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UNITED STATES OF AMERICA.

ANTIDOTE

TO THE

H. Maynard

MERINO-MANIA

NOW PROGRESSING THROUGH THE

UNITED STATES;

OR,

THE VALUE OF

THE MERINO BREED,

PLACED BY OBSERVATION AND EXPERIENCE,
UPON A PROPER BASIS.

LOOK BEFORE YOU LEAP.

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CHANGE-WALK,
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PHILADELPHIA.

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ADVERTISEMENT.

THE object of the present publication, is not to damp the ardour of the public in the extension of the Merino breed of Sheep lately introduced into different parts of America from Spain.....It is a point of too great importance to the manufactures of our country, to thwart the tide of successful experiment, in which so many are at present engaged....But assuredly, something is also due to those individuals, who, by suddenly taking up a subject, hitherto so little attended to, and on which so little, is consequently, practically known amongst us, without the cautious information of persons in other parts of the world, may risk unnecessarily their fortunes, without adequately benefitting the community at large.... Under these impressions, perceiving the MERINO MANIA that is spreading around, it must be of consequence to have a knowledge of the real importance and value of the subject under consideration; and the Editor cannot but think he is doing essential service to his country, in thus giving a detail of the experience of Dr. Parry and others, whose communications have received the sanction of the British Board of Agriculture.

We have heard it stated, that 500, 1000, and even 1500 dollars, have been given for a Merino ram.....and that cloth from the Merino wool, has been sold at 14 and 15 dollars per yard. The present publication will evince if these prices are not beyond all limits of propriety, and whether the business thus carried on, is not likely to degenerate into a mere system of speculation, which, whilst it benefits a few, will bring ruin to thousands. It is said that Gold itself may be bought too dear.... and experience will soon determine if the present prices of these animals, are not also beyond the mark.*

* On this point, the reader may consult the very candid observations of Mr. Livingston, at p. 137-147, &c. of his Essay on Sheep.

It is not the manufacture of a few pieces of broad cloth of equal or superior quality to any imported, which is to benefit the country, if it is to be held out at a price far beyond the purses of the community. Where one person can, or, from a false pride of wishing to equal his far more affluent neighbour, at an evident injury to his family, chuses, to give such a price, which goes to benefit, not the public, but a few individuals.... hundreds must be content with an inferior texture. If we can sell broad cloth of the first quality, and of our own make, at a price considerably lower than that which the English commands...then indeed we may hope to see our Woollen Manufactures flourish through the Union....but it is absurd to expect, that patriotism will induce our citizens to give more for any thing than it is actually worth....especially as none are hereby benefited but speculators and monopolists.

Dr. Parry's communications are particularly valuable....his long acquaintance with the subject, and the extended view he has taken of it, certainly entitle him to every credit. The merit of his work, acquired for him the premium offered by the Society....a Society formed of every class of persons, calculated to advance a perfect knowledge of the different subjects to which they call the public attention.....And it is more particularly useful at present, by proving that the first cross from the Merino ram, at least that produced with the Ryeland ewe, is equally or more proper for the extension of the fine woollen sheep, than the pure Merino itself, which retards the period at which the fleece becomes of the utmost value.....If our own ewes, especially those of Smith's Island, so highly esteemed by Mr. Custis, are not deemed adequate to advance this important end; certainly some of the Ryeland ewes might be introduced from the British flocks.

The Editor has introduced the different papers, without curtailing them.....as he conceives the observations both of the authors and of their reviewers, will prove beneficial to the practical reader.....A few facts, picked up in other parts of the same work, are added, from their importance. And although the observations of Dr. Parry, &c. are more peculiarly calculated for the meridian of Great Britain, yet they will serve greatly to enlighten our own citizens, who may chuse to engage in this particular object.

AN ESSAY
ON THE NATURE, PRODUCE, ORIGIN,
AND EXTENSION OF
THE MERINO BREED OF SHEEP.

BY CALEB HILLAR PARRY, M.D. F.R.S. &c.

** Communications to the Board of Agriculture, Vol. V. Part II.*

THE Board of Agriculture having offered a premium for "The best essay on the growth of wool from the Spanish breed of sheep, or from some cross between the Spanish and British breeds in Great Britain, which shall include a detail of experiments made, with a full explanation of the advantages which may have attended them in respect of wool, carcase, application of food, freedom from distempers, cross in the breed, &c. and which shall point out the most effective means of spreading this race of sheep;" the premium was adjudged to Dr. Parry for the present Essay.

The author prefaces his subject by observing, that he is indebted to many foreign publications for the greater part of the histo-

* The following Papers on the Nature, Produce, Origin, and Extension of the Merino Breed of Sheep, now fast introducing into this Country, are the substance of several Communications lately made to the British Board of Agriculture; and are extracted from a celebrated periodical publication, entitled, "Retrospect of Philosophical, Mechanical, Chemical and Agricultural Discoveries, &c. &c."

ry of the Merino breed of sheep, and acknowledges his obligations to the writings of Bourgoanne, Pictet, and Lasteyrie, in particular; and he states, that by means of an apparatus obtained from Messrs. Jones, the opticians, he has been able to make a very accurate admeasurement of many specimens of wool, the result of which he has thrown into a supplement, annexed to the treatise.

That the importance of the question, submitted by the Board, may be more fully estimated, he has devoted one chapter to the quantity and value of superline wool imported into England from foreign countries. That the quantity may be ascertained from undoubted authority, he has availed himself of an account presented to Parliament, of wool purchased in foreign countries in 1802, 1803, and 1804. In these three years were imported from Spain 16,986,644lbs. from Holland 403,400lbs. from Portugal 400,723lbs. from Gibraltar 288,274lbs. from France 252,222lbs. from Germany 122,150lbs. from America 10,567lbs. from Prussia 3,357lbs. and from Denmark 381lbs. making a total of nearly 18 millions and a half of pounds, of which nearly 15 millions and a half were imported in Spanish or neutral vessels, and the remainder in English vessels. His inquiries among the clothiers have enabled him to state the value of this quantity to be as follows :

Sheep's wool, marked R (finest sort) - - - - -	lbs.	£.
	12,000,000, at 6s.	3,600,000
Ditto, marked F (second sort)	2,000,000, at 5s.	500,000
Ditto, marked T (third sort)	1,127,020, at 4s. 6d.	253,579
Ditto, marked K (fourth sort)	14,920, at 3s.	2,238
Lamb's wool - - - - -	165,778, at 4s. 3d.	35,227
	<hr/>	<hr/>
In foreign vessels quantity	15,307,718lbs.	value £4,391,044
	<hr/>	<hr/>
In English vessels quantity	3,160,000lbs.	
value according to the same proportions, for it could not be ascertained	- - - - -	£906,449

These accounts give the annual average of Spanish wool imported as exceeding 6,155,906lbs. weight, and the annual average value as upwards of £1,560,000 sterling.

In the next succeeding chapter he proceeds to describe the Merino breed of sheep, which produce this valuable article of importation. Their native country is Spain: the number of them in

that country is about five millions: they are divided into two sorts; those which travel from one part of the country to another, which are called "Trashumantes;" and those which remain always in the same pastures, named "Estantes." The animal is described below the middle size, in comparison with English breeds, not very unlike the Ryeland, or old Southdown breed, and by no means furnished with that form, which modern fashion has presumed to be inseparably connected with a disposition to early maturity and fatness. And though individuals differ much in these respects, yet the Merino sheep have generally their heads large and their necks long, their chests contracted, and being sharp on the shoulders and flat sided, and narrow across the loins. Against these defects, however, are to be adduced the peculiar quality of the skin, which is remarkably thin, soft, and loose, affording that evidence of a strong disposition to fatten, which many of our farmers call proof; the skin also differs from that of the native sheep of Britain, in being of a fairer hue, with a vivid tint of what is called carnation, or flesh colour, which tint is particularly conspicuous on those parts which are free from wool, as the eyelids and lips. With this peculiar condition of the skin he considers to be connected the peculiar characteristic of the Merino race; namely—its fineness and flexibility; in which the Merino is superior to every other race of sheep in the world. This breed is literally buried in wool; it exists on their foreheads almost to the eyes, and on the cheeks, and entirely covers their bellies and legs. The length of the staple or filaments of the wool is from two to more than three inches; the wool of the ram coarsest and longest, of the ewe finest and shortest; of the wedder, in both respects, between the two former.

It is stated from the publication of M. Lasteyrie, that the average weight of the fleece, unwashed, is about 5lbs. 7oz. English weight; but in the *Compte rendu a la Classe des Sciences* of Paris for 1802, 30 fleeces, recently imported, are said to have weighed, unwashed, 99 kilogrammes and a half, which is equal to 7lb 5½ oz. English, for the weight of each. This wool, however, was of thirteen months growth. Dr Parry considers the weight, quoted from Lasteyrie, to be equal to the average of ewes' fleeces, and that it is probable the medium weight of rams' fleeces, in Spain, does not exceed seven pounds; though there is certainly great difference in the weight of particular fleeces.

The principal Merino flocks are then enumerated, both those belonging to the grandees and to the different societies of monks,

which compose the corporation of the Mesta. The size of the Nigrette is stated to be superior; but it is said, that the race of the Escorial is supposed to have the finest wool of all.

