhibit their internal ſtructure. *a* is the gullet terminating by a large common opening in *b*, the paunch; and *c* the honeycomb. *d* is the manyplies; *e* is the red, and *f* is the inteſtine leading from it. The variety of the ſtructure of the different ſtomachs is accurately repreſented in this figure.

Fig. 2d, ſhows the right ſide of the heart laid open, and its general ſhape. The arrows* are placed

* By miſtake the arrows have been omitted, but from the reſt of the deſcription they may eaſily be inſerted.

ſo as to repreſent the courſe of the blood through the large veſſels. *a*, *a*, are the two large venous trunks which conduct the blood into *b*, the right auricle of the heart. *c* is the valve which is placed between the right auricle, and right ventricle, preventing the blood from flowing back into the auricle when the ventricle contracts. *d*, is the pulmonary artery which iſſues from the ventricle, and conveys the blood to the lungs. *e*, is the aorta, or great artery into which the left ventricle empties irſelf, and by which the blood is circulated over the whole body. *f*, is the edge of the left auricle, and *g* that of the left ventricle.

The ſix remaining figures of this plate ſhew the changes which take place in the teeth of ſheep during the firſt eight years; and by which their ages may be known.

Fig. 3d, repreſents the 8 teeth of the forepart of the under-jaw in a ſheep, one year old.

Fig. 4th, the teeth of a ſheep 2 years old.

Fig. 5th, - - - - - - - 3 years old.

Fig. 6th, - - - - - - - 4 years old.

Fig. 7th, - - - - - - - 5 years old.

Fig. 8th, ſhows the front teeth worn and broken, as is generally the caſe in the 7th or 8th year.

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PLATE III,

Shows the ſituation of the veins in the cheek and leg, moſt proper for bleeding.

Fig. 1ſt. In this figure the vein, *a*, is ſeen coming from below the under-jaw at *b*, and ſpreading its branches on the ſoft part of the cheek. A ſmall nerve, *c*, runs in an oppoſite direction, and croſſes over the vein; and, in the operation of bleeding, this nerve *ſhould not be divided.* Below the nerve, a thick fleſhy muſcle is expoſed, called the zigomaticus major, which has the principal ſhare in moving the jaw during maſtication. There is another muſcle, *d*, much thinner than the former, beneath which the branches of the vein of the cheek paſs; it goes to the corner of the mouth, and aſſiſts in the motion of the lips. The vein ſhould be opened in the operation for bleeding, at the part where it is longeſt and neareſt the ſurface, and where there is leaſt riſk of injuring any adjacent part. The place marked *a*, will be found in general to anſwer beſt.

Fig. 2d. The vein *a* will be found running along the fore leg, taking an oblique or ſerpentine direction from the anterior part of the cheſt towards the bend of the knee. It may be opened at any place where it can be diſtinctly felt under the ſkin, and where it can be kept from ſlipping under the point of the knife. At *a*, it is generally readily found, and the trunk is of a ſufficient ſize.

The other figure is deſcribed in a note, p. 35.

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PLATE IV.

Fig. 1ſt, repreſents a vertical ſection of the head, intended chiefly to ſhow the relative ſituation of the

brain within the ſkull, and the facility with which an inſtrument, introduced through the noſe, may perforate the ſkull and diſcharge water collected within the brain, in the diſeaſe called *ſturdy*.

1, is the horn ſeen in outline, 2, 2, 2, 2, the ſkull or brain-caſe. 3, the noſtril. 4, the edge of one of the cutting teeth, and lips. 5, the tongue divided. 6, the arch of the mouth, or palate. 7, 7, 7, the bones, called the *ſpongy* bones, which form the noſe, and are the ſeat of the *organ* of *ſmell*. They are covered by a fine membrane, in which the nerves are diſtributed. The nerves form a very large ſurface in all thoſe animals which poſſeſs the ſenſe of ſmell in an eminent degree. In ſheep this ſurface is very extenſive, and their ſenſe of ſmell is proportionably acute.

a, *a*, *a*, *a*, is the outer, cortical, or cineritious part of the brain; and *b*, *b*, *b*, *b*, the medullary portion, about the central part of which is ſeen partly laid open one of the ventricles of the brain, *c*, in which the water in one ſpecies of ſturdy is collected. The dotted line *d e*, ſhows how eaſily an inſtrument may be introduced for diſcharging water from the brain; and how thin the ſkull is between ſome part of the noſe and brain, as at *e*.

Fig. 2d, repreſents an inſtrument called a trocar, for diſcharging the water in ſturdy. It conſiſts of a ſilver tube, or canula, 13 inches long, into which is fitted accurately, a ſharp pointed wire or ſtilet. There is another blunt pointed wire, which is put into the canula when it is to be introduced in order

to prevent it from injuring the *ſpongy* bones. The inſtrument may be introduced into the noſtril in a direction nearly parrallel to the ſkull; and when it comes to the bone the blunt pointed wire is to be withdrawn and the ſharp one put in, when it is to be thruſt forwards along with the canula, giving it a rotatory motion till through the ſkull, and then ſteadily but gently puſhed forward, till the point is felt touching the oppoſite ſide of the ſkull. The ſtilet is now to be withdrawn, and if it has pierced the ſac containing the water, the latter will flow through the canula. But it may happen that the orifice of the canula may have paſſed through the ſac, and that the water will not flow on firſt withdrawing the wire. In this event, the canula muſt be ſlowly drawn outwards, and if it has paſſed the ſac, the water will flow as ſoon as the orifice comes into it.

This operation frequently proves fatal. But although the animal ſubjected to it, ſhould at the time appear ſick and even dead, it ſhould not be diſregarded; for there have been inſtances of a ſheep recovering, after having lain as if dead for ſome hours. Bleeding after the operation may be of much ſervice; and care ſhould be taken not to diſturb the animal in any way, while recovering.

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PLATE V.

Is explained p. 92, 93, 94, and p. 105.

ERRATA.

Addreſs, page 4, l. 23, dele, *in.*
Page 11, l. 4, for animasl, read, *animals.*
12, l. 2, after, *first*, inſert a *comma.*
17, l. 11, for extremeties, read *extremities.*
18, l. 2 from the bottom, for citculation, read *circulation.*
35, *note*, for hand, read *end.*
64, l. 22, dele *it.*
88, l. 3 from bottom, for doze, read, *dose.*
Page 92, l. 18, dele, *and.*
95, laſt l. after tail, inſert, *and.*
98, l. 5, for continally, read *continually.*
110, l. 17, dele, *.
111, *note*, add, the term uſed in England is, *cast*, which is better, and more expreſſive, than the uncouth word uſed above.

APPENDIX.

A PROJECT FOR EXTENDING THE BREED OF FINE-WOOLED SPANISH SHEEP, NOW IN POSSESSION OF HIS MAJESTY, INTO ALL PARTS OF GREAT BRITAIN, WHERE THE GROWTH OF FINE CLOTHING WOOLS IS FOUND TO BE PROFITABLE.

AFTER experiments had been tried for ſeveral years, by the King's command, with Spaniſh ſheep of the true Merino breed, imported from various parts of Spain, all of which concurred in proving that the valuable wool of thoſe animals did not degenerate in any degree in this climate, and that the croſs of a Merino ram uniformly increaſed the quantity, and meliorated the quality of the wool of every kind of ſhort wooled ſheep on which it was tried, and more particularly ſo in the caſe of the Southdown, Hereford, and Devonſhire breeds,---His Majeſty was pleaſed to command that ſome Merino ſheep ſhould be procured from a flock, the character of which, for a fine pile of wool, was well eſtabliſhed.

Application was accordingly made to Lord Auckland, who had lately returned from an embaſſy to Spain; and, in conſequence of his Lordſhip's letters, the Marchioneſs del Campo di Alange was induced to preſent to his Majeſty five rams and thirty-five ewes from her own flock, known by the name of Negretti, the reputation of which, for purity of blood and fineneſs of wool, is as high as any in Spain.

For this preſent his Majeſty was pleaſed to give the Marchioneſs, in return, eight fine Engliſh coach horſes.

Theſe ſheep, which were imported in the year 1792, have formed the baſis of a flock now kept in the park of His Royal Highneſs the Duke of York, at Oatlands, the breed of which has been preſerved with the utmoſt care and attention.

The wool of this flock, as well as that of the ſheep procured before from Spain, was acknowledged by the manufacturers who ſaw it, to be, to all appearance, of the very firſt quality; yet none of them choſe to offer a price for it at all equal to what they themſelves gave for good Spaniſh wool, leſt, as they ſaid, it ſhould not prove in manufacture ſo valuable as its appearance promiſed. It became neceſſary, therefore, that it ſhould be manufactured at the King's expenſe, in order that abſolute proof might be given of its actual fitneſs for the fabric of ſuperfine broad cloth; and this was done year after year in various manners, the cloth always proving excellent: yet the perſons to whom the wool was offered for ſale ſtill continued to undervalue it, being prepoſſeſſed with an opinion, that though it might not at firſt degenerate, it certainly ſooner or later would alter its quality much for the worſe.

In 1796 it was reſolved to ſell the wool at the price that ſhould be offered for it, in order that the manufacturers themſelves might make trial of its quality, although a price equal to the real value ſhould not be obtained: accordingly the clip of that year was ſold for 2s. per pound, and the clip of the year 1797 for 2s. 6d.

The value of the wool being now in ſome degree known, the clip of 1798 was waſhed in the Spaniſh manner, and it ſold as follows:

The number of fleeces of ewes and wethers was 89;

Which produced in wool, waſhed on the ſheeps' backs,			295 libs.
Loſs in ſcowering, ...			92.
Amount of ſcowered wool, ...			203.
Which produced,	Raffinos, ...	167 libs.	at 5s. per lib.
	Finos, ...	23	at 3s. 6d.
	Terceros, ...	13	at 2s. 6d.

47l. 8s. 0d.

The clip of 1799 was managed in the ſame manner and produced as follows:

The number of fleeces of ewes and wethers was 101;

Which produced in wool waſhed on the ſheeps' back			346 libs.
Loſs in ſcowering,			92
Amount of ſcowered wool,			254
Which produced, Raffinos,	207 libs.	at 5s. 6d.	per lib.
Finos,	28	at 3s. 6d.	
Terceros,	19	at 2s.	

63l. 14s. 6d.

The rams' wool of the two years ſorted, together produced as follows:

Quantity of wool waſhed on the ſheeps' back,			314 libs.
Loſs in ſcowering,			99
Amount of ſcowered wool,			215
Which produced, Raffinos,	181	at 4s. 6d.	per lib.
Finos,	22	at 3s. 6d.	
Terceros,	12	at 2s. 0d.	

45l. 15s. 6d.

It is neceſſary to account for theſe extraordinary prices by ſtating, that in the year 1799, when both ſales were effected, Spaniſh wool was dearer than it ever before was known to be; but it is alſo proper to add, that 5s. 6d. was then the price of the beſt Spaniſh piles; and that none were ſold higher, except, as it is ſaid, a very ſmall quantity for 5s. 9d.

The king has been pleaſed to give away to different perſons, who undertook to try experiments by croſſing other breeds of ſheep with the Spaniſh, more than one hundred rams and ſome ewes. In order, however, to make the benefit of this valuable improvement in the ſtaple commodity of Great Britain acceſſible to all perſons who may chuſe to take the advantage of it, His Majeſty is this year pleaſed to permit ſome rams and ewes to be ſold, and alſo command that reaſonable prices ſhall be put upon them, according to the comparative value of each in-

dividual; in obedience to which it has been ſuggeſted that five guineas may be conſidered as the medium price of a ram, and two guineas that of a ewe; a ſum which it is believed the purchaſer will, in all caſes, be able to receive back with large profit, by the improvement his flock will derive from the valuable addition it will obtain.

Though the mutton of the Spaniſh ſheep was always excellent, their carcaſes were extremely different in ſhape from that mould which the faſhion of the preſent day teaches us to prefer; great improvement has, however, been already made in this article, by a careful and attentive ſelection of ſuch rams and ewes as appeared moſt likely to produce a comely progeny; and no doubt can be entertained that, in due time, with judicious management, carcaſes covered with ſuperfine Spaniſh wool may be brought into any ſhape, whatever it may be, to which the intereſt of the butcher, or the caprice of the breeder may chuſe to affix a particular value.

Sir Joſeph Banks, who has the honour of being intruſted with the management of this buſineſs, will anſwer all letters on the ſubject of it, addreſſed to him in Soho-ſquare. The rams will be delivered at Windſor; the ewes at Weybridge in Surrey, near Oatlands.

As thoſe who have the care of His Majeſty's Spaniſh flock may naturally be ſuppoſed partial to the project of introducing fine wool in theſe kingdoms, it has been thought proper to annex the following notice, in order to ſhow the opinion held of a ſimilar undertaking in a neighbouring country, where individuals, however they may have miſtaken their political intereſt, are rather remarkable for purſuing and thoroughly weighing their own perſonal advantage in all their private undertakings, and for ſagacity in ſeizing all opportunities of improving, by public eſtabliſhments, the reſources of their nation.

FRENCH ADVERTISEMENT.

"On the 24th. May laſt, an advertiſement appeared in the Moniteur, giving notice of a ſale of two hundred and twenty

ewes and rams of the fineſt wooled Spaniſh breed, part of the flock kept on the national farm of Rambouillet: alſo two thouſand pounds of ſuperfine wool, being the preſent year's clip of this national flock; and one thouſand three hundred pounds of wool, the produce of the mixed breeds of ſheep kept at the menagerie at Verſailles." This advertiſement, which is official, is accompanied by a notice from Lucien Bonaparte, Miniſter of the Interior, as follows:

"The Spaniſh breed of ſheep that produce the fineſt wool, introduced into France thirty years ago, has not manifeſted the ſmalleſt ſymptom of degeneration: ſamples of the wool of this valuable flock, which was brought from Spain in the year 1786, are ſtill preſerved, and bear teſtimony that it has not in the leaſt declined from its original excellence, although the diſtrict where theſe ſheep have been kept is not of the beſt quality for ſheep farming; the draughts from this flock, that have been annually ſold by auction, have always exceeded in value the expectation of the purchaſers, in every country to which they have been carried, that is not too damp for ſheep.

"The weight of their fleeces is from ſix* to twelve pounds each, and thoſe of the rams are ſometimes heavier.

"Sheep of the ordinary coarſe woolled breeds, when croſſed by a Spaniſh ram, produce fleeces double in weight, and far more valuable, than thoſe of their dams; and if this croſs is carefully continued, by ſupplying rams of the pure Spaniſh blood, the wool of the third or fourth generation is ſcarce diſtinguiſhable from the original Spaniſh wool.

"Theſe mixed breeds are more eaſily maintained, and can be fattened at as ſmall an expenſe as the ordinary breeds of the country.