The difference between different flocks of Merino sheep, in Spain, and between different individuals of the same flock, is referred to the proportion of the grease, or yolk, which imbues all wool, but pre-eminently that of the Merino. From its superabundance in this particular breed, the fleece contracts, near its surface, a quantity of dust, earth, and other matters, so as to give the animal a dirty appearance; which usually is most manifest on the finest fleeces, as they contain the greatest quantity of yolk, or grease; but notwithstanding this darkness on the surface, the wool when drawn asunder, nearer the skin, has a brilliant silky appearance, and, when scoured, is of the purest white.

The fleece is not washed for sale on the sheep's back, but after the wool is sorted; and usually loses three fifths of its weight in the operation, and some authors assert that the loss is often two thirds; and afterwards, in scouring by the clothier, an additional loss is sustained of about three, or three and a half, in twenty; but as the quantity of the yolk is different not only in different individuals, but in the same individual at different seasons, the loss in washing and scouring will proportionally vary.

It is remarked that the yolk of wool, here spoken of, has not escaped the notice of the French chemists: by an analysis of this substance by Vauquelin, published in the *Annales de Chimie*, it is found to contain a large proportion of fatty matter united with potash, so as to form a natural soap; a smaller quantity of potash, combined partly with carbonic, partly with acetous, and partly with muriatic acid; a little lime, in a state of unknown combination; a small quantity of uncombined fatty substance; and a little animal matter which seems to produce the peculiar waxy smell: this yolk is supposed to be formed from the perspiration of the animal.

The wool of Merino sheep is also said to differ from that of all our native breeds, in being nearly of an equal fineness on the shoulder and the rump, though it grows more thickly on the latter part; and the whole fleece is remarkably free from those coarse hairs, usually styled snitchel hairs, or cats' hairs; and the wool of the lambs is much coarser and harder than that of the sheep. The sheep themselves are longer in coming to maturity than most other breeds; they do not acquire their full growth till three years old, and the ewes rarely take the ram till they are eighteen or

twenty months old, though the rams are fit for generation in a year: but the most striking particular in which the Merino race differs from every breed of short-woolled sheep, either in this or other countries, is, that while very few of the rams are polled, or have short snags, the majority have large spiral horns; and on the other hand, a horned Merino ewe is rarely to be found. The rams and ewes form separate flocks, in Spain, till the beginning of July, from whence they are suffered to continue together till the middle of August; one ram is generally allotted to twenty or twenty-five ewes. The ewes seldom produce more than one lamb at a birth, and seldom more than a fourth of these are permitted to be raised; the remainder are killed immediately as they are dropped, and by transferring the skin to another lamb, the mother is induced to adopt it, so that each lamb has two and sometimes three nurses. As the ewe-lambs are mostly preserved, the ram-lambs are but few, and are very rarely castrated: the wedders are rams on whom this operation has been performed at six or seven years of age, when they are no longer fit for propagation. So little are these sheep considered an article of food, that though immense flocks of them pass through or near Madrid twice every year, the mutton of that capital is supplied from Africa, as the beef and pork are from the neat cattle and pigs of France.

In the winter, the Merino flocks cover the plains of the fertile provinces of Valentia, Murcia, Arragon, Castile, La Mancha, Andalusia, Estremadura, and the neighbourhood of Cadiz; but when the herbage is wasted by the increasing heat of the sun, which generally happens in April or the beginning of May, the flocks commence their journies to the mountains of Leon, Castile, Navarre, Arragon, Segovia, Burgos, the Asturias, and other elevated districts. These journies are conducted with much order, and are minutely described in the Essay. During this journey the shearing takes place: when the weather is fine, the sheep are conducted to the esquileos, or shearing-houses, which are usually on the mountains near the roads; they are kept for a day previous in a sudadeos, or sweating-house, in which they are so crowded as to have scarce room to move, or even to breathe; and though this practice has for its pretended object an increased facility of shearing, yet it is probably meant to augment by perspiration the weight, and consequently the price of the fleece. One with another each man shears fifteen sheep in a day; and if by accident the skin is wounded, they drop on the part a little powdered charcoal to heal the wound and guard it against the fly. When the

fleeces are shorn, they are put into a damp warehouse, all the doors and windows of which are closely shut, so as not to admit any transmission of vapour; and this warehouse is not opened till the merchant comes to weigh the fleeces. The Spanish flocks occasionally suffer much from shearing; and that of the Count del Campo Alange is reported to have lost five or six thousand in a single night. The shearing lasts three or four weeks, after which the sheep proceed on their journey, and remain on the mountains till the return of winter, when they are driven back again to the plains. It is customary to give all the sheep in Spain, whether Trashumantes or Estantes, a small quantity of salt, but the former have it only when in the mountains.

The wool in sorting is divided into four parts: the first, which is called by the Spaniards *refina*, or *florera*, and which is marked R, is taken from the flanks, the back as far as the tail, the shoulders, and sides of the neck;—the second, or *finá*, marked F, comprises the wool of the top of the neck, the haunches as far as the line of the belly, and the belly itself;—the third, *tercera*, marked T, is that of the jaws, the throat, the breast, the fore legs to the knees, and the hinder thighs from the line of the belly down to the hocks;—the fourth, or *cahidas*, marked K or C, is that below the hocks, between the thighs, the tail, the buttocks, the pole, and behind the ears, and all that which shakes out of the fleece in shearing or in washing. A set of bags, containing the whole of the first three sorts, is called a *pile*, the proportion of which many years ago was R 15 parts, F 4, and T 1; the profit arising from the sale of the *cahidas*, or fourth sort, is said to be allotted for the consolation of souls in purgatory. When the wool is sorted it is reduced by washing in hot water to the state in which it is imported into this country.

Of the five millions of sheep in Spain, the *estantes*, or stationary part, are said to be about one tenth; and though there is in Spain, as in England, a prepossession in favour of the effect of travelling on the fleece, which the great proprietors encourage, yet it is asserted, on the authority of Bourgoanne and Lasteyrie, that several of the stationary flocks yield wool equal in excellence to the best of the Trashumantes; in Estremadura and Segovia there are flocks which never travel, the wool of which is not inferior to that of the other sort.

The diseases to which the Merino breed is chiefly subject, in Spain, are said to be the scab, giddiness, and an eruptive infectious disorder, like the small-pox, fortunately unknown in England, and

for which we have no name. The Spanish shepherds do not employ any remedies worthy of notice for the cure of these maladies, unless it be of importance to announce, that, when other means fail, they have recourse to magic.

Every thing respecting the maintenance of the flocks of Spain, as well Merinos as others, is directed by a code of laws called the Mesta, which first received the sanction of government about the year 1450.

The author proceeds to state, that he has looked in vain into writers for any plausible explanation of the name Merino, or any authentic history of the origin or introduction of the race itself. By some, he observes, it is attributed to England, and supposed to be derived from the Cotswold breed; but from an inquiry into the quality of English wool, cloth, and sheep, from the earliest times to the latter end of the seventeenth century, which is extended over a considerable number of pages, he is of opinion that the Merino breed was not derived from Britain. It is also given as the opinion of the best informed writers, in which Dr. Parry himself concurs, that they were not originally brought from Africa, though this is strongly maintained by a writer in the French Encyclopedie, who boldly asserts that this race was formed about the time of the Emperor Claudius, from importations of African rams, by Columella, uncle to the celebrated agriculturist of that name. That the Encyclopedist was evidently mistaken is proved by a quotation from the seventh book of Columella's Treatise *De Re Rustica*; it appears, however, that the Roman agriculturist tried many experiments to obtain fine-woolled coloured lambs, by coupling coarse-coloured rams, which he obtained from Africa, with white fine-woolled ewes; but it does not follow from his words (in *agros transtulit*) that Columella placed those rams on any lands of his in Spain. Dr. Parry thinks it much more probable, even from the words themselves, as well as from the nature of his object, that he brought them into the Roman territories in Italy, where there was abundance of the "*oves molles*," the "*oves tectæ*," which were chiefly valued for fine white wool. For among the Romans all ranks of people, of both sexes, wore chiefly woollen garments, a pound of silk, even in the reign of Aurelian, at the close of the third century of the Christian era, being, according to Vopiscus, equal in value to a pound of gold. And when the pre eminence in wealth, and the prevailing vanity of the Romans are considered, and since the heat of Italy is so great at certain seasons of the year, as scarcely to admit the use of a woollen dress, the Doctor is

of opinion, that the quality of the wool must have been a matter especially important, since, during the Augustan age, and for a considerable time afterwards, it was the fashion to wear cloth furnished with a nap or pile. It is recalled to the recollection of the reader, that Varro, Columella, Pliny, Martial, Palladius, Petronius, and Calpurnius Siculus, agree in stating that the sheep which produced the finest wool in the Roman dominions, were those of Apulia and Calabria. A pound avoirdupois of this wool is stated to have cost about *1l. 1s. 7d.* of our money. And even at this time, according to Pliny, and some other ancient authors, Spain was not without valuable breeds of sheep, which were memorable for bearing fleeces naturally of different tints. Columellâ speaks of them as bearing blackish or tawny coloured fleeces; Pliny, who lived somewhat after him, adds, that they were occasionally of a reddish or gold colour, like those of Asia, and Martial compares them with the golden or red hair of women. The opinion of Strabo, with respect to the Portuguese sheep, is then examined, and it is clearly made out, that the wool of them was more like hair, and incapable of being manufactured into cloth with a nap or pile. The historians of Spain, who had been diligently consulted for the purpose, afforded him no information on the subject.