"No ſpeculation whatever offers advantages ſo certain, and ſo conſiderable, to thoſe who embark in it, as that of the improvement of wool, by the introduction of rams and ewes of

* This muſt mean fleeces unwaſhed, or in the yolk, as it is technically termed.

the true Spaniſh race, among the flocks of France, whether the ſheep are purchaſed at Rambouillet, or elſewhere; in this buſineſs, however, it is of the greateſt importance to ſecure the Spaniſh breed unmixed, and the utmoſt precaution on that head ſhould be uſed, as the avarice of proprietors may tempt them to ſubſtitute the croſſed breeds inſtead of the pure one, to the great diſappointment of the purchaſer.

"The amelioration of wool at Rambouillet, has made ſo great a progreſs, that in a circle from twenty-four to thirty-ſix miles in diameter, the manufacturers purchaſe thirty-five thouſand pounds of wool, improved by two, three, or four croſſes. Thoſe who wiſh to accelerate the amelioration of their flocks by introducing into them ewes of this improved ſort, may find abundance to be purchaſed in that neighbourhood at reaſonable rates."

A REPORT

OF THE STATE OF HIS MAJESTY'S FLOCK OF FINE WOOLED SPANISH SHEEP, DURING THE YEARS 1800 AND 1801; WITH SOME ACCOUNT OF THE PROGRESS THAT HAS BEEN MADE TOWARDS THE INTRODUCTION OF THAT VALUABLE BREED INTO THOSE PARTS OF THE UNITED KINGDOM WHERE FINE CLOTHING WOOLS ARE GROWN WITH ADVANTAGE.

On the 9th. of June, 1800, when His Majeſty's Spaniſh flock was ſhorn, it conſiſted of 100 ewes and wethers, which produced as follows:

Wool waſhed on the ſheeps' back, - -	398 libs.		
Loſs in ſcowering, - - - - - - - - - - - -	104		
Amount of ſcowered wool, - - - - - - -	294		
Which produced when ſorted,	Prime,	234 libs.	at 5s. per lib.
	Choice,	34	at 3s.
	Fribbs,	26	at 1s. 6d.
			65l. 11s. 0d.

Eight rams and nine ewes were this year diſpoſed of, which were all that could be ſpared from the flock. Two of the rams went into Dorſet-ſhire, where the breed is much approved by ſome ſkilful judges of ſheep, and ſeems likely to produce conſiderable advantage by croſſing with the common ſheep of the country.

Mr. Bridge of Windford Eagle, communicated this year the reſult of an experiment he had made on three kinds of ſheep, viz. Dorſet, half Spaniſh and half Dorſet, and half Spaniſh and half Mendip.

He kept theſe ſheep from the year 1798, when they were lambed, till February 1800, when they were butchered as fat ſheep; and having valued them in June 1798, he found the carcaſes of each ſort, with two years' wool which had been ſhorn from them, to yield at that time the following increaſe in value:

Real Dorſet, - - - - - - - - -	4l. 5s. 6d.
Half Spaniſh half Dorſet, - -	4l. 3s. 8d.
Half Spaniſh half Mendip, -	3l. 19s. 2d.

In theſe experiments Mr. Bridge's wool ſtapler values the Dorſet wool at 1s. 2½d. a pound, and the half Spaniſh wool at 1s. 4½d. only; but as the Spaniſh croſs in both caſes increaſed the quantity of wool, and as half Spaniſh wool has never, when its value was properly known, been ſold for leſs than 1s. 9d. and generally more than 2s. per pound, there can be no doubt that the improvement in value ariſing from the croſs is in both caſes conſiderable.

Mr. J. Ridgeway, of Upperton, in the pariſh of Yazer, in Herefordſhire, communicated an experiment, in which two ſheep, the one a Ryeland, and the other half Spaniſh and half Ryeland, of equal weights, were fed by him together: the half Spaniſh ſheep produced in a year 2 libs. 12 oz. more wool, and 5 libs. more mutton than the Ryelander. This gentleman, whom His Majeſty graciouſly permitted to have rams from the Spaniſh flock ſome years ago, has alſo ſhown by his accounts that the wool of his flock of about 16 ſcore of ſheep, has been ſo much in-

creaſed both in quantity and in value by the Spaniſh croſs, as to have produced nearly twice as much money for each clip after the Spaniſh blood was eſtabliſhed in it, as it uſually did before.

In June 1801, the Spaniſh flock conſiſted of 108 ewes, and wethers,

Which produced in wool waſhed on the ſheeps' back, 397 libs.
Loſs in ſcowering, - - - - - - - - - - - - - - - - - 112
Amount in ſcowered wool. - - - - - - - - - - - - - 285
Which produced when ſorted,

Prime, - - -	237 libs.	at 5s. 6d. per lib.
Choice, - -	31	at 3s. 6d.
Fribbs, -	17	at 1s. 9d.

72l. 1s. 9d.

The wool of the rams and fatting wethers, which had been kept ſeparate, was prepared for ſale at the ſame time, and produced in

Wool on the ſheeps' back, - - - 220 libs.
Loſs in ſcowering, - - - - - - - 82
Amount of ſcowered wool, - - - 138
Which produced when ſorted,

Prime, - - - - -	96 libs.	at 5s. per lib.
Choice, - - - - -	30	at 3s. 6d.
Fribbs, - - - - -	12	at 1s. 9d.

30l. 6s. 0d.

This year eight rams and twenty-two ewes were ſold. If the foot rot had not unfortunately damaged the rams very materially, more of them would have been diſpoſed of. It is, however, obſervable, that although the rams that are kept at Windſor, in rich land, are occaſionly attacked by this harraſſing diſeaſe, the ewes and wethers which feed on dry and hilly paſtures of Oatlands, have never been ſubject to lameneſs of any kind.

Eleven wethers that had been ſent to the marſhes in order to try the effect of rich paſture in fattening ſheep of this breed, were ſlaughtered this year, by Mr. King of Newgate market, previous to the Smithfield meeting, which uſually takes place the week before Chriſtmas. Two of the carcaſes were given to perſons who had been uſeful in aſcertaining the value of the Spaniſh breed; the remaining nine were ſold to Mr. Giblet, butcher in Bond-ſtreet, whoſe judgment in ſelecting, and liberality in purchaſing, the beſt carcaſes is well known both to thoſe of whom he buys, and to thoſe who buy of him. The ſale bill is as follows:—

1 ſheep, 6 ſtone, 6 libs. at 6s. per ſtone,				£.2	0 6
1	7	0	6s.	2	2 0
1	6	1	6s.	1	16 0
1	7	2	6s.	2	3 6
1	5	6	6s.	1	14 6
1	5	2	6s.	1	11 6
1	5	7	6s.	1	15 3
1	5	4	6s.	1	13 0
1	6	2	6s.	1	17 6
11 heads and plucks, at 1s.				0	11 0
10 ſtone, 4 libs. fat, at 3s. 10d.				2	0 3
				19	5 9

Reſpecting the goodneſs of the mutton, inquiry muſt be made of Mr. Giblet, at whoſe ſhop the carcaſes were ſhown for ſeveral days, and of his cuſtomers who purchaſed the joints. Experience has, however, demonſtrated already, both at Windſor and at Weybridge, that Spaniſh mutton is of the beſt quality for a gentleman's table.

The pelt wool of theſe eleven ſheep was taken off, in order that its value might be aſcertained.

It weighed in the yolk,	36 libs.
Loſs in ſcowering,	8
Amount of ſcowered wool,	28

It was ſold as ſkin wool for 4s. 6d. a pound, and of courſe,

produced 5l. 19s. or 10s. a ſheep, all expences deducted. The amount of this profit was quite unexpected, and holds forth a ſource of advantage in this breed, that has not probably hitherto been calculated upon.

Of all who have laboured to render his Majeſty's patriotic views in importing Spaniſh ſheep permanently uſeful to his ſubjects, Dr. Parry, of Bath, deſerves the higheſt commendation. Amidſt the labours of a profeſſion always toilſome, when ſucceſsful, and particularly ſo at Bath, where perſons, whoſe diſeaſes cannot be aſcertained by the faculty elſewhere, continually reſort, the Doctor found leiſure to employ himſelf in the improvement of the Britiſh fleece, by croſſing various breeds with Spaniſh rams, preſented by his Majeſty to the Marquis of Bath, and to the Bath Agricultural Society.

The prizes the Doctor has continually obtained, from the judicious and reſpectable body from whom he borrowed rams, for cloths made of his own wool, in the midſt of a manufacturing country, and amongſt abundance of able competitors, proves to a demonſtration, that he has brought the fleeces of the mixed breed very nearly to the value of the original Spaniſh; nor is this to be wondered at, when we recollect that the effect of a mixture of breeds operates in the following proportions:—

The firſt croſs of a new breed gives to the lamb half of the ram's blood, or	50 per cent.
The ſecond gives	75
The third	87½
The fourth	93¾

At which period it is ſaid, that if the ewes have been judiciouſly ſelected, the difference of wool between the original ſtock and the mixed breed is ſcarcely to be diſcerned by the moſt able practitioners.

More need not be ſaid of the Doctor's merit; his book, which every man who wiſhes to improve wool ought to read, will give a more juſt idea of the acuteneſs of his diſcrimination, the diligence with which he purſued his purpoſe, and the ſuc-

ceſs that finally attended his judicious management, than can be ſtated in the brief form of a report like this.

Much however as Dr. Parry deſerves the gratitude of all who honour the fleece, Lord Somerville's merit ſtands at leaſt as eminently conſpicuous. Emulating the example of his Sovereign, his Lordſhip, whoſe juſt diſcrimination of the value of different breeds of ſtock, is admitted by the moſt experienced agriculturiſts, made a voyage to Portugal for the ſole purpoſe of ſelecting by his own judgment, from the beſt flocks in Spain, ſuch ſheep as joined in the greateſt degree the merit of a good carcaſe to the ſuperiority in wool which the merino flocks are allowed to poſſeſs.

His Lordſhip ſucceeded, and brought home, more than two years ago, a flock of the firſt quality, which will probably repay with advantage the coſts of the undertaking, as ſome of his Lordſhip's rams are ſaid to have been already ſold for 100 guineas each.

As ten crops of wool have now been ſhorn from his Majeſty's Spaniſh flock, and not a ſingle ſheep has been introduced into it during the whole of the two years that have produced them; and as the tenth crop afforded nearly five-ſixths of prime wool, and only one-fourteenth of fribbs; it is to be hoped that the deep rooted prejudice which has for ages deceived the people of England into an opinion that Spaniſh wool degenerates in this climate, will now be finally lodged in that catalogue of vulgar errors which the increaſe of human knowledge daily enlarges. It is to be hoped alſo that a bold aſſertion hazarded here, that the mutton of Spaniſh fine woolled ſheep is coarſe, tough, and little better than carrion, will be contradicted by the evidence of Mr. Giblet and his cuſtomers, to the ſatisfaction of thoſe who have unwarily given credit to it.

His Majeſty having been pleaſed to permit the ſale of ſuch ſheep as can be ſpared from the Spaniſh flock to be continued, the rams will be delivered at Windſor, and the ewes at Oatlands, in the latter end of Auguſt. As, however, it has been ſuggeſted to his Majeſty, that the carcaſes of the ſheep are evi-

dently improved, and that the wool has rather gained than loſt in value, ſix guineas will in future be the price of a ram, and two that of an ewe. And as his Majeſty has been graciouſly pleaſed to continue to entruſt the management of the flock to Sir Joſeph Banks, all letters on the ſubject of it, addreſſed to him, in Soho Square, will be anſwered, and the utmoſt endeavours uſed to conſult the convenience of thoſe who wiſh to become purchaſers.

July, 1802.

A REPORT

OF THE STATE OF HIS MAJESTY'S FLOCK OF FINE WOOLLED SPANISH SHEEP, FOR THE YEAR ENDING MICHAELMAS, 1803, BY SIR JOSEPH BANKS, F.R.S.

The wether lambs of the laſt year having been ſold in their wool, and the rams' wool retained in order that two years growth might be prepared for ſale together, his Majeſty's Spaniſh flock conſiſted when ſhorn in June 1802, of ninety-ſix ewes only; the fleeces of theſe, after having been waſhed on the ſheep's backs as uſual, weighed as follows:—

In wool as ſhorn from the ſheep, - - - - -	352 libs.
Loſs in ſcowering, - - - - - - - - - - -	96
Amount of ſcoured wool, - - - - - -	256

This wool, when ſorted, produced as follows:—

Prime wool, or R. - -	221 libs. at	5s. 9d. - -	63l. 10s. 9d.
Choice locks, or F. - -	32 - - -	3s 6d. - -	5l. 12s. 0d.
Fribbs, or T. - - - -	3 - - -	1s. 9d. - -	0l. 5s. 3d.
			69l. 8s. 0d.

After deducting the expenſe of ſorting and ſcowering, at the high rate which an individual, who is not a manufacturer, muſt

pay for theſe proceſſes, this wool is worth about 5l. a tod, or 43l. 5s. a pack, as clipped from the ſheep's back.

The prime wool was purchaſed by John Maitland, Eſq. Member of Parliament for Chippenham, whoſe mercantile houſe, eſtabliſhed for more than a century, has always dealt largely in the importation of Spaniſh wool, and who, from the firſt introduction of Merino ſheep into this country by the King, in the year 1787, has uniformly given the moſt liberal and zealous aid to the promotion of his Majeſty's patriotic views, though doubtful in the beginning of the ultimate ſucceſs of the project.

It was made into cloth by Mr. Edridge, a manufacturer of Chippenham, whoſe ſkill and reſpectablity in his line are exceeded by no man. He inſpected its quality with the moſt minute exactneſs, and with an eye more inclined to expect ſymptoms of degeneration than of improvement, during the whole of the numerous proceſſes to which wool is ſubjected in the making of broad cloth, and he found that in every one of them, it anſwered to his complete ſatisfaction. The cloth made from this wool proved ſo excellent in its kind, that the King was graciouſly pleaſed, at the deſire of Mr. Maitland and Mr. Edridge, to permit theſe gentlemen to explain, in his Majeſty's preſence, its qualities and peculiarities. Samples of this cloth may now be ſeen in Mr. Maitland's warehouſe, in Baſinghall-ſtreet; and it will be found, in converſing with Mr. Maitland and his partners, that in their opinion, the raffinos of his Majeſty's wool, conſidered as a pile, are inferior to but few of the beſt of thoſe imported from Spain, though it is probable that no pile in Spain throws out ſo ſmall a proportion of finos and terceros. From this opinion it may fairly be deduced, that his Majeſty's wool has improved ſince the ſheep were imported from Spain; indeed there is every reaſon to believe that it is ſtill improving, and will in a very few years equal, if not excel, the very beſt piles that have hitherto been imported into this kingdom.