From all these circumstances he concludes, that however the notion of the English origin of the Merino breed of sheep may serve to flatter the national pride, yet that it falls to the ground as soon as it is investigated; and also that it is not more probable that the race was introduced into Spain from Barbary, as asserted by the French Encyclopedists: but, adverting again to the attention which the Romans paid to their sheep, and particularly to the breed, which, from producing the fine short wool, was much valued, and the object of peculiar care on that account, he thinks it probable that the race of short-woolled sheep of the ancient Romans, and the present race of Merino sheep of Spain, are the same. For the perfection of both these breeds, he observes, seems to have consisted in certain common qualities. "The favourite ewe of ancient Italy was to have a large carcase, capacious belly, short legs; and the ram a wide breast, shoulders and buttocks, à long and deep body, and a broad and long tail. The fleece was to be thick, soft, and deep, especially about the neck and shoulders. It seems to have been with a view to the increase of wool, on this finest part of the animal, that the Romans thought a long neck valuable in the ewes: the ears and forehead of the rams were

to be involved in wool, and no individual of either sex was tolerated of which the wool did not clothe the whole belly. Regard was also had to the horns: it is a memorable circumstance in these sheep, that the rams had generally horns, and the ewes none; still however the polled rams were most esteemed."—"It is impossible for any one who reads this description," says Dr. Parry, "and who is acquainted with the improved Merino race of the present day, not to suspect that they are one and the same breed."

He then proceeds to investigate evidence as to this fact: he observes, that throughout Europe, as far as he knows, there is not any short-woolled breed besides the Merinos existing, except in Italy, of which the males are horned and the females not: that in former times the sheep of Apulia and Calabria had their different summer and winter quarters, the same as the Merinos now have in Spain; It was also the universal practice among the Romans to give salt to their sheep, with a view to promote appetite and thirst, to increase milk, and to improve digestion; and he can hardly believe that this practice, which still subsists in Italy, should from time immemorial have found its way into Spain, and into that country only, except by immediate communication; and as the Spanish flocks are frequently led by goats in the present day, so it appears, from Tibullus, this was a common usage among the Romans. Dogs follow the flocks in Spain as well as in most other countries; they are however not intended, as in England, France, and most other European districts, to assist the shepherd in guiding and regulating the sheep, but are of a strong and fierce kind, serving to guard and protect both against the depredations of robbers and beasts of prey: so also dogs were kept by the Romans for the same purposes, the qualities, uses, and treatment of which are minutely described by Varro and Columella. Many of these instances, it may be said, may have been coincidences of practice, suggested by similarity of circumstances, but could not have been the reason why, in order to avoid variegated fleeces in the offspring, both nations should exclude rams with spotted mouths or tongues from the privilege of breeding; a practice which is stated to have prevailed among the Romans, upon the authority of Varro and Columella, and to be adhered to by the modern Merino shepherds, on the authority of Lasteyrie. A still more remarkable coincidence is noticed, which is the practice of killing a considerable number of lambs very shortly after they are dropped. This custom prevailed equally with the Romans as it

does with the present Spaniards, and precisely from the same motives :—that as the wool only was the valuable produce of the flock, each lamb might acquire more strength by having two nurses.

This agreement then in so many important particulars of form, fleece, constitution, and general treatment, satisfies the author of the essay beyond all reasonable doubt, that the present Merinos are the same race as the ancient Tarentine sheep of Apulia; yet he can find no evidence of the time when they were first introduced into Spain. For though the union of Italy and Spain first took place under Frederick, king of Arragon and Sicily, about the beginning of the fourteenth century, yet it is not in Arragon that the best Merino sheep are now found; and the author conceives that the circumstances of the history of Spain would rather induce a belief that their introduction took place at a more remote period than 1300: he leans to the idea of their having existed in that country during the dominion of the rich, industrious, and luxurious Moors, if not in still earlier times, when Spain was under subjection to Rome.

Dr. Parry, having thus completed his observations on the nature, produce, and origin of the Merino breed of sheep, concludes the first part of his essay by remarks on the extension of the race to various parts of the world.

The Swedes are stated to be the first nation in Europe, who imported Merino sheep with a view to naturalize them; though the most northern part of this country is burnt up during a short summer by a sun which never sets for many days, and the whole is desolated by a winter of seven or eight months, during which the ground is covered with uninterrupted snow. Notwithstanding this it is stated, that M. Alstroemer introduced a flock of Merino sheep into Sweden in 1723, and that under his direction the government instituted a school of shepherds in 1739, and granted bounties of 25 per cent. to the sellers of fine and good wool; these, however, were reduced to 15 per cent. in 1781, to 12 per cent. in 1786, and in 1792 were wholly discontinued. The Merino Sheep now in Sweden are estimated at 100,000, or about one twenty-fifth part of the sheep of the country, and the wool is in every respect equal to that in Spain; the size of the animal has in many cases degenerated, but the wool produce has proportionally increased; and the Swedes raise at present in their own country nearly as much fine wool as is sufficient for their manufactures. The more attentive cultivators lodge their sheep during the whole year in large airy buildings, the windows of

which are always open, and the doors made of hurdles; and they are driven out twice in the day; the daily allowance of food given to each is two English pounds of hay, with an addition of dried leaves of trees, stalks of the hop, pease haulm, and oat and barley straw; but many only house them at night for security against the wolf and the lynx. The sheep are allowed salt in damp or rainy weather; and the shearing takes place in July, the sheep having been previously washed: the average weight of well washed ewes' fleeces is given at full three pounds, and of lambs' fleeces at one pound.

The Danes first carried Merino sheep from Sweden in 1789, a few descendants of which remain; and in 1797 the government of Denmark imported 300 sheep from Spain, from the celebrated breeds of the Escorial, Gaudaloupe, Paular, Infantado, Montano, and Negrette: these were placed at Esserum, eight leagues from Copenhagen, and were all alive, except two, eighteen months afterwards, when they were seen by M. Lasteurie. They are kept in airy houses, and fed with hay, or rye and oat straw cut into chaff; they are fed three times a day with an allowance in the whole of $3\frac{1}{2}$ pounds of dry food, and in warm weather are sent out into enclosed pastures without a shepherd: salt is given them in wet weather, and some persons give them the heads of salt her-rings, or the brine which has been used for pickling meat or fish; the lambs are weaned at three months, and are then allowed the best pastures.

Augustus Frederick, Elector of Saxony, introduced Merino sheep into his dominions in 1765: the number was three hundred, divided into four establishments; and at the end of ten years they were found to have had all possible success; the sheep of the pure blood preserving every valuable quality, and the ultimate crosses having wool fully equal to the pure Merinos. The winter food of this race in Saxony consists of hay, lattermath, clover, oat or rye straw, pease-haulm, vetches, &c. which are given twice or thrice in the day in large buildings, but in summer the sheep are only housed at night, and kept from the pastures till the dew is dissipated. Salt is very generally distributed to them by the Saxons, from an idea that it contributes to their health and to the fineness of their fleeces. The lambs fall before March, and are weaned in June; the sheep are washed before shearing in running water two successive days, suffered to dry for two days, and are shorn on the third which generally takes place in May. Saxony no longer imports Spanish wool; and much of that grown

there has been sent for some years to the fairs at Leipsic, and part of it imported into England. It is said to be allowed by manufacturers, who have tried this wool, that it makes cloth superior in softness and fineness to any obtained from the best Spanish piles.

The Merino breed of sheep was first introduced into Prussia by M. Finck in 1768, who obtained his original stock from Saxony; but in 1779 he imported three rams and twenty ewes directly from Spain. Though he has carefully maintained the pure race, yet he has chiefly employed his rams in improving the native breeds. The Count de Magnis also possesses, at Eckersdorff in Silesia, a flock of nine thousand sheep by the Merino cross. His attention has been directed to uniting size with fineness of wool; he has therefore mixed the best Merino rams with the large breed of Hungary, and in this respect has made great progress, one sheep with another giving three pounds of washed wool, on a carcase larger, stronger, and better formed than any other fine-woolled sheep on the Continent. The times of yearning, and the treatment of these flocks in Prussia and Silesia, are so nearly the same as what prevails in Saxony, as not to deserve a separate notice; most of the farmers in Prussia allow their sheep to go out during the day in the severest weather, and give them dry food during the night. The Count de Magnis gives his sheep corn, but considers it as too expensive; he regards potatoes as equally beneficial with oats, and certainly much cheaper; and during the winter his sheep eat as much salt as they choose.

The war with Austria prevented M. Lasteyrie from visiting that country and some other parts of Germany; the information therefore which Dr. Parry is able to give, concerning their Spanish flocks, is very limited and imperfect. He relates however, from Lasteyrie, that the Empress Queen Maria Theresa imported Merino sheep from Spain in 1775, and placed them at Mercopoil in Hungary; and that subsequently to that period two other flocks have been brought from Alicant to Trieste; and in 1802 a person was employed by the Emperor to purchase sheep in Spain. In Anspach and Bayreuth attempts are noticed to improve the native sheep by the introduction of Merinos; and in Mecklenburgh, Zell, Brunswic, Baden, and Hanover, this race has been long enough introduced to improve the wool of those countries in a considerable degree.

It is remarked, that few countries appear less adapted to the support of sheep than the rich and marshy soil of Holland; yet in

1789 M. Trent imported from Spain two rams and four ewes, and placed them on an estate between Leyden and the Hague; in 1793 he imported three new rams and four ewes; and in 1802 his flock amounted to one hundred. His rams' fleeces weighed from 10 to 14 pounds, and his ewes' fleeces from 6 to 10 pounds, in an unwashed state. To prove the fineness of his wool, he placed on a piece of black cloth nine specimens of his own wool by the side of the best specimens of superfine Spanish which he could procure, and sent them to a clothier, who pronounced five of Mr. Trent's specimens to be superior to the superfine Spanish. In 1793 M. Cuperus, near Leyden, also imported some Merinos from Spain into Holland, and his crosses of the native breeds were in 1802 nearly equal to the unmixed Spaniards in fineness of fleece.

Piedmont appears to Dr. Parry to have first obtained the Spanish breed of sheep in 1793, when Prince Masserino chose 150 ewes from the best flocks of Segovia. Notwithstanding the war which existed at the time, they increased considerably, and many crosses were obtained from the ewes of Germany, Rome, Naples, and Padua. The greater part of the proprietors agreed to form a society, and in 1801 obtained from the government of France, to which Piedmont was then annexed, a grant to improve under certain conditions, the plains of La Mandria: the laws for the regulation of the flocks of this society are given by M. Lasteurie. The management of the Merino flocks of Piedmont appears to vary but in few particulars from the modes which have been previously described. The cultivators of the plains of La Mandria drive their flocks to the Alps from the middle of June to the end of October: they are seldom folded except in the mountains, experience having shewn that their dung in the house is more profitable, provided they are supplied with a proper quantity of straw.

“There is, however,” says Dr. Parry, “no country in Europe, which of late years has taken such laudable pains in cultivating the Merino breed of sheep as France.” For though it appears that Spanish sheep had been imported into France at an early period, yet the first person that paid any systematic attention to the wools of that country, by this method, is said to have been Daubenton, who in 1776 obtained part of 200 Merinos imported by M. Trudaine, intendant of the finances. The flock of Daubenton, is now in the possession of M. Thevenin of Tanlay, and produces wool of the very first quality. In 1786 about 400 Merino

sheep were presented by the king of Spain to Louis XVI. but 60 of them died on their journey, and a greater number fell a sacrifice to the febrile disease before mentioned, similar to the small-pox, after their arrival at Rambouillet. This royal present, having been chosen for their form and fleece from various Spanish flocks, differed much both in size and shape; but having been better assorted after their arrival in France, produced a race unlike any of the original breeds, but equal to the best of them in mould and fineness of wool, and superior in weight of carcase and of fleece. A particular account is given of this flock, which was placed under the direction of an agricultural committee at the commencement of the French revolution, who made an annual report to the National Institute on the subject. From the report of the year 1802 it is stated, on the authority of Lasteyrie, that the medium weight of the fleeces of full grown nursing ewes was about 8 lb. 7 oz.; of the ewes of three years old, which had no lambs, about 9 lb. 13 oz.; of the two-tooth ewes about 10½ lb.; and of the rams of three or four years old about 11 lb. 5½ oz.: each fleece selling on an average at the price of about 1*l.* 3*s.* 4*d.* sterling. Dr. Parry has seen several specimens of the Rambouillet wool of 1802, and indeed is in possession of some of it; and, as far as he can judge of their quality by the naked eye, he considers them to be equal to the Ryeland wool of the Spanish piles. It is stated that by a secret article in the treaty of Basil, the French Directory had stipulated for itself the privilege of purchasing in Spain 1000 ewes and 100 rams in each of the five succeeding years. From the Rambouillet flock many others have been established in France and its dependencies, none of which is said to be more justly entitled to general notice than that of M. C. Pictet, of Geneva, who established a Merino flock in 1800; and besides these pure Spanish flocks, there are many others of a mixed breed, which have originated from experiments made by individuals, the result of which is said to be, that, with due care, the wool in every breed of sheep is capable of arriving at a degree of fineness equal to that of the Merino, and that the effect is produced by constantly crossing with the finest woolled rams, and is generally obtained sooner or later according to the fineness of the fleece of the ewe, but in no breed later than the fourth cross.

From the account which he has given, it appears to the author of the Essay that the Spanish breed of sheep has been much improved in weight, and probably fineness of fleece, and has considerably increased in size, by having been naturalized in France;

and he thinks these valuable points have been accomplished in the four following ways: 1, By choosing for breeding the finest and best woolled rams and ewes;—2, By never allowing them to propagate till they have attained their full growth, which, at the earliest, is not till nearly three years of age;—3, By separating the weak from the strong;—4, By giving them good food and plenty of air and exercise. A particular account of the mode of feeding and treating them is subjoined in illustration of this opinion, which is too extended to be comprised in this analysis.

It is next remarked on the authority of Count Alexis Orloff, that Merino sheep have been imported into Russia, but no information is given of the result. With respect to this breed at the Cape of Good Hope, some particulars are communicated from the information of Sir George Yonge, who was governor there; and the author having once had a ram of the native Cape breed, speaks from his own knowledge that the wool chiefly consists of long coarse filaments like hair; this has been very much improved by a cross of Merino rams; and Dr. Parry speaks of a specimen of wool from the fourth cross of the native Cape sheep, which he had obtained from Sir George Yonge since his return to England, as having a filament so fine, as that the next cross would produce wool fully equal to good Spanish.

From these Cape Merinos sprung a race of sheep, which were carried from thence in 1797, by Captain M^r Arthur, to the English settlement on the coast of New Holland; and a memorial presented by that gentleman to the English government in 1783 is added, to evince his sanguine expectations that wool might be produced there from the Merinos which would be superior to Spanish wool, and some samples which he brought over and gave to Mr. Joyce, of Freshford near Bath, were equal in fineness to any he had ever manufactured.

Though it is admitted that Merino sheep have been at various times imported into Great Britain, yet the plausible tales of the French Encyclopedists on this point are shewn to have no foundation in truth; and the sheep of this breed, which have been imported in modern times, are believed to be very few, till the King obtained some Merino sheep in 1792; in which year he purchased five rams and thirty-five ewes from the flock of the Countess del Campo Alange, which is called Negrette. The management and distribution of this flock through the country by periodical sales, are then amply detailed; but these are circumstances too generally known to make their insertion necessary in this place.

The most ample information of the progress of the royal Merino flock of England, may be obtained from the Reports of Sir Joseph Banks, under whose care the flock is placed, and through whose judicious management, it is asserted, the form has been considerably improved, and the fleece rendered finer than the Negrette pile, the wool of the parent stock in Spain.

The exertions of Lord Somerville to introduce Merino sheep are next noticed, with appropriate commendations of his judgment and zealous activity in all agricultural pursuits; and he is said to have treated his flock so successfully, that the cloth manufactured from his wool is superior to the greater part of that manufactured from Spanish, and the carcase at the same time is fast approaching to best Ryelands or South-downs. The Merino flocks of Lord Portchester and Mr. Tollet, which have been formed from those of the king and Lord Somerville, are also mentioned; and it is added, that, besides these larger flocks, there are in the kingdom many smaller ones of Merino sheep, which the author cannot particularize; but it appears to him that the principal mode in which the utility of the Merino race has been extended in England, has been by crossing our native breeds with Merino rams. The cross with Ryeland ewes is supposed to be that most frequently resorted to, and several gentlemen are named, who are zealously employed in promoting the cross with the Ryeland, the South-down and the Wiltshire breeds.

The nobility and gentry of Ireland are stated to be engaged in an attempt to introduce the Merino race of sheep into that country. In 1804 premiums were offered for both sheep and wool, to be exhibited at the great cattle fair at Ballinasloe. For the premiums for Merino Sheep there was that year no claimant; but the premium of 20*l.* for the best ram's fleece grown in Ireland, was obtained by the Earl of Farnham, for a Merino-Ryeland fleece.

HISTORY OF THE
 MERINO-RYELAND BREED OF SHEEP,

BY CALEB HILLAR PARRY, M. D. F. R. S. &c.

Communications to the Board of Agriculture, Vol. V. Part II.