Mr. Tollet, a gentleman of Glouceſterſhire, who has purchaſed Merino ſheep both from the King and from Lord So-

merville, has been very ſucceſsful in improving the carcaſe without damaging the wool; he poſſeſſes a ram, bred from a ram and an ewe both purchaſed from the royal flock in 1801, which, when clipped in June laſt, yielded 11 libs. 12 ozs. of unwaſhed wool. The carcaſe of this ſheep was then eſtimated by good judges at 10 libs. a quarter; and it was admitted to be a handſome ſheep. For this animal Mr Tollet has refuſed an offer of 200 guineas, or of 100 for the next year's uſe of him; he alſo refuſed 30 guineas each for the ſire and the dam, though old and infirm, being unwilling to part with animals which had belonged to the royal flock; he however ſold their ram lamb of the laſt year for 30 guineas, and thus made ſome progreſs in aſcertaining the value of this important breed.

Theſe facts, which prove an amelioration in the King's Merino ſheep, are fully confirmed by the improved ſhape and weight of his Majeſty's ſhearling rams of the preſent year, and give a juſtifiable hope, that by a due ſelection of rams and ewes, and a correct judgment in matching them, Merino ſheep will in time be produced with carcaſes perfectly faſhionable, and wool as perfectly fine.

No purchaſer having been found laſt year for the lambs' wool at a price adequate to its value, it was made into light ladys' cloth, which proves excellent, and promiſes to be a valuable article. A ſpeculation, however, has offered for manufacturing the lambs' wool into ſuperfine woollen hoſe, which ſeems likely to yield a ſtill better price for the raw article than the cloth.

The demand for his Majeſty's Merino ſheep increaſes at preſent beyond all calculation. The beſt informed clothiers in Glouceſterſhire, enlightened no doubt by the uſeful labours of rhe Bath Society, and the valuable experiment of Dr. Parry, as well as by the Doctor's, and by Lord Somerville's publications, are amongſt the moſt anxious applicants to purchaſe. The Bath agricultural Society, whoſe attention has been moſt particularly directed to the improvement of Britiſh wool, humbly requeſted the King to give them a Spaniſh ram; which re-

queſt his Majeſty moſt graciouſly complied with laſt autumn, and they returned thanks in the warmeſt terms of reſpectful gratitude and ſatisfaction.

As ſpeculation in the value of Spaniſh ſheep is evidently on the increaſe, and a reaſonable probability now appears that his Majeſty's patriotic exertions, in introducing the breed, will at laſt be duly appreciated and properly underſtood, it would be palpably unjuſt ſhould the views of thoſe who wiſh to derive a fair advantage from the ſale of the progeny of Spaniſh ſheep purchaſed by them from the royal flock, be in future impeded by a continuation of the ſale of the King's ſheep at prices below their real value. This circumſtance having been ſtated to the King, his Majeſty was graciouſly pleaſed to permit the rams and ewes that are to be parted with from the royal Merino flock this year, to be ſold by auction in the ſame manner as is done at Woburn, by his Grace the Duke of Bedford, and at Holkham, by Mr. Coke, on the preſumption of this being the moſt likely manner of placing the beſt individuals of their improved breeds in the hands of perſons moſt likely to preſerve, and further to improve them.

17th Auguſt, 1803. JOSEPH BANKS.

POSTSCRIPT.

As the publicatiion of this report has been delayed by unavoidable circumſtances to ſo late a period, it is proper to add, that the wools of 1803 have yielded, both raw and ſcowered, much as uſual. The prime, or raffinos, of the ewe flock, were ſold for 6s. 9d a pound, and that of the rams for 6s. 6d. Theſe enormous prices, however, depended on a ſcarcity of imported Spaniſh wool, and are highly diſtreſſing to the manufacturer; they ought not, therefore, to be allowed to enter into the ſpeculation of the grower. 10th July, 1804.

I have not been able to procure any report which may have been made of the progreſs of his Majeſty's flock, ſubſequent to the above period. I have reaſon to believe that they have been diſcontinued. The ſales of drafted rams and ewes from this

flock have been continued. The following is an account of the sale which took place in August, 1807.

RAMS.

Lot 1.	A four-toothed ram,	£.	14	3 6	
2.	- - - - do. - - - - -		17	6 6	now in my possession.
3.	- - - - do. - - - - -		18	18 0	
4.	- - - - do. - - - - -		14	3 6	
5.	- - - - do. - - - - -		26	5 0	
6.	- - - - do. - - - - -		23	2 0	now in the possession
7.	- - - - do. - - - - -		15	15 0	of Mr. M'Leod of
8.	- - - - do. - - - - -		38	17 0	Geanies, Rossshire.
9.	- - - - do. - - - - -		26	5 0	
10.	- - - - do. - - - - -		29	8 0	
11.	- - - - do. - - - - -		18	18 0	
12.	- - - - do. - - - - -		26	5 0	
13.	- - - - do. - - - - -		26	5 0	
14.	- - - - do. - - - - -		23	2 0	
15.	A six-toothed ram, -		43	1 0	
16.	- - - - do. - - - - -		34	13 0	now in my possession.

EWES.

Lot 17.	A full mouthed ewe	£.	11	11 0	
18.	- - - - do. - - - - -		15	4 6	
19.	- - - - do. - - - - -		12	1 6	
20.	- - - - do. - - - - -		17	17 0	
21.	- - - - do. - - - - -		21	10 6	
22.	- - - - do. - - - - -		22	1 0	now in my possession.
23.	- - - - do. - - - - -		26	5 0	do.
24.	- - - - do. - - - - -		27	6 0	
25.	- - - - do. - - - - -		28	7 0	
26.	- - - - do. - - - - -		24	3 0	
27.	- - - - do. - - - - -		19	19 0	
28.	- - - - do. - - - - -		27	6 0	
29.	- - - - do. - - - - -		31	10 0	now in the possession
30.	- - - - do. - - - - -		27	6 0	of Mr. M'Leod of
31.	- - do. - - - - -		29	8 0	Geanies.
32.	- - - - do. - - - - -		27	6 0	now in my possession.

Lot 33.	A full mouthed ewe	£32	11	6	
34.	A ſix-toothed ewe, -	11	11	0	
35.	- - - - do. - - - - -	10	10	0	
36.	- - - - do. - - - - -	10	10	0	
37.	- - - - do. - - - - -	16	5	6	now in the poſſeſſion
38.	An old ewe, or with ſome defect, marked "an ewe" in the catalogue, - - - - - -	11	1	6	of Mr. M'Leod of Geanies.
39.	A ſix-toothed ewe, -	13	2	6	
40.	- - - - do. - - - - -	10	10	0	
41.	- - - - do. - - - - -	17	17	0	
42.	- - - - do. - - - - -	21	0	0	

Of the above, eight came to Roſs-ſhire.

One of the ewes which was in Mr. M'Leod's poſſeſſion, died laſt ſpring (1809.)

LETTER

FROM DR. PARRY, WHO IS MENTIONED IN SIR JOSEPH BANK'S REPORTS, TO THE BATH AND WEST OF ENGLAND SOCIETY.

From Papers of the Bath Society, vol. X.

Gentlemen, Circus, 10th Dec. 1804.

Having, during the laſt thirteen years, carefully attended to the cultivation of a breed of ſheep, for the wool of which, in various forms, the Society has done me the honour to award me ſeveral premiums, I think myſelf called upon to communicate to them the general reſult of my experience. This I ſhall do in form of propoſitions, each of which I ſhall attempt to demonſtrate by ſpecimens now exhibited to the Society.

I muſt premiſe, that except a few Morſe ewes, which I employed at the commencement of my experiments, but which

I ſoon thought I had good reaſons for diſcarding, my ewes were wholly of the ryeland breed, ſelected for me in Herefordſhire, and altogether uncontaminated by the admiſſion of any of the larger and more faſhionable kinds. The rams which I have employed for the original croſſes have been Merinos, from the flocks of the King and Lord Somerville. Of theſe rams I have at different times uſed about ten.

1. The firſt propoſition which I ſhall endeavour to eſtabliſh, is, that the wool of the fourth croſs of this breed is fully equal in fineneſs to that of the male parent ſtock in England.

(Here follow references to ſpecimens.)

I may add, that, except by accident, the wool of no clip ſhort of the fourth, equals in fineneſs that of Spain.

2. By breeding from ſelect Merino-ryeland rams and ewes of this ſtock, ſheep may be obtained, the fleeces of which are ſuperior both to thoſe of the croſs bred parents, and of courſe to thoſe of the original progenitors of the pure Merino blood in England.

(Reference to ſpecimens.)

In 1802, I ignorantly hoped to improve my wool by one dip more of the Spaniard. Accordingly one hundred of my beſt ewes were ſerved by three pure Merinos. The conſequence was, that the entire produce was conſiderably coarſer than that of the former generation.

What compariſon the produce of theſe mixed rams with unmixed Engliſh ewes, will bear with thoſe deſcended from pure Engliſh ewes croſſed with the pure Merino, I cannot from my own experience demonſtrate. All, however, which I know tends to prove them in no reſpect inferior; and I have the evidence of a breeder of Southdown ſheep in Surrey, whoſe letter to me I am ready to produce, if required, and who has this year employed theſe rams to upwards of ſix hundred ewes, to ſhow that their lambs, both in wool and carcaſe, are ſuperior to thoſe from pure Merinos. I need not point out to the Society the important conſequences which reſult from this fact.

3. From mixed rams of this breed, ſheep may be obtained

having wool at leaſt equal in fineneſs to the beſt which can be procured from Spain.

The doctor produced a ſpecimen of the N. E. or Nigretti pile, for which a manufacturer in a neighbouring county, deſervedly of the higheſt reputation, lately gave, in the unſcowered ſtate, 6s. 9d. per lib. This ſpecimen is peculiarly intereſting, becauſe it is from that Spaniſh flock which furniſhed the Merino ſheep now in the poſſeſſion of the King, and from which are deſcended moſt of our mixed races.

The fineſt ſpecimen was "the Laſtini pile;" for which, unſcowered, the gentleman who favoured me with this ſpecimen, gave, nearly a year ago, 6s. 9d. per lib.; of courſe, when ſcowered, it was then worth 7s. 9½d. per lib. and I believe it could not now be obtained without a considerable advance of price. *This is the fineſt ſpecimen of Spaniſh wool which I have been able to procure during the laſt twelve years; but I do not think it equal to that of my rams' fleeces, Nos. 6. and 7.*

In comparing many of my fleeces with the imported Spaniſh wool of theſe moſt vaunted piles, there is one difference which will ſurely ſtrike the moſt unſkilful obſerver—that while the latter is dry, and harſh, and untractable, mine is to the touch, ſoft, flexible, and ſilky.

4. Wool, from ſheep of a proper modification of Merino and Ryeland, will make cloth equal to that from the Spaniſh wool imported into this country.

Whatever merit there may be in theſe articles (the ſpecimens) I will hereafter aſſign ſufficient reaſons, why they are by no means equal to what may be expected from my ſtock at a future period.

5. The proportion of fine wool in the fleeces of this croſs breed, is equal, if not ſuperior, to that of the beſt Spaniſh piles.

In what is called a pile of Spaniſh wool, the R. or raffino is as 20; the F. or Fino 4; and the T. or Tercera 1: that is, the F. and T. are equal to one-fourth of the R. or one-fifth of the whole; the F. one-fifth of the R. and the T. one-twentieth.

In the blue cloth, No. 14, the R. was 44 lib. the F. 7¼ lib. and the T. 2¼ lib. According to the above proportion of the Spaniſh, the F. and T. of this wool ſhould have been 11 lib.; whereas they were only 9½ lib. This difference of 1¼ lib. is in the F. wool, which is ſo much leſs than in the pure Spaniſh. I beg the Committee to examine and expreſs their opinion, whether this F. wool of my flock, is not ſuperior in quality to what is uſually imported from Spain. I am told that my T. wool is entitled to the ſame comparative preference.

6. This wool is more profitable to the manufacturer than the beſt Spaniſh.

It requires 60 lib. of good Spaniſh wool, in the imported ſtate, to make 30 yards of broad cloth, dyed in the wool of the proper ſubſtance. Theſe 60 libs. waſte in ſcowering to 52 libs. Hence it follows, that 52 lib. of ſcowered Spaniſh wool are neceſſary to make 30 yards of good wool-dyed broad cloth. The R. wool of the Britiſh cloth, No. 14, having been 44 lib. ſhould therefore have made about 25½ yards; whereas, in fact, it made 26¼ yards; and, it is aſſerted by the manufacturer, that if it had not deceived him as to its capacity of milling, to which is owing its uncommon ſtrength, it would have reached in length one yard and a half more of cloth of the uſual ſubſtance. This accounnt correſponds with that of Mr. Waletoon's prize cloth from my wool, in the year 1802. The raffino wool-dyed and picked blue was 47 lib. which might probably have been 48 lib. when only ſcowered. Now 48 lib. of ſcowered Spaniſh wool ſhould make about 27¾ yards of broad cloth; whereas the ſame quantity of my wool, in this inſtance, produced 30½ yards of cloth; which the draper, even at that time, ſold for 23s. a yard.

From theſe, and many other ſimilar facts which I could adduce, I think myſelf authoriſed to infer, that this wool waſtes leſs in the manufacture, and is, therefore, weight for weight, more valuable than imported Spaniſh wool. For this difference very ſatisfactory reaſons might be given; but I ſhall not take up the Society's time with enumerating them. It is ſuf-

ficient for me to ſtate, and, I think, to have proved the fact.

I have ſpoken above as to the ſuperior ſoftneſs and flexibility of this wool. It is probable, that ſeveral gentlemen are here preſent, who, in manufacturing it, have found even the coarſer ſamples to make much finer cloth than their appearance in the wool promiſed. Further evidence as to this point will be adduced under the next propoſition.

As to its capacity of felting, I need go no further for proof than to the blue cloth, No. 14, in which, as hath been before obſerved under this head, it turned out greater than was juſtified by the common appearance of Spaniſh wool.

7. The lamb's wool of the Merino ryeland breed will make finer cloth than the beſt of that of the pure Merino breed.

In order to demonſtrate this, I beg leave to exhibit three pieces of lamb's wool broad cloth.

The ſuperior firmneſs of the cloth, No. 20, to that of No. 19, is a convincing proof of the truth of the ſecond propoſition. At the ſame time, I beg leave to aſk, whether any gentleman here preſent, has ever ſeen any cloth from imported Spaniſh lamb's wool, equal to this in fineneſs and ſoftneſs. Thus is eſtabliſhed the truth not only of this 7th propoſition, but alſo of the 6th. I do not, however, exhibit this cloth as the beſt which may be produced from the lambs of this croſs.* The wool was not uniformly good. Hereafter I ſhall aſſign the reaſon of this inequality, which it cannot be doubted that I ſhall be able to correct, ſhould it be thought neceſſary.