THE history of the author's own breed of sheep is introduced by an account of his first turning to agriculture, and particularly the care and improvement of sheep in the year 1788; but as he was not able to procure a Merino ram till 1797, it is only necessary to notice his detail from that time. From 1797 he has been enabled regularly to employ rams of the pure blood in his own flock, and had obtained in 1805 a total of 382 fine-woolled sheep and lambs, besides nearly 100 of mixed breeds. Dr. Parry seemed to have long reasoned upon the project of producing fine wool in England, which should be fully equal to the best Spanish, and to have entertained an almost certainty of success. For though general opinion had long decided that it was impracticable to raise in this country wool equal to that of Spain, yet it appeared to him that this opinion, whether as referable to climate, food or habits of travelling, was founded on nothing better than mere prejudice. He had remarked that the skin and the hair of the Negro and Gipsej in England remained unchanged, from what they originally were in Africa, Hindostan, or Malacca; those of the North American, of West Indian and of European descent, continuing similar to those of their native country; that the form and feathers of the turkey and domestic fowl, continue similar to those of their native country, whether in North America or Asia; and that the Arabian stallion delivered down his most boasted excellencies through our native mares. When he considered that these circumstances took place in spite of all the changes of climate, food,

and general habits of life, he concluded from analogy, what has been since verified by experience, that Merino sheep would produce wool equally fine in this country as in Spain: his opinion was strengthened by the circumstance, that the Finlander and the Laplander, contiguous inhabitants of the northern parts of Sweden, continue to this day two distinct varieties of the human race.

When he turned his reflections from other animals to the race of sheep, it struck him forcibly that the Portland sheep, though one of the smallest races in Britain, and living on a bare natural pasture in a temperate climate, produced a small fleece of the coarsest clothing wool; and that the same circumstance took place in regard to the sheep on the cold mountains of Wales; and on the other hand that the Merino breed inhabiting Spain had the finest fleece in the world in all the different situations of that country; he felt a conviction therefore that the fineness and weight of fleece are by no means relative to the climate, soil, quantity or quality of food, size or habits of life of the sheep themselves. To these arguments from analogy, he adds the decisive test of direct experience in the Merino being naturalized in Sweden, Denmark, Prussia, Saxony, Silesia, Hungary, Austria, Hanover, Holland, Bayreuth, Anspach, Wirtemberg, Baden, France, Switzerland, Piedmont, the Cape of Good Hope, and New South Wales, as well as in this country: in almost all which countries the food and treatment of the sheep, as well as the climate, admit of so many variations. Yet under all this diversity of climate, soil, and treatment, the Merino sheep have flourished and produced wool equal to the native growth of Spain. He concludes these observations by asserting that "these facts surely prove that it is the peculiarity of the breed, which we are to consider, as chiefly productive of fine wool, in spite of the operation of other causes."

It has been stated in the first part of the Essay, on the authority of the continental writers on the subject, that any breed of ewes, however long and coarse in the fleece, would on the fourth cross of the Merino ram give progeny with short wool equal to the Spanish; but this opinion the author corrects from his own experience; for though he found this to take place in four crosses from the Ryeland breed, yet it did not obtain in four crosses from the Wiltshire, and the same held true with regard to the specimen of Cape wool of the same cross, which he obtained from Sir George Yonge; though in the two last cases one cross more would have effected it; he infers therefore that the exact number of four

crosses being sufficient to produce the finest wool must not be admitted as a universal proposition.

A table is then added, with observations as to the probable increase of a given number of sheep crossed by a Merino ram in certain predicated cases, but as these are rather speculative than practical, we shall pass them over.

The author of the Essay next observes that "we have no right *a priori* to conclude the Merino fleece to be, in any view, the best which can exist on a sheep," since it cannot be decided that in point of smallness, strength and inelasticity of filament, wool may not be produced superior to the Spanish; and he gives it as his own opinion that this is the case in the union of the Merino with the Ryeland. The superior softness and silkiness of the wool of the fourth cross of his Merino-Ryeland breed to that of the pure Negrette flock from which it is derived, is stated not to admit of doubt; and it is suggested that farther improvement may be obtained by carefully and continually breeding in and in from sheep at that degree of mixture; but he has found the wool of a whole generation made considerably coarser by a fifth cross of the pure Merino. He at the same time admits that his great choice of rams of the Merino-Ryeland mixture gave him an advantage of selecting from his own flock, rams with finer fleeces than Merinos. It is added that the wool of Lord Somerville and of His Majesty is finer than the original pile of the Negrette flock in Spain; and that the same is true of the Rambouillet flock in France, that of M. Pictet of Geneva, and that of the Elector of Saxony.

In order to demonstrate to the Board of Agriculture the further improvement which had arisen from a careful admixture of animals of the fourth cross, Dr. Parry submitted to their attention many specimens of his own, as well as of Spanish wool, and of cloth and casimir manufactured from the produce of his Merino-Ryeland race, for which he claims a decided superiority to cloth and casimir manufactured from pure Spanish wool: many particulars are detailed which would not well admit of abridgment, but it appears that the Refina, or finest sort of wool, bears a greater proportion to the whole fleece of Dr. Parry's than in the fleece of Spain; that the whole fleece is greater in weight, and the waste less in washing and scowering, even when the yolk is completely separated by the addition of an alkaline salt to the hot water, which is represented to be the only certain means of removing it entirely. The following Table is given as the result:—To obtain

two pounds and a half of wool, requires of unwashed wool, as follows :

	<i>lb.</i>	<i>oz.</i>
Of the author's Merino-Ryeland flock - - -	5	0
Of Lord Somerville's flock - - - - -	5	0
Of the flock of M. Pictet of Geneva - - -	6	2
Of the Rambouillet flock - - - - -	7	8
Of the Merino breeds in Spain - - - - -	7	8
Of the mixed French breeds - - - - -	6	2

Calculations of the value of the wool in the yolk are next sub-joined ; and the writer complains of the want of a market in this country for Merino-Ryeland in that state ; and recommends reducing it by washing to the same state in which Spanish wool is imported, before it is offered to the manufacturer. To shew its value in the manufacture itself, comparatively with Spanish wool of commerce, he states that in 1804, 42lb. of Refina wool cleaned, scoured, and picked, made $26\frac{3}{4}$ of cloth, while 60lb. of good Spanish wool are required to make 30 yards, or according to one very intelligent manufacturer, 29 yards of the best wool dyed broad-cloth.*

With respect to the price which Dr. Parry has actually made of his Merino Ryeland wool, he declines naming it, because he has had much manufactured for himself and his friends, and has frequently sold only small quantities, not sufficiently large to regulate any market, or even to ascertain what clothiers would give for it, as he has not provoked competition; and besides he does not think it honourable to disclose any secrets of the woollen manufactory, which he may have obtained through the partiality of his friends in that department of trade. He says however that the manufacturer will be sufficiently apprized of the value of the wool, when he is told that the piece of blue broad-cloth already mentioned was sold for 24*s.* the yard, and at the same time a piece of casimir made of somewhat inferior wool at 7*s.* 3*d.* per yard, to the same draper, both ready money, and without deduction of length ; and

* Mr. Livingston in his excellent "Essay on Sleep," in speaking to this very point, observes, "This is something more than 11b. 9oz. to the yard. If I was to determine the fineness of my flock by the same rule, I should exceed both, since the same quantity of cloth was made at Clermont by common country spinners and weavers from 11b. 4oz. of Clermont Merino wool; and $32\frac{1}{2}$ yards of $25\frac{1}{2}$ inches wide, were made in Mr. E. P. Livingston's family from $16\frac{3}{4}$ lbs. of wool."—p. 129.

that he had been offered 33s. a yard for another piece which he exhibited to the Board.

The account thus given of the Merino-Ryeland wool is applied only to that of the ultimate degree of fineness, or at least of that degree which is equal to Spanish wool of commerce; but it is not to be referred to the wool of crossing in the intermediate degrees, as the author had either mislaid or forgotten most of the observations during the course of the experiment; but he had observed that the first mixture of the Merino with the Ryeland adds about one-third or somewhat less to the fleece of the latter breed, without having much influenced its fineness; that the second and third mixture of these breeds carries the wool of the ewe to the length of four, and sometimes six inches, with great increase of weight, but still considerable coarseness in the filament; and that the fourth cross brings the wool to the Spanish standard in point of fineness, and greatly reduces the length, leaving it still somewhat greater than the pure. And the reader is referred for a more particular account to the publications of Lord Somerville and Mr. Tollet.

After these comments on the wool of the Merino-Ryeland sheep, he next considers that of the lamb; and states that the Merino lambs wool imported into England is much coarser and more wiry than the sheeps wool; it also appears to him that the fourth and fifth crosses of the Merino-Ryeland with the Negrette ram have also this tendency; while from 72lb. of his own lambs-wool carefully selected, which was reduced by washing and scowering to 42lb. a piece of blue ladies broad-cloth of the length of $28\frac{1}{2}$ yards dyed in the wool, was manufactured by Mr. Naish of Tiverton, which the author sold for 21s. per yard ready money, and without deduction of length; and the draper who purchased this cloth publicly declared that having had one of these coats constantly in wear from six to nearly twelve months, he never had any which remained so long unaltered as to pile and beauty.