8. Should long wool of this degree of fineneſs be wanted for ſhawls, or any manufactures which cannot be perfected with our common courſe long wools, the rams fleece of the croſs breed, which is exhibited, will prove that this can be effected by allowing the fleece to remain on the animal unſhorn for two years. †

* Lambs got by a Merino ryeland ram.

† Meſſrs. Teſſier and Huzard gave an account to the French National Inſtitute, of the ſale of the wool and ſheep of the flock of Rambouillet, in the year 9, (1801) as well as of the progreſs of the amelioration of

I beg leave here to trouble the Society with a few remarks. I have ſaid that the cloths from ſheep's and lamb's wool now exhibited, good as they certainly are, are ſtill not the beſt which are to be obtained from my flock. It will be reaſonable to aſk, why I do not exhibit the beſt? I anſwer, becauſe I have not hitherto had a ſufficient choice of fleeces. It has already been ſtated, that till the fourth croſs, the produce of ryeland ewes cannot be made to equal the Merino in fineneſs. On this principle, any one, who will give himſelf the time to calculate, will find that, beginning with 1000 ewes of the Engliſh blood, he will be eight years, unleſs his lambs take the ram, before he has one hundred and twenty-five ſheep of that fourth croſs. What then muſt have been the caſe with me, who for ſome years could not procure Spaniards to ſerve annually more than from five to twelve ewes? In fact, excluſively of the beſt fleeces, always reſerved for exhibition and compariſon, I have not hitherto been able to appropriate to the manufacture of fine cloth more, in any one year, than about thirty-five fleeces; and of theſe ſeveral have been only of the ſecond rate. Of this claſs I conſider the fleeces employed for the cloths, and more eſpecially the caſſimere, now exhibited. Having now much better rams, a further advance of time, and more experience, I may reaſonably hope to remedy this deficiency. It will not, however, be till the year 1808, which is ſeventeen years from the commencement of my experiments, that I ſhall expect to have a flock of four or five hundred ſheep, all equal in fineneſs of fleece to Nos. 6. and 7. Before I conclude, I wiſh to call the attention of the Society to one more important point; whieh is my

11th and laſt propoſition; that though I have never ſelected a breeding ram or ewe on account of any other quality than the

wool in France during that period. The moſt intereſting experiment mentioned by them was that of leaving the wool on ſome ſheep for two years; by theſe means it acquired double length, gave a double weight, without any inconvenience to the animals, and was rendered exceedingly proper for the manufacture of woollen ſtuffs, ſo that it was employed in making kerſeymeres, which were preſented, and which are equal to the beſt Engliſh ſtuffs of that kind.—*Ph. Mag.*

fineneſs of the place, this ſtock is already much improved as to the form of its carcaſe, comparatively with the Merinos originally imported.

For this purpoſe, I exhibit three two-toothed rams, eight ewes, two and four-toothed, and four chilver lambs. Theſe ſheep have not been fed for exhibition. All have eaten only graſs. They have been conſtantly together in great numbers; and notwithſtanding any want of merit as to high condition, an inconvenience very eaſily remedied by thoſe who attach importance to it, they will be found ſuperior in carcaſe to moſt pure Merinos which I have ſeen. I think they ſhow that, by a proper ſelection, this breed may ſoon become equal in carcaſe to the beſt ſouthdowns. From the ſize of the two-toothed rams, no one will heſitate to conclude that wethers of this breed, at two ſhear, may eaſily be made to reach 16 or 18 lib. per quarter.

I beg the Society's pardon for having ſo long intruded myſelf on their attention. I ſhall probably give them little trouble of this kind in future; but as the ſubject, at this time eſpecially, is of great importance to the commercial intereſts of the country, I requeſt that they would permit the Committee to examine the ſeveral propoſitions which I have ſtated, and report on them, ſeparately, at the General Meeting to-morrow.

C. H. Parry.

EXTRACT OF A LETTER

FROM DR. PARRY TO SIR GEORGE MACKENZIE, BART.

The accounts which you give me of the hardineſs of the royal Merinos is extremely gratifying to me, as it confirms my own experience, and anſwers the only ſolid objection which could lie againſt the introduction of that breed into our ſhamefully neglected waſtes. I truſt that the breeders of ſheep in Great Britain will now ſpeedily ſee their own true intereſt and that of their country.

If you breed from the ryeland ewe, you will be aſtoniſhed ultimately, to ſee the ſuperiority of the progeny, both as to carcaſe and fleece, to the pure Merino race. I incloſe a ſmall ſpecimen of the wool of one of my rams, the grandſon of a Spaniard by the male, and not nearer than the great grandſon by the female; and I have much pleaſure in adding, that the very fineſt piece of caſſimere ever ſeen by our manufacturers, was this year (1807) made from my ſhearling rams of the ſame croſs, unſhorn when lambs.

.....

Dr. Parry's two works, the one publiſhed in the year 1800, and the other in 1807, contain the fulleſt information reſpecting his important experiments, and are ſtrongly recommended to the peruſal of all thoſe who wiſh to be particularly informed of the progreſs of the improvement of Britiſh wool.

COPY OF A LETTER

FROM SIR JAMES MONTGOMERY BART. M.P. TO SIR GEORGE MACKENZIE, BART.

Penrith, 27th January, 1808.

SIR—I was prevented anſwering your firſt letter till now, owing to my not having been till lately in that part of the country where my Spaniſh ſheep are, and where my papers relating to them are kept, The breed I have are a part, or rather the deſcendants of the Merinos that belonged to the Edinburgh wool ſociety. Upon the diſſolution of the ſociety about twelve or fifteen years ago, my father got that part of their flock. From a letter of the late Lord Daer, inſerted in the Farmer's Magazine, for Auguſt 1805, I obſerve, that Sir John Sinclair procured that breed for the Society from M. Daubmenton, in France, and the deſcendants in my poſſeſſion anſwer exactly to the deſcription given in his Lordſhip's letter, of that gentleman's breed. Ever ſince theſe ſheep came into our poſſeſſion,

they have been paſtured upon ſome fields at Stobo, of middling quality, but dry and well ſheltered, and about from 600 to 700 feet above the level of the ſea. They have been managed in the ſame manner as the other ſheep of the country, and had nothing given them in winter, except when the depth of ſnow, rendered it impoſſible for them to ſupport themſelves on the paſture, when they got a little hay or a few turnips. I think them as healthy a breed as any I know. They are indeed frequently lame, and I know many gentlemen think the Merino breed peculiarly ſubject to the foot rot. But I am not ſatisfied they are ſo. The lameneſs ſeemed to be occaſioned by the outſide horn of the hoof growing too faſt, and by doubling under the ſole, injured it, and dirt getting into the ſore feſtered it. I ſpeak incorrectly, perhaps, when I ſay, the horn of the hoof grows too faſt. I believe the growth is not materially great, but owing to the ſheep being confined in a field, ſmall compared to the extent they delight to range in, did not get ſufficient exerciſe to wear it down. They are a very active kind of ſheep, and well adapted in their form for travel. My opinion is formed partly from noticing the ſtate of their feet at different times, and partly from obſerving that in froſt, when the ground is very hard, they are never lame, and if previouſly lame ſoon get well. For two years I weaned the Spaniſh lambs along with the lambs of my hill farm, on a large rough heathy hill, and none of the lambs were lame, although they were ſometimes lame in their uſual paſture. I likewiſe kept a few of them on the hill farm for ſeveral years, when they never ſhowed any ſymptoms of lameneſs. This laſt experiment, gave me a high opinion of the hardineſs of the Spaniſh ſheep, eſpecially after they were a year old. The farm upon which it was made, conſiſts of a valley and range of hills covered with heath and graſs, the loweſt part of which is about 700, and the higheſt about 1800 feet above the level of the ſea, and without any other ſhelter than the hills afford. In autumn, 1804, I ſent ſeveral Spaniards to that farm, the preciſe number, I do not recollect. It proved unfortunately, a very unfavonrable ſeaſon for young

ſheep, my loſs in hogs upon that farm, which is ſtocked with the Cheviot breed, was from 15 to 20 per cent. The loſs among the Spaniards was ſtill greater, only two ſurvived the winter. The others either died, or were withdrawn from the hills for fear of their dying. But theſe two remained on that farm for three years, and though they got nothing but what they could pick up on the hills during winter, they were at all times as healthy as any of the flock, and one of them in particular was eſteemed by the ſhepherd, the moſt active, and the beſt *ſnow breaker* under his charge. They are always, however, much leaner than the reſt of the flock. This remark may likewiſe be applied to thoſe which paſtured in the parks. They are certainly much inferior to the native breed in the quality of fattening. They are, however, in tolerable order in the month of September, and made excellent fine grained and well flavoured mutton. If they had been better cared for during winter, I have no donbt they would have been ſtill better. The lamb's are never fat enough for a gentleman's table. They reſemble kid, more than lamb.

I ſent the wool of 1801, to Mr. Laycock, wool ſtapler in Southwark, to be ſcowered, ſorted and ſold, for the purpoſe of aſcertaining whether the wool had degenerated in quality from their long reſidence in this country. The acconnt he returned me is as follows:—

Fleeces in the yolk, 17 weighed, ...	51 ½ lbs.		
1 Hereford fleece, ...	1 ¾		
	53 ¼		
Scowered clean, ...	35 ¾		
Loſt in ſcowering, ...	17 ¾		
Sold Raffinos at 5s. 0d. . . 32 lbs. . .	£.8	0	0
Finos, . . 2s. 6d. . . 3 . .	0	0	6¼
Terceros, 0s. 9d. . . ¾ . .	0	0	6¼
	£.8	8	0½

Theſe prices I underſtood to be as high as were given that year, for any Spaniſh wool, and the very ſmall quantity of finos and terceros, ſhows that the wool had not in any degree degenerated in conſequence of our cold climate.

The wool of 1802 and 1803 was ſold to the manager of the cloth manufactory at Inverleither, at 3s. 6d. per Engliſh pound in the yolk. I obſerve in my books that the fleeces of 1803 had been accurately weighed, 35 fleeces weighed 114 lib. 14 oz. which at 3s. 6d. per lib. gives 11s. 5¾d. each fleece, and makes the average weight 3 lib. 4 oz. I muſt obſerve, however, that ſeveral of the ewes were very old, and produced very little wool. I think 6 lib. a fair average weight of the ram's fleeces, and from 3 to 4 lib. for the ewes. I had the wool of 1804 made into cloth at Inverleither, but the dreſſing of the cloth was ill executed. It was, however, a ſoft pleaſant cloth to wear, and wore well. In 1805, I got 4s. per lib. for the wool in the yolk, which has been the price I ſold for in 1806 and 1807.

The croſſes I have tried have been with Hereford and South-down ewes. The former produces the fineſt wool; the latter the largeſt ſheep, and greateſt quantity of wool. I prefer the former; and after two croſſes it is difficult to diſtinguiſh the wool from the entire Spaniſh. The price at which the wool of the croſs breed ſold, was 6d. per lib. under the Spaniſh. The ſhape and carcaſe were much improved by theſe croſſes; the croſs breed fatted better than the pure Spaniſh, though ſtill inferior in that reſpect to our native breed.

Three years ago I gave Sir John Stuart of Coltneſs, a Spaniſh ram, who put him to ſome of the common black faced ewes. I ſaw lately three of the produce at Coltneſs, which were well ſhaped, and the ſhepherd told me they were active and hardy. The wool of this croſs was ſold for two following years, at 2s. 6d. per lib. of 22 oz. in the yolk. I have likewiſe croſſed ſome Shetland ewes with the Spaniard. But I do not like the produce. They have little wool, which can neither be claſſed with long or ſhort wool, and the animals like the mother are wild, and difficult to fatten.

I have parted with my Spaniſh flock lately to Mr. Malcolm Laing, who is to take them to Orkney. My doing ſo did not proceed from any idea of their being an unprofitable ſtock, but becauſe I have a large flock of Cheviots on a hill farm, and I think it more advantageous for me to paſture my graſs grounds with the drafts from my Cheviot flock, than by keeping any ſeparate ſtock for them whatever. I have no doubt, that to a country ſuch as Orkney, diſtant from markets for fat ſheep, and where the inhabitants require but little, the introduction of the Spaniſh breed will be very advantageous, for they are ſufficiently hardy for the climate, and their wool ſo thick and oily, that rain does not affect them. I have examined the ſkin of theſe ſheep, after they had been expoſed a whole day to the rain, and found their ſkins as dry as if they had been in a houſe; nothing but the outſide of the fleece gets wet.

Whether in a country where there is a great demand for fat cattle, this breed can be reckoned more advantageous than any other, appears a doubtful queſtion, in their preſent unimproved ſtate. In time the Merinos will be improved both as to ſhape and quality of fattening, in the ſame way as all other breeds have been improved, viz. by a proper ſelection of thoſe to breed from. In their preſent ſcarcity that cannot take place. People deſirous of having that breed, are glad to take any kind of them they can get, and breed from them when too old to rear a well ſhaped offſpring. In their preſent ſtate, at leaſt in the caſe of thoſe I have, I think it very doubtful, whether the loſs upon the carcaſe is not equal to the gain on the wool.

Believe me, your's ſincerely,

JAMES MONTGOMERY.

LETTER

FROM GENERAL ROBERTSON OF LUDE, TO SIR GEORGE MACKENZIE.

Alderney, 29th. December, 1807.

DEAR SIR.—I have delayed, for ſome time, to anſwer your

very acceptable enquiry concerning the progreſs of the Merino breed of ſheep introducing on my eſtate, until I might become not only particularly informed of all the circumſtances relating to them ſince I laſt left home, but alſo to be able to give you (in ſo laudable an undertaking as that of endeavouring to remove the prejudices againſt ſo valuable a breed,) every ſort of information I have been able to procure from different parts of England, where their advantages have already been proved beyond every other ſpecies of ſheep.

This ſubject being ſo nearly connected with incalculable advantages to the Highlands of Scotland, I ſhall firſt obſerve on the ſubject of prejudice againſt the Merino breed, that although it is many years ſince they were firſt introduced into ſome of the lower parts of Scotland, it happened unfortunately that they were placed on ſuch unwholeſome paſtures in ſome inſtances, and ſo improperly cared for in others, that it became univerſally believed that this breed was ſo peculiarly liable to foot rot and other diſeaſes, as to render it altogether unfit for Scotland. From ſome unſucceſsful trials in Perth-ſhire, I was, among many others, miſled into the ſame opinions, and thought it was a breed ſo extremely delicate, degenerating beſides in carcaſe and wool in our climate, as to be undeſerving of any attention except from theoriſts and agricultural ſpeculators, who might chuſe to write or ſpeak on ſuch ſubjects. How much I have had juſt cauſe for a complete change of ſentiment in thoſe reſpects will now appear.