Having finished all that he deemed necessary to state as to the wool of the sheep, he next proceeds to the carcase, and relates that in point of size his Merino-Ryeland sheep are equal to the Ryeland; and after arguing upon the comparative profitableness of the larger or smaller breed of animals, in the opinions of both farmers and butchers, gives his own in favour of the smaller breeds of neat cattle and sheep, which was also the general result of the experiments made by the late Duke of Bedford, by Mr. Billingsley and Mr. Davis. He judiciously remarks that "a small sheep

becomes fit for food from a proportionably smaller quantity of keep, than a large one, and the joints into which it is divided, are better accommodated to the use of common families," and thinks the minimum in point of convenience to be between 14 and 18lb. per quarter, to which size widders of the Merino-Ryeland breed are easily brought. With respect to the fitness of fat itself, he remarks that a certain proportion of it according to the modes of cookery in England, and he thinks he might add in England only, is coveted by every palate, and a larger proportion is desired by the labouring part of the people, who like it in their broths, their puddings and their fried vegetables, but that the number of such purchasers is very limited, and that among the middle and wealthier class of the people, and especially among their domestics, very fat mutton on the table is an object of aversion.

The author proceeds to draw a comparison between the smaller breeds of sheep, particularly the Merino-Ryeland, and the new Leicester, and decidedly gives the preference to the former. In forming his own flock he declares that his view has certainly been to place the finest wool on the best carcass, but as he thought the two objects incompatible at the same time during the commencement of experiments in crossing the two breeds, he confined himself to the former object alone, which however is not yet fully accomplished.

It might be expected, he observes, that he should give some account of the fattening of the sheep, and the food and treatment best calculated for that purpose, but he could give the Board no satisfactory information on that subject, as he considers himself a mere breeding farmer, and had hitherto looked only to the extension of his flock and the improvement of his wool. He considers the Merino-Ryeland as a hardy race of sheep well calculated for living on high and exposed situations; more easily confined by fences, and more obedient to the shepherd and his dog, than the pure Ryeland; the skin also of the Merino-Ryeland has the same vivid tint of carnation as the pure Merino, and like that an astonishing degree of thinness, softness, and looseness.

Dr. Parry next treats of the health and diseases of Merino-Ryeland sheep, and asserts the breed to be fully equal to our native sheep in point of health; a few of his flock however have died of inflammation of the pleura, or membrane lining the chest and lungs, which manifested itself by the common appearances both before and after death; they are also subject to giddiness, principally in the first and second year, which frequently proves fatal,

and invariably on dissection a bag of water is found in the cavities of the skull, occasioning a pressure on the brain. The most common disease, and at the same time the most difficult to cure, is the scab, which however is the same disease which affects other sheep, but the extreme fineness of the skin renders it more difficult to be eradicated than in the coarser breeds; and though the foot-rot is not enumerated among the diseases affecting Merino sheep either in France or Spain, yet Dr. Parry's mixed race have frequently suffered from it: upon the whole the Merino-Ryeland breed of sheep do not appear to be quite so hardy as some others, yet under that attention which it well repays, it is found to be full as exempt from disease, as any of our indigenous breeds.

And though the account, given of the different qualities of this breed of sheep, may seem sufficiently flattering to lead to a ready and wide extension, yet many difficulties and objections occur. The writer observes with regret that the chief obstacle arises from the backwardness of the manufacturer to give the proper price for the wool, which is felt not only by the common growers of such wool, but in the Royal flock itself; though it is acknowledged that the wool of this flock is better than that of the Negrette pile of Spain, yet in 1802 the Refina, clean scoured, sold only for 5*s.* 9*d.* per pound, while the manufacturer gave 7*s.* 3*d.* per pound for Negrette in the same state. Many pretexts are enumerated which have been offered by the manufacturers of, and dealers in wool, but they are all refuted, and resolved into wilful prejudice. Manufacturers, anxious to preserve the excellence and established reputation of their approved fabrics, are not to blame for doubt and caution in the admission of a new material; but it is asserted that when the value of this material becomes known, and it obtains its price, sufficient will be grown to supply the market, inasmuch as the extension of fine wool only languishes for want of encouragement. Several remedies are suggested;—to reduce it to the state of Spanish wool of commerce, before it is offered for sale;—for gentlemen of rank and fortune to give a preference to cloths made of wool of our own growth, that inquiries for such cloths might stimulate the draper to demand them of the manufacturer;—the establishment of central markets for fine British wool;—and the employing one manufacturer, selected by the growers, to make up for the market all the British fine wool which should be sent to him, at a certain rate, and with an accurate return of particulars. The chief difficulty which stands in the way of the farmer being

thus removed, the demand for the wool would doubtless increase the breed to a vast extent.

The profit of this breed to the farmer, comparatively with others of the short-woolled kind, are then considered; and upon the supposition that there are three millions and a half of acres of land incapable of any improvement by the plough, and which at present make no return but by the wool of the sheep which they support, reckoning one sheep as the stock of two acres and a half, if Merino-Ryeland sheep were stocked on such land, and each sheep produced four pounds of wool in the yolk, a produce may be obtained of at least 6*s.* per acre every year by the growth of wool only. The best and fairest method of estimating the comparative profit on different kinds of sheep, is stated to be, not according to the number of animals, which would probably vary materially in weight, but according to a given weight of each race; and assuming 125lb. the most usual weight of a Southdown, as the standard, the following is stated as the produce of different breeds, viz.

	<i>lb.</i>	<i>oz.</i>	<i>dr.</i>
South-down, clean scowered - - -	2	6	3 $\frac{1}{5}$
Ryeland in the same state - - -	2	5	2 $\frac{3}{5}$
Merino-Ryeland, in the same state -	3	12	0

From which it appears that on 125lb. of living carcass, the Merino-Ryeland carries 1lb. 5oz. 4 $\frac{2}{5}$ dr. of scowered wool more than the South-down, and 1lb. 6oz. 5 $\frac{3}{5}$ dr. more than the Ryeland. If therefore the three millions and a half of acres above mentioned of unimprovable land are supposed to carry not more than one sheep to two acres and an half, the produce of Merino-Ryeland wool, at 4lb. per fleece in the yolk, would give 2,800,000lbs. of clean wool, which at 7*s.* 6*d.* per pound would amount to £1,050,000; while the best price for the common wool now produced on such land does not exceed 2*s.* 2*d.* per pound, and the greatest quantity does not exceed 1 $\frac{1}{4}$ lb. of clean scowered wool from each fleece, giving the value of £189,583; leaving an annual superiority in favour of the Merino-Ryeland wool of £860,417, which is nearly five times the value of the present produce. Many calculations are subjoined to point out the number of Merino-Ryeland sheep necessary to produce annually an equal quantity of fine wool to that which is now imported from the Spanish market, all of which are obviously deduced from the foregoing premises.

Having remarked in the preceding part of the Essay, that the French found no material loss of weight in wool of the Merino breed suffered to remain two and even three years on the same animal; Dr. Parry relates that he has had a similar result as to the wool of a Merino-Ryeland; and though such wool might be inferior in value to the manufacturer of cloth, yet it would not become much deteriorated; for M. Pictet of Geneva and his wife applied these materials, by themselves, to the manufacture of shawls, which according to his description, as well as that of Mr. Poole, who had seen them, were superior in softness, lightness, and beauty to any produced in Norwich or other parts of England; and when he inquired of a friend as to the practicability of employing fine long wool for that purpose, he learned that he had been anticipated by Mr. Tollet, whose wool was actually in preparation for such an experiment. He states his own fleece before mentioned, which is six inches in length, and of the finest filament, to be ready for trial by any manufacturer of shawls who shall apply for it. He here concludes his remarks on the comparative value of the Merino-Ryeland breed of sheep to the farmer, the clothier, and the kingdom at large, having pointed out the most powerful motives for the extension of this and similar breeds: and next adverts to their management.

The first object of inquiry which presented itself, relative to the management of this race of sheep, was the proper age and season of propagation. It is related that the curators of the Merino flock of Rambouillet lay it down as a principle, that in order to insure the true growth of the progeny, and an exuberant crop of wool, no sheep should be permitted to generate, till it be two years and a half old, by which time they consider the growth of the animal nearly completed: this principle they apply to the rams as well as the ewes, and its propriety seems to be evinced by the improvement of that flock, which in size of carcase and weight of fleece exceeds every other of the same race: while M. Pictet and some others on the contrary contend that it occasions great loss of time in obtaining a flock, and is contrary to the instincts of nature, which are infallible. Some truth is admitted to exist in the first proposition, but none in the second; and this is supported by reasoning from the analogy of what happens to other animals, and in the human race. On this point however, various sentiments obtain; nor is there less difference of opinion as to the season and manner of putting the ram to the ewes; and it is asserted that in England these points are chiefly regulated by two considerations;

—food and the convenient falling of the lambs. The smaller breeds of sheep, which are usually fed on hills and dry lands, on which the spring of grass is late, are so managed that the ewes shall lamb from the middle of March to the middle of April, while the proprietors of several of the larger breeds are interested in early yeaning, either for house or grass lambs. It seems to the author as if there were in different breeds a natural variation in the period in which the female seeks the embraces of the male; for he remarked that 47 Merino-Ryeland ewes discovered these propensities much sooner than 60 ewes of the same age, which were either pure Ryelands, or a cross of the Leicester. This subject is dilated upon pretty much at large, and the various practices described; but as the essay itself will be referred to by the curious sheep-breeder, who means to regulate his flocks by the suggestions it affords, it is unnecessary to particularize this part of it for any other class of readers. Dr. Parry gives it as his opinion that most advantages will result from permitting the sexual intercourse to take place early in the autumn.