In the year 1804 I became a practical farmer, and poſſeſſed of a large flock of the Linton or black-faced, about 3,000 in uumber. I was ſoon ſtruck with the great difference in price which was given by Mr. Baird, the wool-dealer, for what was produced from ſome of the white-faced ſtocks in your county (leſs numerous) and my own ſtock. While he aſſured me my paſtures were as capable of rearing the Cheviot or beſt wqolled breeds, as any other gronnds where they actually ſucceeded in the Highlands. I then reſolved on a gradual, but total, change from the black-faced breed, by means of croſſing it with Che-

viot rams, and breeding alſo from Cheviot ewes on the ſame paſtnre, in order to make a comparative trial of their hardineſs. At this time, however, I was called to England on my profeſſional duties; and happening to be in London when His Majeſty's firſt ſale of Merinos took place at Kew, I was prevailed upon by a military friend who had been in Spain, to attend the ſale, and promiſe him to purchaſe a ram and ewe for trial, at all events, which I did; and having ſent them by ſea to Scotland, with ſome nf the Southdown breed, I found next year, (1805,) that although no particular care had been taken of the Merinos, their fleeces averaged 1½ libs. beyond the weight ſtated by Sir Joſeph Banks at the ſale, that they had formerly yielded: and that year I alſo received 3s. more per lib. for their wool than what the Southdowns produced. Theſe favourable circumſtances determined me at once to give them a more extenſive trial; and at the next year's ſale, one of the beſt and higheſt priced ſhear rams was purchaſed on my account at Kew. He, likewiſe with 7 Southdown rams of the Duke of Bedford's breed, arrived at Lude in ſafety in September 1805. My diſtribution that year was, firſt, to put the Merino rams to the Spaniſh, Southdown, and Cheviot ewes, about 80; and, ſecondly, the Southdown and beſt Cheviot rams I could procure, to the Linton ewes, about 800 in number. The Leiceſter or Bakewell breed, about 30, were by themſelves. Although the ſecond part of this plan was far from meeting with approbation from the ſticklers for the Linton breed, who pronounced confidently that their croſs muſt prove ſoft and degenerate, it will be found in the ſequel of this letter to have exceeded my moſt ſanguine expectations of ſucceſs.

Notwithſtanding the uncommon ſeverity of the ſpring 1806, by which great numbers of the lambs periſhed at dropping time; and, with other accidents included, their numbers ſtood then on the 26th. July.

From Merino rams with Spaniſh, Southdown, and Cheviot ewes, 76 alive; of do. 6th. April, 1807, 59 hogs, loſs, 17. Lambs from Southdown and Cheviot rams with Linton ewes,

at the above period, 590. As hogs 6th. April, 510, loſs, 80. Ditto from Bakewell ewes, 26, as hogs, 17, loſs, 9. Total number as lambs, 692, as hogs, 586, of loſs, 106. By which account it appears, that during the autumn, winter and ſpring, of the proportions in loſs, the Spaniſh croſs was about $4\frac{1}{2}$ in the ſcore, the Southdown and Cheviot $2\frac{3}{4}$, and the Leiceſter $7\frac{1}{4}$, The Spaniſh Southdown and Cheviot croſſes met with exactly the ſame treatment, paſturing promiſcuouſly on the ſame grounds during the whole period, in which a loſs of 97 lambs was ſuſtained on the high paſtures, while the Leiceſters were kept below; ſince when to the preſent time, hardly any further loſs has happened among them.

The ſame diſeaſe braxy, in England called redwater, except in very few inſtances, occaſioned the above loſs of lambs and hogs, both upon the open paſtures and within the encloſures. No other part of my ſtock, in the ſame period, loſt above one in 100, and although the hogs ſuffered ſo much by braxy, I am informed, this loſs on the whole, was not in proportion ſo great as in any of the neighbouring ſtocks. This diſeaſe conſequently requires the moſt ſerious attention, as occaſioning one of the greateſt drawbacks on ſheep farming in the Highlands of Scotland. I ſhall, therefore, before proceeding further in the particular trial of the Merinos, ſtate what occurs to me on the cauſes and cure of a diſeaſe, which appears to be general, and affects them in common with every other ſpecies of young ſheep, which are now left conſtantly in the field, in place of being houſed at night, as formerly. In my plan of cure for braxy is comprehended an extenſive ſyſtem of agricultural improvement, which I ſhall alſo take this opportunity of ſtating. It is generally ſuppoſed, and I think with every degree of probability, that this ſudden and fatal diſorder is occaſioned among lambs, hogs, and even gimmers and dinmonts, by ſome particular graſſes rendered extremely aſtringent by froſt. Theſe appear immediately to affect the urinary ducts of the fatteſt lambs, occaſioning ſtranguary, and conſequent, mortification. This happening among the young ſheep only, while the ſame herbage oc-

caſions no injury to the ſheep of a more advanced age, we may conclude that the latter eſcape by means of their ſtronger powers of digeſtion and ſecretion.

Indeed the above hypotheſis may be ſaid to be fully proved by the conſtant inſtances we have of thoſe different ages of ſheep paſturing promiſcuouſly every day in the year, and the young ones only are carried off by braxy. Different plans of prevention have been reſorted to, particularly ſhifting the young ſtock from one paſture to another, when they begin to die; alſo putting them on turnip or clover for a ſhort while in the day, which remedies have checked the diſorder. As we may thus fairly conclude that the diſeaſe originates from too aſtringent food, rendered noxious previous to the ſun's exhalation of the froſty particles, the readieſt antidote muſt certainly be found in an application of vegetables of a looſening and diuretic tendency, and which are not ſubject to any noxious converſion of their properties by the influence of froſt. Impreſſed with this idea, and in ſummer 1805 reflecting on the difficulty of ſupplying ſo large a flock of hogs with a ſufficient quantity of green crop to ſave them from braxy, eſpecially when the winter paſtures are at a diſtance from ſituations where ſuch could be procured, it occured to me, in looking over theſe winter paſtures, that large tracts of them had in former ages been arable land, and as appears (by the regularity and form of the ridges) at ſome unknown period when huſbandry was better underſtood than it now generally is in the Highlands. I thought theſe grounds might by a ſhort proceſs be again reſtored to their former fertility, and in the proceſs ſave my young ſtock from periſhing. In execution of this idea, the ſtout heath was burnt, and what from conſtant paring had left for ages an unproductive ſurface, was laid below by the plough, which re-produced a fine black mould to light. This land was laſt ſummer croſs-ploughed, I believe to the extent of thirty acres, marl laid on, winter tare. rape, rye, and turnip ſeed ſown, which, I am informed, have a tolerable appearance. As much more ground of the ſame ſort as the plough can accompliſh from other works has ſince

been turned up to receive the winter froſts, and marl and green crops ſhall next year ſucceed, ſo that a conſtant ſucceſſion of ſaving food will thus be obtained for the hogs, and a permanent ſubject of great value produced to the country, from a *caput mortuum*. In caſe it is thought next ſpring, that the land which is now in green crop to be paſtured off by the hogs, is not capable of producing a good white crop of oats or barley, it will then be put under a regular crop of potatoes or turnips with dung, which manure is obtained, beſides what can be ſpared from my arable farm, by driving what belongs to cotters, who get their potatoe, &c. by that means rent free. Whichever year this white crop may be ſown with permanent graſſes and reaped, it is calculated to pay the whole expenses of labour, ſeed, marl, and dung, expended during the three or four preceding years. But this proceſs coming more properly under the head of experimental agriculture, I ſhould not have mentioned it here, only as far as I conſider it to be connected with the rearing and ſecurity of the young Merino flock, which both in the preſent and future years will be very materially benefited thereby.

The next trial or circumſtance of comparative hardineſs in each race, to that of numbers ſold in the ſcore, was that of actual condition in the month of March laſt; when it was repreſented to me the Merino croſs appeared in lower condition than the others. I thought this notion aroſe from the cloſeneſs of the wool, making the carcaſe appear more diſtinctly than in the other breeds. To aſcertain this fact, I directed an account of their average weight to be ſent to me, which ſtands as follows: at the ſame time their ſizes and weight are to be conſidered accordiug to the ſuppoſed weight of their reſpective ſires and dams attermentioned.

Suppoſing then all the rams of different ſorts to be about the ſame weight, 14 lib. per quarter, from whence the groſs number of lambs proceeded, the ewes are ſuppoſed to have differed nearly as follows: Southdown 12 lib. Linton 10 lib. and Cheviot 8 lib. per quarter.

On the 28th March laſt, hogs of the Spaniſh and Southdown croſs weighed 14 ſtones; hogs, Southdown and Cheviot rams with Linton ewes, firſt croſs, 3 ſtones 1½ lib. Spaniſh rams and Cheviot ewes, firſt croſs, 2 ſtones 12 lib. which ſhows that the weight of the latter increaſed moſt. Their dams being 8 lib. lighter, themſelves only 3½ lib. lighter than the Liuton croſs. From the above period, 28th March, all the hogs were ſhifted to a better paſture, the braxy appeared no more, and they continued to mend in condition every day, until we came to the next proceſs concerning them, as to the weight and price of their wool, on an average per fleece, &c. which took place in July laſt, 1807. Unfortunately for the encouragement of wool growers, that article fell very much in price this year. Mr. Baird, however, gave as formerly 5s. per lib. for the pure Merino. He receives 24 lb. to the ſtone.

In four Merino fleeces there were 26 lib. which were conſidered as a ſtone, make 6l. 10s. per ſtone—12s. 6d. per fleece—5s. per lib.

Merino rams, with Southdown and Cheviot, laid or ſmeared hogs, yielding 5½ fleeces to the ſtone, 2l. 7s. 3d. per fleece—1s. 8d. per lib.

The pure Southdown white wool unſmeared, ſame price as above.

Hogs of the firſt croſs of Southdown and Cheviot rams, with Linton ewes, took 8½ fleeces, ſmeared per ſtone 14s. 6d.—1s. 8½d. per fleece—7¼d. per lib.

The Linton white wool waſhed according to common cuſtom, the ſame. The wool of the common country breed unwaſhed, took on an average 10 fleeces for a ſtone, 8s.=9½d.=4d. per lib. Here occurs a great inſtance of comparative advantage in the Spaniſh over the Cheviot aud Southdown croſſes of the ſame year, in their reſpective weight of fleeces, and amount of price, with the produce of the Linton ewes, although croſſed by rams ſo ſuperior to their own breed. This difference is at the preſent time more clearly ſhown by what was at the ſame period received by the tenants of the common country ſtocks of ram-

noch, &c. where I am informed that although unwaſhed, it required on an average ten fleeces to make out the ſtone, for which allowing 8s. (being above the average price) makes the fleece 9½d. and the lib. 4d. as in the above table.

My profeſſional duties this year ſtill requiring a longer abſence from home, than proper attention to ſo large a farm demanded, I in the month of July laſt let off very advantageouſly the greateſt portion of hill-ground belonging to my farm, and I intend in the enſuing year to ſell off the whole of the black faced ſort, and theſe croſſes afterwards, with every other breed of ſheep on the farm, which has not an admixture of the Spaniſh; and for them I ſtill retain ſufficient ſummer and winter paſture for maintaining a large number. On this ſubject I was happy to receive a letter in Auguſt laſt, from my South-country ſhepherd, who has become a convert in favour of, after being before a moſt decided opponent to the introduction of the Merino breed. He, in common with all other perſons who were reckoned to have ſkill in the neighbourhood, deprecated their extenſion as a flock. As I conſider him, however, as an excellent judge of ſheep in general, I read with much ſatisfaction that part of his letter requeſting an addition of Merino ewes, adding, "I ſhall no more be againſt the Spaniſh ſheep, for I am ſure they will do very well on low grounds, and ſhall be the moſt profitable ſtock that ever came into this country," &c. And why not on the high grounds likewiſe? My experiments have already aſcertained that their lambs of the firſt clip throve, as well laſt year and this year, as to hardineſs and points of condition, on ſome of the Highland mountain paſtures in Scotland, as any other breed of ſheep has actually done in common with them. And therefore I think we may ſafely conclude, that the pure breed, when bred there, will anſwer equally well with the firſt, or any futnre clip or admixture; becauſe it is known from experience, that in the ſummer months, the Leiceſter lambs even, or any breed requiring the richeſt paſture, will thrive very well on high grounds, without diminution of carcaſe. Our proportion of ſummer paſture ſo far exceeding the winter in all parts of the interior High-

lands, it becomes an object of the greateſt magnitude in ſheep farming, to ameliorate the winter paſtures, in order to maintain equal number with the ſummering. This ſhews the neceſſity of purſuing the plan of improving the intermediate hills, in the manner above deſcribed, as to producing green crops for the young ſtock. With reſpect to their produce becoming more hardy, and to yield a finer ſtaple of wool than the original ſtock which we have already introduced, I am ſure that we ſhall, by perſeverance, be convinced of both facts, for the following reaſons; firſt, it is known that nature aſſimulates gradually all animals to withſtand the degrees of heat and cold, in the different regions they are deſtined to inhabit. This operation is particularly obſervable in ſheep. For inſtance, if you carry any ſort of ſheep to America or the Weſt Indies from Britain, the wool will degenerate in every generation, whatever attention is paid.* But continue to breed from the beſt or worſt wooled ſheep of any race imported to the Britiſh Iſlands, and with proper care, their ſtaple is found conſtantly to improve. Secondly, as ſheep obtain their cloſeſt and fineſt piles, during the winter months, the coldeſt climate, with wholeſome and plentiful paſtures, will conſequently produce the fineſt wools. The old Scots white-faced breed, and what is ſtill called the Shetland, are inſtances of this fact, although theſe animals, kept in ſmall and irregular flocks, have met with great neglect and bad treatment. But their ſmallneſs of carcaſe has been, and is likely to continue much againſt their further propagation. Thirdly, as to the fineneſs of the Merino wool being peculiar to the warm climate of Spain, there can be no greater miſtake, as it is only in winter, as here, that the Spaniſh flocks leave their mountain paſtures, from the neceſſity of obtaining food where it can be found on lower grounds; and it is now proved by his Majeſty's ſtock, the Bath Agricultural Society, Lord Somerville, and various other breeders of the Merino race, that their wool has already arrived at

* Though this be generally believed, no regular experiments have been made to aſcertain the fact.

greater perfection in England, and in new South Wales, even to produce a higher price than what is actually imported from Spain. And, fourthly, I have found, by three winter's experience, that the Merino fleeces have weighed about a ſixth more than they did when in his Majeſty's flock; that being kept conſtantly out, they are more hardy than goats in reſiſting the ſeverities of the weather in wet or cold, although in this climate goats acquire a much cloſer and longer pile than the ſame ſpecies are furniſhed with when more to the ſouthward, and that conſequently, there is every reaſon to believe, when the Merino breed become natives, and brought up to every ſeverity of the climate from lambs, they will prove more hardy than the Linton breed, which, like the goat, has a great proportion of hair in their covering, admitting the rain and ſleet without much reſiſtance into their ſkins, thereby in bad ſeaſons becoming ſubject to rot and other diſorders.