The Herefordshire custom of housing, or as they call it coting, their breeding ewes and lambs, is descanted upon as a practice from which many benefits have been erroneously supposed to arise; and it is recommended as a better plan to elevate the various ricks in a farm-yard on a basis or floor five feet from the ground, under which the sheep might be either constantly or occasionally sheltered, and the ground be littered and kept clean like a house: a copious supply of proper food to the ewes and lambs is also mentioned as an essential point to insure success; and the shepherd is advised to give good hay, and to offer it in cribs rather than in racks, to prevent waste. Hay of quick growth is stated to be preferable to all other for sheep, because they uniformly reject that which is benty, and only eat that which is made from young and succulent grass; but the best sort of dry food is asserted to be linseed, which the author gave his sheep in the following manner;—one part of the whole seed was mixed in a tub with seven parts by measure of cold water, and suffered to stand all night; in the morning the whole was boiled up together; when cold it formed a jelly thicker than the white of an egg, and was given in troughs either by itself, or mixed to a nearly dry state with hay cut into chaff. In either way the sheep ate it readily, and the lambs themselves at a certain age; and both from habit became excessively fond of it: he never fed his own

sheep with chopped straw, pease-haulm; or various other dried vegetables recommended by foreign agriculturists.

Considering it of great consequence to economize meadow hay, as much as possible, being the most expensive of all dry food, the author speaks of the lattermath of such grass as excellent food for sheep, as well as clover, lucerne, and sainfoin, on account of their succulence and tenderness; but what he recommends as the most profitable of all food, and which is always within our reach, is the rouen, or aftergrass, reserved through the winter; which, though many inches in height, is capable of being kept without loss in dry situations, and will be eaten up clean by sheep and lambs of all descriptions at the latter end of winter and in the spring: many years experience has confirmed him in his opinion of its excellence, and he pronounces the public under the greatest obligations to Mr. Arthur Young and other agriculturists, who have made known its merits. Of turnips he professes to know little by experience, but has found them on every trial much inferior to the cabbage tribe, on which he has long been accustomed to place his chief dependence for the winter and spring food of his flock, without ever having experienced disappointment. The general principle that vegetables should always be transplanted into a good soil from one that is poorer, he decidedly reprobates, and has always followed exactly the reverse; for he would treat seed like a foetus in the womb of its mother, and a young plant like a young animal, and by a proper choice of seed, early sowing, warmth, defence against injury, and plenty of the most nourishing food, would push it rapidly, safely and uniformly through all its stages, so as in the time limited by nature for its growth, to give it the greatest possible dimensions and succulence. The writer's mode of sowing and raising cabbages is minutely described in the succeeding pages; but as it scarcely deviates from the practice of every good gardner, it need not be recounted. He has tried rape as a spring food for his sheep, and has found it profitable, and has occasionally given carrots and potatoes; but has discarded the use of all these as inferior to the cabbage; he also formerly provided chicory, or wild endive, as a change of spring food, but has now given it up in favour of spring vetches. Salt he never gave his flock but once, and then he mixed it among his hay, when it was made into the rick.

Adverting to the diseases of the Merino-Ryeland breed of sheep, he enumerates the hydatids in the lungs, giddiness, foot-rot, scab, scouring, hypobosca ovina or sheep-tick, the fly or maggots,

tetanus or locked jaw. His observations on these diseases, which are all common to the several breeds of sheep in this country, contain little but what may be found in other writers, and nothing meriting particular notice. Few of the remedies recommended are peculiar to the work; it is however worthy of recollection, that for common scouring in sheep or lambs, when it is the result of mere indigestion, he found the following an effectual remedy;—he took equal weights of salt and whiting reduced to a fine powder, and dissolved the salt in four times as many pints of water as there were pounds of salt, stirring in the whiting by small quantities; when this had been simmered over the fire till it became thick enough to make into pellets, he gave five pellets of the size of the tip of his middle finger to each of his ram-hogs every morning; and found the remedy effectual. He observes that the troublesome animal the sheep tick 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; he indicates the necessity of attending to the poisonous nature of the liquid.

As the value of the fleece renders the management of it an object of much importance, he recommends that the pastures where Merino-Ryeland sheep feed, should be carefully freed from thistles, briars, loose-thorns, the burdock, clivers, and all other weeds, which either tear off the wool, or drop among it their rough seeds, which cannot afterwards be separated without much loss, labour and expense; that the hay should be given in cribs, the fly be attentively guarded against, and the ordure which adheres to the tail constantly cut off. He agrees with the Spaniards in objecting to washing the wool on the sheep's back before shearing; for the fleece is so thick, that, when thoroughly soaked with water, it is so long in drying, that if the weather prove wet and cold, the sheep is much incommoded. His own time of shearing has usually been about the second week in June, but the period ought to be regulated by climate, season, and other circumstances, and the operation should be performed earlier on the Merino, than on our native breeds, and if very cold or wet weather follows, the sheep should be housed for two or three nights; the wool should be clipped round the animal and entirely separated at one cut, which cannot be done in the common method of shearing lengthways. The wool should be kept in baskets rather than in bags, and be shorn dry, and laid up in a two-pair of

stairs room on a boarded floor. The perfection of the washing is said to depend a good deal on the season, and ought to be done if possible, before the end of October, after which period the water would cool too soon, and the shortness and coldness of the days would make it difficult to dry the wool: the water should be heated to 144 degrees of Fahrenheit's thermometer, and the wool be steeped at least eight or ten hours; and after the washing, be rinsed in a running stream if possible; and should then be drained or pressed; but the latter method is preferred. The wool is then in the Spanish state, after which the yolk must be farther detached by scowering before it be manufactured. The lambs are usually shorn unwashed at the end of July or beginning of August, and have not appeared to suffer any injury. The author proceeds to remark that it may be easily inferred from what has been said with regard to the relative quality of the lamb's wool, that no decisive judgment can be formed from it as to the future fineness of the fleece; and he is persuaded that a still worse decision can at that period be made as to the size and proportion of the carcase; so that the value or excellence of a ram cannot be ascertained till he is three or four years old: this circumstance renders him extremely averse to the castration of the lambs, which he never performs except on those who have either sprung from coarse-woolled ewes, or are grossly defective in point of carcase. He has hitherto weaned his lambs at once, without any apparent disadvantage either to the dam or the young; but it has been necessary to milk the ewes twice or thrice afterwards at the interval of two or three days. He observes the horns of the rams may be shortened to about six inches without any inconvenience by a saw, and if the entire banishment of the horn be desired, he knows it may be effected by breeding from polled rams: and he considers the best mode of marking the rams to be branding them on the horn with a hot iron.

The last chapter of the Essay is on the mode of forming a flock which shall have superfine wool on a beautiful carcase, so as to combine the essential points of wool and carcase in the greatest degree. The author does not see however by what means, in the beginning of an experiment, we can proceed with equal pace towards both these objects. "If," says he, "our view be goodness of form, we need not go for that purpose to Spain, but may better accomplish it in a single day in Sussex, or in Leicestershire: but the new and great point is to superinduce the Merino fleece." He considers it extremely probable that the female has more influence

in the production of form than the male, and is confirmed in this sentiment because the lambs got by the finest-woolled ram, which was not well shaped, and smaller than most of the other males, turned out to be larger and better formed than the generality of his other stock ; and he has noticed the same thing to happen in other animals. He also apprehends that a ram of the cross breed is as good for the purposes of propagation as an equally good Merino ram, and better than one that is inferior. With respect to what the ignorant call "Nature," and those who fancy themselves more learned, "Blood," he considers it to be nothing more than an abstract term, expressive of certain external and visible forms, which from experience we infer to be inseparably connected with those excellencies we most covet : and gives it as his opinion resulting from all his observations and experience, "that he who at this time beginning to breed, prefers the best pure Merino ram to the best Merino-Ryeland, will probably find himself eight years behind in the experiment." And after a flock of Merino-Ryeland sheep has been obtained, nothing seems to him to promise greater benefit in the improvement of it, than a division into classes according to age and strength ; as the robust always harrass the weaker and drive them from their food.

The Essay is concluded with a notice that M. Pictet is now trying at Geneva, as Columella formerly did at Rome, some experiments to introduce a coloured wool of natural growth, but much success is not expected from it. And having faithfully related every thing important which he knows either from his own experience, or good authority, relative to the pure Merino, and Merino-Ryeland breeds of sheep, he states that the disposition in the Merino-Ryeland breed to assume the *paternal* fleece and the *maternal* shape, has led him to conclude that this principle might be advantageously applied to the union of the finest-woolled ram with coarser ewes pre-eminent as to form ; and with this view is now trying experiments with ewes of the Leicester-Ryeland, and Leicester-South-down crosses, though at his advanced period of life he dare not flatter himself that he shall live to see the result.

SUPPLEMENT.