I ſhall now ſtate the actual number and diſpoſal of my Merino flock for this ſeaſon, ſince a very conſiderable addition has been made to it; and alſo what increaſe I expect from it next year.

The hogs of the Spaniſh croſs on Southdown, Cheviot, and Leiceſter ewes, amount in all to 71, which are in very good order, hardly any loſt by braxy, and were treated exactly as the ſame kinds were laſt year, except that as lambs, they were kept to the month of November, on ſtill higher grounds than their predeceſſors. But what has occaſioned the greateſt increaſe, and proſpect of extended ſucceſs in the pure breed, proceeds from a lot of 85 Merino ewes, and two rams, which I was fortunate enough to get ſafely home on the firſt of October laſt, out of 100 ewes, and the above two rams which I purchaſed laſt September, in Glouceſterſhire; and notwithſtanding a long drive from that country to London, from thence an uncomfortable paſſage to Dundee, and conſequent drive to Lude, they have been mending every day ſince their arrival, and are now reported to be in ſuch good condition, as to be perfectly proof againſt the ſeverities of the winter and approaching ſpring. With them

the two former Merino rams have been put; the two rams which accompanied them were put to the Spaniſh, Southdown, and Cheviot 1ſt and 2d croſs gimmers, together with the Southdown and Cheviot ewes, about 80 in all. And 27 of the ſhear rams of the Spaniſh, Southdown and Cheviot 1ſt croſs were put to 470 of the ewes and gimmers of the Southdown and Cheviot 1ſt croſs or Linton ewes. Thus in the enſuing month of July 1808, I expect to have weaned from the above deſcriptions of ewes about 220 of the 1ſt claſs of wool; 120 of the 2d, including 1ſt croſs on the Southdown and Cheviot ewes, and 440 of the 3d claſs, making in all for clip 1809, about 780 ſheep of Merino pure, and Merino admixture. My ſales may then commence of young rams aud ewes, the hardineſs of which will make them anſwer on any wholeſome paſture whatever. In the enſuing year the whole of the other croſſes and black-faced ewes will be ſold according to particular advertiſements which are to be made of them; on which occaſions farmers and ſheep breeders will have full opportunities on the ſpot, of examining critically the whole ſyſtem of management which I have detailed in this letter, and of comparing the nature of the ſoil and paſture with their own.

After all that has been ſaid, I am ſorry to think that from the ſettled prejudices which ever encounter in their commencement all projects which go to ſuch changes as are here propoſed, we can have but feeble hopes of obtaining much attention for a length of time. Being however ſo much convinced that this breed will be the moſt profitable that ever came into the country, I ſhould fail certainly in a public and private duty, if I did not continue to ſtrive under every difficulty which may occur, and perſevere in theſe experiments. The efforts of individuals far detached, cannot influence rapidly on a wide extended plain, which has not varied much theſe laſt twenty years, in the general breeding of Linton ſheep throughout Scotland. In attempting this change of ſentiment and practice, as to the introduction of another race, we are to look forward for the continued exertions of the National Agricultural Board, of the

Highland Societies, and of ſuch patriotic characters as Lord Somerville, Sir John Sinclair, and Dr. Parry, who will no doubt continue both by their example and writings, to open the minds of the community to a comprehenſion of this great channel of national wealth: ſo that before long, his Majeſty's paternal intentions of diffuſing ſo great a benefit generally among his ſubjects, may have their full effect.

As this letter has already extended far beyond the bounds I had laid down with reſpect to the Merinos at Lude, I ſhall not now proceed to further deſcriptions of their ſucceſs in other quarters, which I have lately heard of. But in the mean time, wiſhing you every facility in accompliſhing your patriotic intentions, I ſhall beg leave to ſubſcribe myſelf, with much regard,

Dear Sir,

Your moſt obedient and humble Servant,

W. ROBERTSON.

SOME CIRCUMSTANCES

RELATIVE TO

MERINO SHEEP,

CHIEFLY COLLECTED

FROM THE SPANISH SHEPHERDS, WHO ATTENDED THOSE OF

THE FLOCK OF PAULAR,

LATELY PRESENTED TO HIS MAJESTY BY THE GOVERNMENT OF SPAIN; WITH PARTICULARS RESPECTING THAT GREAT NATIONAL ACQUISITION, AND ALSO RESPECTING THE SHEEP OF THE FLOCK OF NEGRETE, IMPORTED FROM SPAIN BY HIS MAJESTY, IN THE YEAR 1791. FROM COMMUNICATIONS TO THE BOARD OF AGRICULTURE.

Soho Square, 18th February, 1809.

SIR JOHN—At a time like the preſent, when Spaniſh wools, though at a price unheard of in the annals of traffic, ſtill continue to find a market, thus clearly proving, that their value in the eſtimation of the conſumer, is far above any price that has been hitherto offered for them by the manufacturer, and when we muſt all agree, that the interruption of our trade with Spain may ſtill continue for ſome time longer, I truſt that a paper written with a view to facilitate the production of this valuable article in the United Kingdom, and to communicate ſome information relative to the important preſent of Merino ſheep lately received by our moſt gracious Sovereign from the Government of Spain, will be intereſting to you, Sir, I beg the favour of you, in caſe you ſhall approve it, to do me the honour of placing it at the diſpoſal of the very uſeful Inſtitution over which

you preſide, with ſo much advantage to the agricultural intereſts of this country. I have the honour to be, Sir,

Your obedient and faithful humble Servant,

JOSEPH BANKS.

Sir John Sinclair, Bart. Preſident
of the Board of Agriculture.

SOME CIRCUMSTANCES RELATIVE TO MERINO SHEEP, CHIEFLY COLLECTED FROM THE SPANISH SHEPHERDS, WHO ATTENDED THOSE OF THE FLOCK OF PAULAR, LATELY PRESENTED TO HIS MAJESTY BY THE GOVERNMENT OF SPAIN; WITH PARTICULARS RESPECTING THAT GREAT NATIONAL ACQUISITION; AND ALSO RESPECTING THE SHEEP OF THE FLOCK OF NEGRETE, IMPORTED FROM SPAIN BY HIS MAJESTY, IN THE YEAR, 1791.

A conſiderable part of Eſtremadura, Leon, and the neighbouring provinces of Spain, is appropriated to the maintenance of the Merino flocks, called by the Spanirds, Trashumantes, as are alſo broad green roads, leading from one province to the other, and extenſive reſting places, where the ſheep are baited on the road. So careful is the police of the country to preſerve them, during their journies from all hazard of diſturbance or interruption, that no perſon, not even a foot paſſenger, is ſuffered to travel upon theſe roads while the ſheep are in motion, unleſs he belongs to the flocks.

The country on which the ſheep are depaſtured, both in the ſouthern and the northern parts, is ſet out into diviſions, ſeparated from each other by land-marks only, without any kind of fences; each of theſe is called a Deheſa, and is of a ſize capable of maintaining a flock of about a thouſand ſheep, a greater number, of courſe, in the ſouth country, where the lambs are reared, and fewer in the north country, where the ſheep arrive after the flock has been culled.

Every proprietor muſt poſſeſs as many of theſe in each province, as will maintain his flock. In the temperate ſeaſon of winter and ſpring, the flocks remain in Eſtremadura, and there the ewes bring forth their lambs in December. As ſoon as the increaſing heats of April and May have ſcorched up the graſs, and rendered the paſturage ſcanty, they commence their march towards the mountains of Leon, and after having been ſhorn on the road, at vaſt eſtabliſhments called Eſquileos, erected for that purpoſe, paſs the ſummer in the elevated country, which ſupplies them with abundance of rich graſs; and they do not leave the mountains till the froſts of September begin to damage the herbage.

A flock in the aggregate is called a Cavana; this is divided into as many ſubdiviſions as there are thouſands of ſheep belonging to it; each ſheep, beſides being ſear-marked in the face with a hot iron when young, is branded after every ſhearing, with a broad pitch brand, generally of the firſt letter of the name of the proprietor, and each ſubdiviſion is diſtinguiſhed from the reſt, by the part of the ſheep's body on which this mark is placed.

By the laws of the Meſta, each Cavana muſt be governed by an officer called Mayoral; for each ſubdiviſion of a thouſand ſheep, five ſhepherds and four dogs are appointed. Some of theſe inferior ſhepherds obtain the office of Rabadan, the duty of which is to give a general ſuperintendance under the controul of the Mayoral, alſo to preſcribe and adminiſter medicines to the ſick ſheep. At the time of travelling, and when the ewes are yeaning, one or two extra ſhepherds are allowed for each thouſand ſheep.

The number of Merino ſheep in Spain, is eſtimated by Burgoyne at 6,000,000; theſe of courſe muſt be attended by 30,000 ſhepherds, and 24,000 dogs at ordinary times, and they find occaſional employment for 5 or 10,000 additional perſons in the ſeaſons of lambing, and of travelling.

In their journey, each ſubdiviſion is attended by its own ſhepherds and dogs, and kept ſeparate as far as may be from

all others. The duty of the dogs is to chaſe the wolves, who are always on the watch when the ſheep are upon the road, and are more wily than our foxes; they are taught alſo, when a ſick ſheep lags behind unobſerved by the ſhepherds, to ſtay with and defend it, till ſome one returns back in ſearch of it. There are beſides in each ſubdiviſion about ſix tame wethers, called Manſos; theſe wear bells, and are obedient to the voice of the ſhepherds, who frequently give them ſmall pieces of bread; ſome of the ſhepherds lead, the Manſos are always near them, and this diſpoſes the flock to follow.

Every ſheep is well acquainted with the ſituation of the Deheſa to which its ſubdiviſion belongs, and will at the end of the journey go ſtraight to it, without the guidance of the ſhepherds; here the flock grazes all the day under the eyes of the attendants; when the evening comes on, the ſheep are collected together, and they ſoon lie down to reſt; the ſhepherds and their dogs then lie down on the ground round the flock, and ſleep, as they term it, under the ſtars, or in huts that afford little ſhelter from inclement weather; and this is their cuſtom all the year, except that each is allowed, in his turn, an abſence of about a month, which he ſpends with his family; and it is remarkable, that the families of theſe ſhepherds reſide entirely in Leon.

The ſhepherds who came with his Majeſty's flock, were queſtioned on the ſubject of giving ſalt to their ſheep; they declared that this is only done in the hotteſt ſeaſon of the year, when the ſheep are on the mountains; that in September it is left off; and that they dare not give ſalt to ewes forward with lamb, being of opinion that it cauſes abortion.

It is ſcarcely credible, though it appears on the beſt authority to be true, that under the operation of the laws of the Meſta, which confide the care of the ſheep to the management of their ſhepherds, without admitting any interference on the part of the proprietor, no profit of the flock comes to the hands of the owner, except what is derived from the wool; the carcaſes of

the culled ſheep are conſumed by the ſhepherds, * and it does not appear that any account is rendered by them to their employers, of the value of the ſkins, the tallow, &c.; the profit derived by a proprietor from a flock, is eſtimated on an average at about one ſhilling a head, and the produce of a capital veſted in a flock is ſaid to fluctuate between five and ten per cent.

The ſheep are always low kept. It is the buſineſs of each Mayoral, to increaſe his flock to as large a number as the land allotted to it can poſſibly maintain; when it has arrived at that pitch, all further increaſe is uſeleſs, as there is no ſale for theſe ſheep, unleſs ſome neighbouring flock has been reduced by mortality below its proper number; the moſt of the lambs are therefore every year killed as ſoon as they are yeaned, and each of thoſe preſerved is made to ſuck two or three ewes; the ſhepherds ſay, that the wool of an ewe, that brings up her lamb without aſſiſtance, is reduced in its value.

At ſhearing time the ſhepherds, ſhearers, waſhers, and a multitude of unneceſſary attendants, are fed upon the fleſh of the culled ſheep; and it ſeems that the conſumption occaſioned by this ſeaſon of feaſting, is ſufficient to devour the whole of the ſheep that are draughted from the flock. Mutton in Spain is not a favourite food; it is not in that country prepared for the palate as it is in this; we have our lamb-fairs, our hog-fairs, our ſhearling-fairs, our fairs for culls, and our markets for fat ſheep, where the mutton, having paſſed through theſe different ſtages of preparation, each under the care of men, whoſe ſoil and whoſe ſkill is beſt ſuited to the part they have been taught by their intereſt to aſſign to themſelves, is offered for ſale, and if fat and good, it ſeldom fails to command a price by the pound, from 5 to 10 per cent. dearer than that of beef. In Spain, they have no ſuch ſheep-fairs calculated to ſub-divide the education of each animal, by making it paſs through many hands,

* The ſhepherds on diſcovering the drift of the queſtions put to them on this head, ſaid that in ſettling the wages of the ſhearers and waſhers, at the Eſquileos, allowance is made for the mutton with which they are fed.

as works of art do in a manufacturing concern, and they have not any fat ſheep markets that at all reſemble ours; the low ſtate of grazing of Spain ought not therefore to be wondered at, nor the poverty of the Spaniſh farmers; they till a ſoil ſufficiently productive by nature, but are robbed of the reward due to the occupier, by the want of an advantageous market for their produce, and the benefit of an extenſive conſumption; till the manufacturing and mercantile parts of a community become opulent enough to pay liberal prices, the agricultural part of it cannot grow rich by ſelling.

That the ſole purpoſe of the journeys taken annually by theſe ſheep, is to ſeek food in places where it can be found, and that theſe migrations would not be undertaken, if either in the northern or the ſouthern provinces, a ſufficiency of good paſture could be obtained during the whole year, appears a matter of certainty. That change of paſture has no effect upon their wool, is clear, from all the experiments tried in other countries, and in Spain alſo, for Burgoyne tell us, that there are ſtationary flocks, both in Leon and Eſtremadura, which produce wool quite as fine as that of the Traſhumantes.

The ſheep lately preſented to his Majeſty are of the Cavana of Paular, one of the very fineſt in point of pile, and eſteemed alſo above all others for the beauty of carcaſe. In both theſe opinions, Mr. Laſteyrie, a French writer on ſheep, who lived many years in Spain, and paid diligent attention to the Merino ſheep, entirely agrees; he alſo tells us, that the Cavana of Negrete, from whence the ſheep imported by his Majeſty, in the year 1791, were ſelected, is not only one of the fineſt piles, but produces alſo the largeſt carcaſed ſheep of all the Merinos. Mr. Burgoyne agrees with him in aſſerting, that the piles of Paular, Negrete, and Eſcurial, have been withheld from exportation, and retained for the royal manufactory of Guadalaxara, ever ſince it was firſt eſtabliſhed.

The Cavana of Paular conſiſts of 36,000 ſheep; it originally belonged to the rich Carthuſian Monaſtery of that name, near Segovia; ſoon after the Prince of the Peace roſe into pow-

er, he purchaſed the flock from the Monks, with the land belonging to it, both in Eſtremadura and in Leon, at a price equal to twenty French francs a head, 16s. 8d. Engliſh. All the ſheep lately arrived are marked with a large M. the mark of Don Manuel.

The number ſent from Spain to the King was 2000, equal to two ſub-diviſions of the original Cavana; to make the preſent the more valuable, theſe were ſelected by the ſhepherds from eight ſub-diviſions, in order to chooſe young, well ſhaped, and fine woolled animals. This fact is evident, from the marks which are placed on eight different parts of the bodies of the ſheep now at Kew.

The whole number embarked was 2,214; of theſe, 214 were preſented by the Spaniards, to ſome of his Majeſty's Miniſters, and 427 died on the journey, either at ſea, or on their way from Portſmouth to Kew. His Majeſty was graciouſly pleaſed to take upon himſelf the whole of the loſs, which reduced the royal flock to 1573; ſeveral more have ſince died. As the time of giving the ram in Spain is July, the ewes were full of lamb when they embarked, ſeveral of them caſt their lambs when the weather was bad at ſea, and are rendered ſo weak and infirm by abortion, that it is much to be feared more will die, notwithſtanding the great care taken of them by his Majeſty's ſhepherds. A few have died of the rot. This diſeaſe muſt have been contracted by halting on ſome ſwampy diſtrict, in their journey from the mountains to the ſea at Gijon, where they were embarked, as one ſheep died rotten at Portſmouth; there is every reaſon however to hope, that the diſeaſe will not ſpread, as the land on which they are now kept has never been ſubject to its ravages, being of a very light and ſandy texture.

It is well worthy of obſervation, that although the Swedes, the Saxons, the Danes, the Pruſſians, the Auſtrians, and of late, the French, have, either by the foreſight of their governments, or the patriotic exertions of individuals, imported Merino ſheep, no nation has hitherto ventured to aſſert, that they poſſeſs the complete, and unmixed race of any one Cavana;

this circumſtance does not appear to have been attended to any where but in England; though in fact, each Cavana is a ſeparate and diſtinct breed of ſheep, not ſuffered by the Spaniards to mingle with others. The difference in value of the wool of different Spaniſh flocks is very great; at this time when Spaniſh wool is unuſually dear, the prima piles are worth more than 7s. a pound, and yet the inferior ones ſcarce reach 5s.* Even the French, attentive as that nation generally is to all things that concern the intereſt of individuals, appear to have overlooked this circumſtance, and to have contented themſelves with making up the numbers of their importations, without paying any regard to it; they have not at leaſt ſtated in any one of their publications, that attention was paid to the ſecuring ſheep of a prima pile, and keeping the breed of that pile pure and unmixed, after they had obtained it.

Our merchants in Spaniſh wool range the prima piles in the following order of value, as appears by a ſtatement in the year 1792.

Paular.
Negrete.
Muro.

Patrimonio, and fifteen more not neceſſary to be enumerated. Mr. Laſteyrie, the French writer on ſheep, ranges them not very differently; he ſtates them as follows; but both Engliſh and French agree that all the prima piles are nearly equal in fineneſs of fibre, and conſequently in value to the manufacturer.

Eſcurial, called by us Patrimonio.
Guadalupe.
Paular.
Infantado.
Montareo.
Negrete, &c.

The Danes, he tells us, procured their ſheep from the beſt

* Since this was written, Spaniſh wools have riſen to an exorbitant price, Prima Leoneſa is this week rated in the Farmer's Journal at 20s. a pound, and Seville at 13s. 6d.

piles; but there is no appearance of their having, ſince they obtained them, kept the flocks ſeparate, nor are they at preſent ſo remarkable for fine wool as the Saxons, whoſe wool is now at leaſt as fine as that of Spain is, upon an average of prima and ſecond rate piles.

The Swedes were the firſt people who imported the Spaniſh breed; this good work was undertaken and completed by the patriotic exertions of a merchant of the name of Alſtroemer, in the year 1723 The next who obtained an importation of Merino ſheep were the Saxons, who are indebted for the benefits they enjoy from the improvement of their wools to the Prince Xavier, Adminiſtrator of the Electorate during the minority of the Elector, and brother-in-law to the King of Spain. The Prince obtained a flock of theſe valuable animals in 1766, and in 1778 an addition to it of 100 rams and 200 ewes. The Danes followed his uſeful example, as alſo did both Pruſſia and Auſtria Every one of theſe countries continue at this moment to profit largely by the improvement theſe ſheep have occaſioned in their agricultural concerns. So far from truth is the too common aſſertion that their wool will not continue fine in any country but Spain, that in the year 1806, when the ports of Spain were cloſed againſt us, a very large quantity of fine wool, the produce of German Merino ſheep, was imported into this country from Hamburgh, and uſed by our manufacturers as a ſubſtitute for Spaniſh wool. In truth, ſome of this wool was ſo fine that it carried in the Britiſh market as high a price as the beſt Spaniſh piles were ſold for, in times of peace and amity.

In the year 1787 the King, guided by thoſe patriotic motives which are ever active in his Majeſty's mind, gave orders for the importation of Merino ſheep for his own uſe, and for the improvemeut of Britiſh wool; as it was doubtful at that time whether the King of Spain's licenſe, without which theſe ſheep cannot be embarked at a Spaniſh port, could be obtained, it was deemed adviſeable to make the firſt purchaſes in the parts of Eſtremadura adjoining to Portugal, and to ſhip the ſheep

for England at Liſbon. The firſt importation of theſe valuable animals arrived in March 1788, and a little flock of them was ſoon after completed; but as theſe were of various qualities, having been draughted from different Cavanas, his Majeſty was pleaſed to order au application to be made to the King of Spain by Lord Auckland, then his Majeſty's Miniſter at that Court, for permiſſion to import ſome ſheep draughted from one of the prima piles. This was obtained, and a little flock, conſiſting of thirty-ſix ewes, four rams, and one manſo, arrived ſafe and well at Dover, in 1791. Theſe ſheep had made a part of the Cavana called Negrete, one of the three piles reſtricted from importation, and which is likewiſe remarkable for producing the largeſt carcaſed ſheep that are to be found among the Merino flocks, as has been before ſtated.

On the receipt of this treaſure, for ſuch it has ſince proved itſelf to be, the King, with his uſual prudence and foreſight, ordered the whole of the ſheep that had been procured by the way of Portugal to be diſpoſed of, which was immediately done, and directed the Negrete breed to be increaſed as much as poſſible, and maintained in its utmoſt purity.

From that time to the preſent the opinion of the public, ſometimes perhaps too unwary, and at others too cautious, in appreciating the value and adopting the uſe of novel kinds of ſheep, has gradually inclined to give that preference to the Merinos which is ſo juſtly their due. At firſt it was impoſſible to find a purchaſer willing to give even a moderate price either for the ſheep or for their wool; the ſhape of the ſheep did not pleaſe the graziers, and the wool ſtaplers were utterly unable to judge of the merit of the wool, it being an article ſo many times finer and more valuable than any thing of the kind that had ever before paſſed through their hands. The butchers however were leſs timorous; they readily offered for the ſheep, when fat, a fair mutton price; and there are two inſtances in which when the fat ſtock agreed for was exhauſted, the butcher who had bought them anxiouſly enquired for more, becauſe he ſaid the mutton was ſo very much approved of by his beſt cuſtomers.

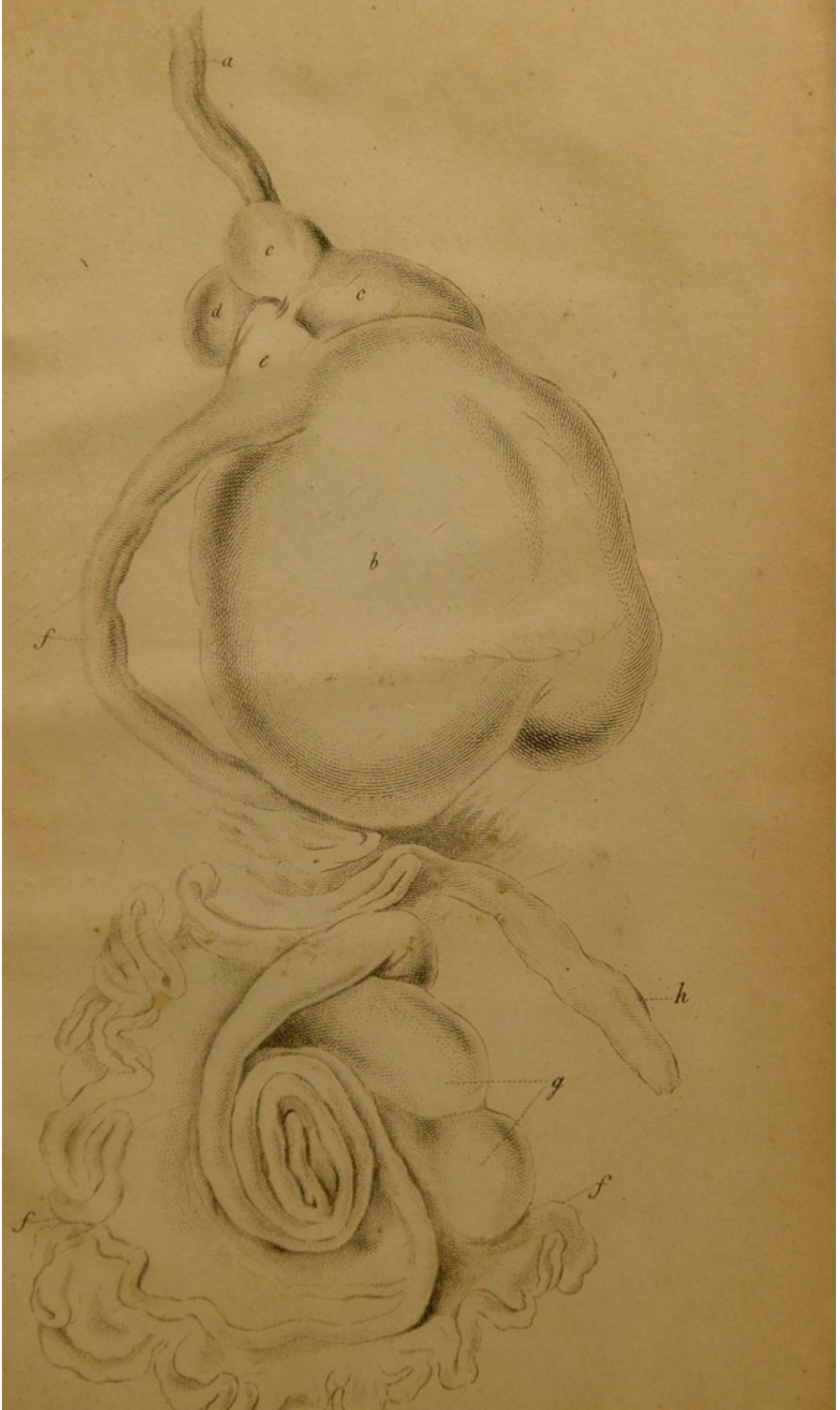
It was not however till the year 1804, thirteen years after their firſt introduction, that it was deemed practicable to ſell them by auction, the only certain means of placing animals in the hands of thoſe perſons who ſet the higheſt value upon them, and are conſequently the moſt likely to take proper care of them. The attempt, however, ſucceeded; and the prices given demonſtrated, that ſome at leaſt of his Majeſty's ſubjects had at that time learned to put a due value on the benefit his Royal patriotiſm offered to them. One of the rams ſold at the firſt ſale for 42 guineas, and two of the ewes for eleven guineas each; the average price at which the rams ſold was 19l. 4s. and that of the ewes 8l. 15s. 6d. each.

This moſt uſeful mode of diſtribution has ſince that time been annually continued, and the ſales have taken place in the beginning of Auguſt. The laſt ſale was held on the 17th of Auguſt, 1808, when the higheſt price given for a ram was 74l. 11s. for an ewe 38l. 17s. The average prices of rams was 33l. 10s. 1d. of ewes 23l. 12s. 5d.; a moſt deciſive proof not only that the flock had riſen very materially in public eſtimation, but alſo that the ſheep have not in any way degenarated from their original excellence.

The wool was at firſt found to be quite as difficult of ſale as the ſheep themſelves; manufacturers were therefore employed to make a conſiderable quantity of it into cloth, which, when finiſhed, was allowed by both woollen drapers and taylors to be quite as good as cloth made of wool imported from Spain. But even this proof would not ſatisfy the ſcruples of the wool buyers, or induce them to offer a price at all adequate to the real value of the article; it was found neceſſary, therefore, to have the wool ſcowered, and to ſell it in that ſtate as Spaniſh wool, which, though grown in England, it really was; thus managed, the ſales were eaſily effected for ſome years, at a price equal to that demanded for the prima piles of imported Spaniſh wool at the times when the bargains were made.

Time and patience have at laſt ſuperſeded all difficulties, and his Majeſty's wool has now for ſome years been ſold as clipped

Sketch of the Stomach and Intestines



The 4 Stomachs laid open

Fig. 1.

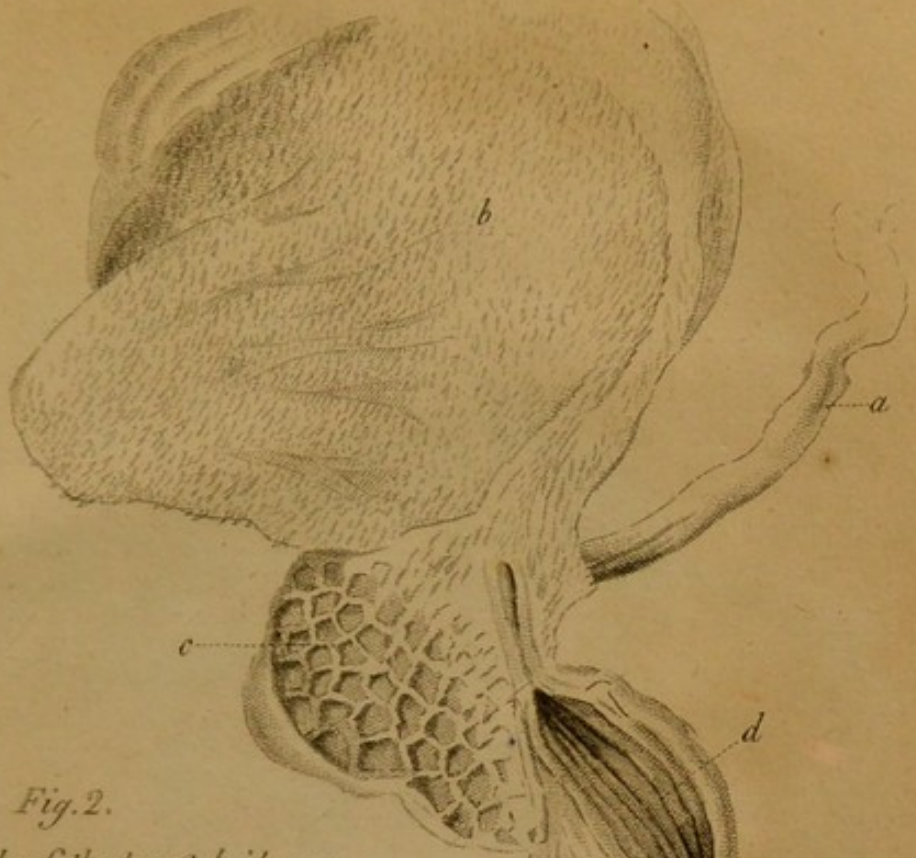


Fig. 2.

The right side of the heart laid open

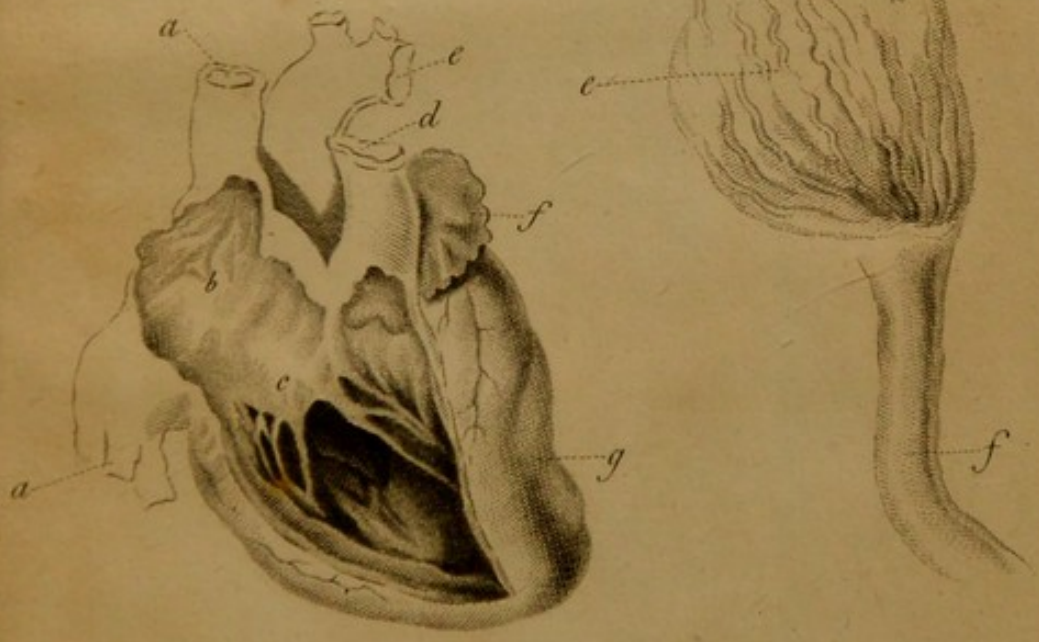
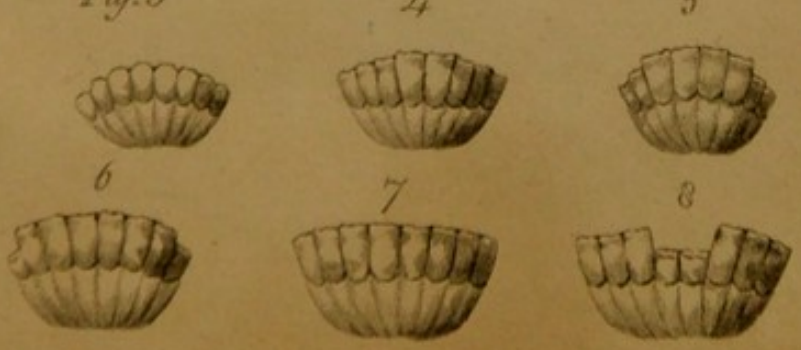


Fig. 3



13 Inches Long

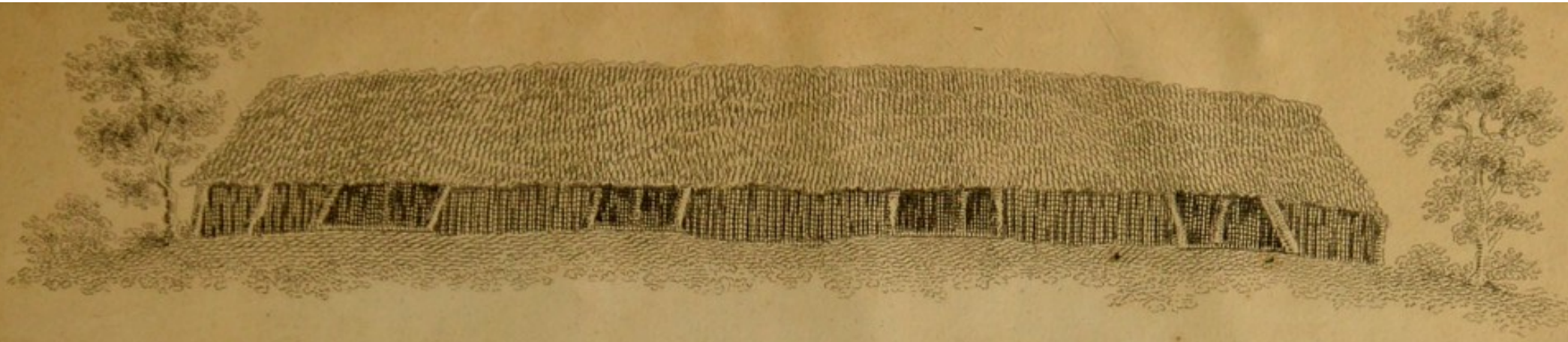
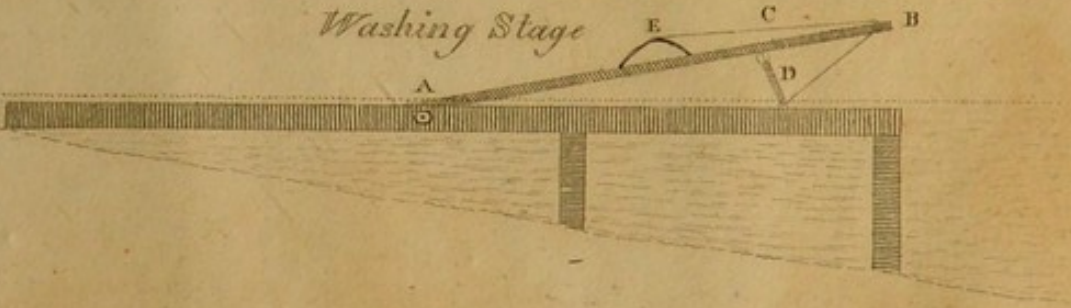
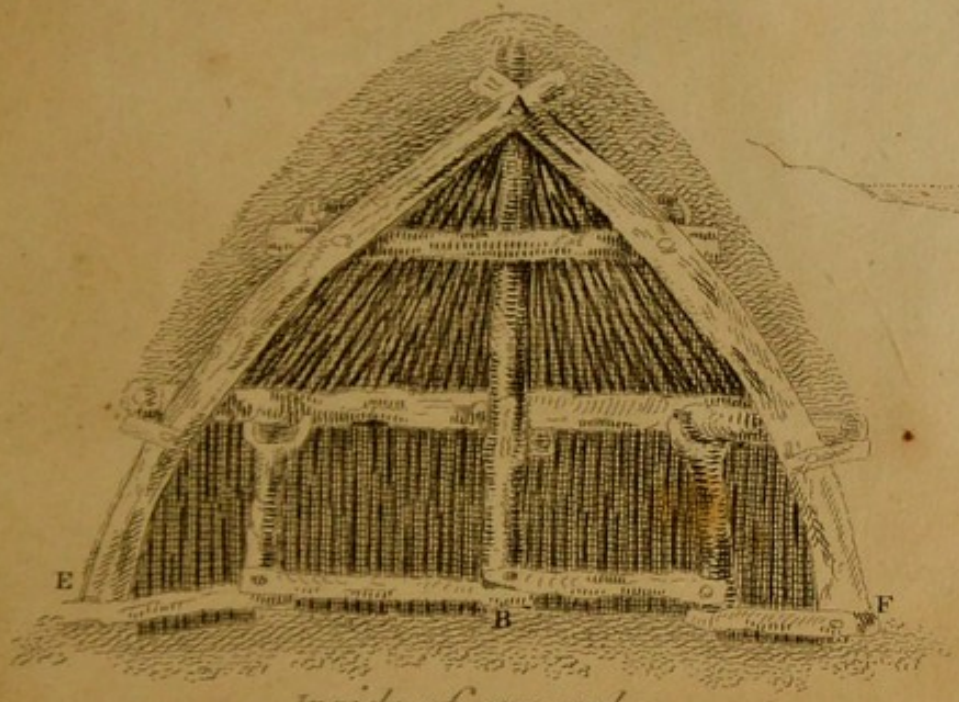


Fig.2.

Fig.1.

Washing Stage





Inside of one end of the Cot

from the ſheep's backs, the ſheep having been waſhed, and the whole management of them carried on exactly in the Engliſh manner, at a price not lower than 4s. 6d. a pound, which allowing for the loſs of weight in the ſcowering, coſts the buyer at leaſt 5s. 6d. a pound, a tolerable price for Spaniſh wool when plenty of it could be produced, though not poſſibly ſo high a one as ought to have been given or as will be obtained for the Anglo Negrete pile, when the value of the article is fully underſtood.

The race of another capital Cavana has now been added to the riches of this country, the Paular, and the draught from it is larger than on any other occaſion has been ſuffered to leave Spain; the animals have been ſelected with ſkill and attention, the pile they belong to ſtands at the very top of our Engliſh liſt, and the ſheep have been moſt fortunately placed at the diſpoſal of our moſt gracious King, whoſe ſhepherds have demonſtrated to the public, in an experience of 17 years of their management of theſe intereſting animals, that they can not only continue the breed in its original purity, but can alſo preclude all danger of degeneration in the article of wool. What more can be wiſhed for on this head?

That ſpirit of patriotiſm, which induced our Sovereign to declare himſelf the protector of the purity of the Negrete race, will alſo, it is moſt earneſtly to be hoped, induce his Majeſty to extend the ſame protection to the newly arrived Paulars; by this meaſure, and by this alone, the public will be effectually guarded againſt all danger of the admiſſion of impure blood, which the avarice of ill-judging individuals, ſeeking after a premature improvement of the carcaſe, has too often, it is feared, introduced into our Engliſh flocks. Thus protected, the twofold treaſure obtained for the advantage of his ſubjects by his Majeſty's wiſdom and foreſight, will become a perennial fountain of true Merino blood, to which thoſe agriculturiſts who are wiſe enough to adopt the breed, may from time to time reſort, to correct their errors, if they fall into bad practices, to carry

on their croſſes, if any ſuch are found to be advantageous, to the higheſt degree of perfection, and to reſtore the originality of their ſtock, if, in conſequence of any unſucceſsful experiment, it ſhould have ſuffered deterioration.

26th December, 1808.

OF

THE MERINO SHEEP

IN

ROSS-SHIRE.

Some years ago, a ſhip freighted by the Earl of Selkirk, to carry Merino ſheep from Sweden to America was ſtranded near Fort George. The ſheep were ſold, and purchaſed by ſeveral people, none of whom have paid proper attention to the breed, except Mr. Young, bookſeller at Inverneſs, who, foreſeeing the profit likely to be derived from a flock of fine woolled animals, entered on a pretty extenſive ſpeculation, which is likely to turn out extremely well. I regret being under the neceſſity of deferring a more full account of this flock, till I publiſh my Survey of Roſs and Cromarty. Mr. Young has not found time to fulfil his promiſe of ſending me a communication for this work, In the mean time I muſt expreſs my hope, that Mr. Young will alter ſome parts of his management, in order to give every advantage to his Merinos and croſſes; and for preſerving the wool ſo as to ſend it to market in a proper ſtate for being manufactured. I have lately read ſome obſervations on ſmearing, in the Farmer's Magazine, which are certainly deſerving of notice. But I can only remark here, that ſheep require ſmearing in proportion to the coarſeneſs of their wool. The wool of Merino

ſheep is ſpoiled, and the health of the ſheep greatly injured by ſmearing. In the ſummer of laſt year, I ſaw ſome Swediſh Merino tups from Redcaſtle, expoſed for ſale at Beauly. They were part of the deſcendants of thoſe already mentioned; but their wool did not betray the ſlighteſt ſymptom of care. It was very coarſe and hard. Some gentlemen, who did not ſeem to be acquainted with the method of comparing fleeces, bought theſe ſheep; which I regret, becauſe I fear they will be diſappointed on bringing their wool to market. I truſt that the diſappointment will be attributed to the true cauſe. Nothing excites prejudice againſt any propoſed improvement ſo much as failure in experiment.

Mr. M'Leod of Geanies and myſelf are croſſing the Cheviot breed with Merino rams. One of his rams is a Swediſh Merino, and the other from the King's flock. I have now ſix rams; one of them I purchaſed from John Maitland, Eſq. M.P.; two from his Majeſty; and the other three were reared on my farm. They were never allowed to go even into an open cot for ſhelter, and they have withſtood the moſt ſevere weather. Not one of my Merinos has ever been ill in the ſlighteſt degree; and though my ewes are very old, they have yeaned as fine lambs as I could wiſh for. Mr. M'Leod has not been ſo fortunate, ſome of his having died; but all his croſs-bred lambs are doing well. I have alſo a few Southdown ewes, and a conſiderable number of their lambs from Merino tups. The whole are treated in the ſame manner, and I am happy to have it in my power to ſay, that perſons who are eſteemed good judges of live ſtock, acknowledge my flock to be one of the beſt in the country. When my experiments ſhall have been a little more extended, I ſhall communicate my ſucceſs to the public. At preſent, my object is more to multiply the number of my croſs-bred ſheep, than to be very careful in ſelection. But, though I have not ſelected any particular animals for breeding from, I have every proſpect of being able to ſhow very good carcaſes, as ſoon as the ſheep have attained a proper age for being ſlaughtered.

I have ſold my wool this year (1809) at the undermentioned prices:

Southdown, - - - - - - - - - 42s. per ſtone, of 24 libs. Eng.
Merino Southdown, 1ſt croſs, 56s. - - - - - do. - - - - -
Cheviot, - - - - - - - - - - 30s. - - - - - do. - - - - -
Merino Cheviot, - - - - - - 44s. - - - - - do. - - - - -
Pure Merino, - - - - - - - - 7s. 6d. per lib. Eng.

FINIS.