THE Supplement, besides stating a few additional facts which confirm the opinions offered in the body of the Essay, gives an account of a method of measuring the relative fineness of the filaments of wool, a table of comparative diameters of the filaments of various clothing wools, and the results of these admeasurements. The uncertainty of all the modes which have been previously adopted induced the author to apply to Dr. Herschel, who advised him to make use of the method which he has described in an account of his lamp-micrometer in the Philosophical Transactions for 1782. He availed himself of these suggestions, and soon found that the relative diameters of minute objects might be ascertained with great precision by placing an object of a known diameter on the stage of a microscope in a strong light, and a piece of white paper spread horizontally beneath it; then by looking through the tube at the object with both eyes open, its image may be seen projected on the paper below, which may be measured with a pair of compasses; and if the magnified object be divided by the known diameter of the object the magnifying power will be ascertained. This being found, place on the stage the object of which the diameter is sought, and having measured with the compasses, as before, the diameter of its image projected on the paper below, divide that diameter by the magnifying power, and the quotient will be the real magnitude required. He applied this principle to the filaments of various clothing wools strongly illuminated by the reflected light of an Argand lamp, and has given a table of their diameters at the outer end of the filament, the middle, and the inner end, as well as their mean diameter.

It resulted from the admeasurements made by Dr. Parry:—
 1, That the wool of one of his ewes was considerably finer than that of any other kind, which he had an opportunity of examining; and the wool of another nearly as fine as the best Spanish pile.—2, That the wool of two of his rams, both of which sprung from Merino-Ryeland sires with ewes of the same cross, was finer than that of any ram of any breed, which it had been in his power to measure, and that one of them was superior to any imported

wool of either sex.—3, That the wool of all his rams similarly descended, which he had measured, was finer than that of 3 out of 5 of the pure Merinos.—4, That the Negrette breed of sheep is greatly improved in its wool by having been introduced into England; the specimen of the Royal flock which he measured being finer not only than the finest of that pile procured from Spain, but than any other Spanish pile which he had seen.—5, That the Merino wool may be considerably improved in fineness by an admixture of the Ryeland breed, and afterwards by breeding in and in from the fourth cross of that breed.—6, That in a coarse-woolled breed of sheep, as that of the Cape of Good Hope, four crosses of the pure Merino are by no means capable of bringing the wool of the produce to an equality in fineness with the paternal race.—And 7, That so far as these observations go, the form of the filaments of clothing wool is not that of two cones joined together by their apices, but that of a single cone, of which the apex is next the skin.

OBSERVATIONS BY THE EDITORS OF THE RETROSPECT.

THIS Essay, together with the former by the same author may be considered as a complete history of the Merino breed of sheep, as well as of all attempts to introduce them into the different countries of Europe. In this point of view the information is certainly important, but it is much more so as detailing the means by which the introduction of fine woolled sheep into our own country may be attempted with scarcely a doubt of success, and as pointing out that even a superior degree of fineness of wool, than has yet been known in Spain, may be obtained by a judicious admixture of the Merino with the Ryeland breed. The account of the author's own flock is much less deserving of notice as a private memoir of successful husbandry, than as an elucidation of the principles on which superiority of fineness may be obtained in wool at the same time with an accession of weight and symmetry in the carcase of the animal.

An attentive perusal of the account here given of this Essay will render superfluous any observations recommending it to the perusal of the readers of the RETROSPECT. The accuracy with which Dr. Parry's experiments have been made, and the clearness with which they have been detailed, do of themselves sufficiently stamp the value of the Essay. In the compass of a single half volume every

thing is comprized which has been known or published in the various countries of Europe respecting the Merino breed of sheep, together with a most minute and particular account of the effect of mixing that breed with one of the most valuable of our native races of sheep.

To point out any particular parts of the Essay as more worthy of approbation than the rest would be doing justice neither to the author nor to the reader; though it may be affirmed that the second part is more important in point of information than the first; as it contains the history of the writer's own flock of the mixed breed, while the first part is only the collection of all that is valuable in other publications.

AN INQUIRY WHETHER THE
PURE MERINO BREED OF SHEEP

*Is now necessary in order to maintain the Growth of Superfine Wool in
Great Britain.*

BY CALEB HILLAR PARRY, M.D. F.R.S. &c.

Bath Society's Papers. Vol. II.

THE writer commences his inquiry by observing, that an opinion has been for some time industriously propagated, that no cross breed of sheep can maintain the ultimate fineness of fleece, without having recourse to fresh crosses; this opinion he conceives to be no better founded than the long-established prejudice, "that fine wool could not be produced in Great Britain," of which experience has now demonstrated the falsehood; and considering that the assertion, "that fine wool can be with difficulty preserved," to be a serious and grave proposition, he deems it necessary to investigate the fact in order to arrive at some tolerably certain conclusion; for if after 15 or 20 years assiduous attention to the business of crossing eventually from rams derived from his own mixed stock, a man should have brought his flock to great excellence in carcase, and the greatest possible fineness of wool, and shall then find his fleece begin to degenerate, so that, in order

to restore its fineness, he shall be obliged to sacrifice the form by the new introduction of ill-shaped Merinos, who is there that would be mad enough to undertake the hopeless project of forming a beautiful and fine-woolled flock, under the prospect of such dependence and disappointment? Dr. Parry trusts he is enabled to shew that the apprehension has no foundation in truth. He proceeds then to examine what changes are usually produced on any original species of animals by an introduction into other countries, and remarks, that the Norway rat is the same in this country as on the shores of the Baltic, and that the mouse-hunting powers of the cat are the same as in the tenth century, when the value of a cat was established by law in Wales, by Hoel the Good, to be equal to a ewe, her fleece and lamb, taken together; and the ass, as far as we know, is not a native of our island. Among birds also he notices that neither the pheasant, the common fowl, nor the turkey are ancient inhabitants of our soil, and yet no degeneration or decay is discovered in any of these; that the gipsey, originating in Hindostan or Malacca, preserves the distinctive marks of a separate variety of the human race in all latitudes and climates, and that the Finlander and the Laplander maintain their original characteristic difference even on the same soil; and without adding other instances drawn from analogy, which he considers superfluous, observes that, with regard to sheep, it is proved beyond contradiction, that the carding wool of our English breeds is not changed by long residence in the plains of Jamaica, and that there is no evidence of the wool of the Merino sheep having degenerated in Spain, where the race was certainly unknown in the time of the Emperor Trajan; and though the breed is now disseminated through a variety of countries, from New Holland, in the 34th degree of southern latitude, to Sweden, 60 degrees north, and has been introduced into some of them more than forty years, yet the experience of English manufacturers has certified that the wool of all these different countries is not inferior to the best Spanish, and that the Spanish itself is the same as it was as far back as 1723. Hence he concludes there is no cause for apprehension of any deterioration from length of time in the wool of the pure Merino breed.

With regard to the second point to be considered—the permanence of mixed breeds, he appeals to the well known and popular example, the race-horse. Britain, it is said, abounded in horses at the invasion of Julius Cæsar, but they probably differed little from the poney of Wales, or the galloway of Scotland; and though

two centuries ago the breed was sufficiently increased in size and strength, yet it was not till the middle of the last century, that, on observation of the fleetness, wind, and strength, which were combined in the Turkish and Saracenic breeds, the effect was tried of coupling males of these races with mares of our own country. Breeders continued for many years to cross the female descendants with pure males, till the actual acquirement of the excellencies which were sought for, rendered unnecessary all further intermixture of the pure blood. Yet in horses of this kind there is no degeneracy; they are, on the contrary, superior to the race from which they sprung, and in a constant state of improvement; for while the horses of the Arabs in their own country can scarcely trot or canter 8 or 10 miles without being exhausted, there is hardly a race horse in England, that will not, with little fatigue, run 20 miles in an hour, almost at full speed. Dr. Parry is therefore decidedly of opinion that this principle, which the experience of half a century has established, on the subject of horses, will be found equally true on that of sheep. "Mr. Bakewell," he says, whom we must justly consider as one of the most enlightened of farmers, would have laughed to scorn any one who would have told him, that in order to preserve certain points of form or constitution in a breed, it was necessary to revert to animals possessing those points in a less degree than the sheep of his own flock: the observation of his whole life confirmed him in the truth of the contrary principle." That rule then, which holds good with regard to the carcass, may likewise be received as true with respect to the fleece.

The Doctor then relates to the Society what he has learned from sixteen years experience, and the detail may be considered as a proof of the principles which he has advanced, and is far from leading to the conclusion that, when the fineness of the wool of a cross-bred ram is fully established, there is a necessity of recurring to the pure stock; having found no deterioration occur in a whole race of sheep after three or four generations bred in and in, but that the greater part of the progeny appeared to be in an improving state, he thinks we have no right to presume the contrary from supposition only. The greatest stumbling-block appears to him to have originated from observing a sort of gross connexion between the food and the quality of the fleece; it was concluded that the fine herbage of the downs necessarily produced fine wool, and that none but coarse wool could spring from gross luxuriant food; but neither of these conclusions is true, for the fineness of a sheep's fleece, of a given breed, is inversely as its fat-

ness, and the very same sheep may, at different times, according to these circumstances, have fleeces of all the intermediate qualities from extreme fineness to comparative coarseness. This is given as the true cause of the error, which has prevailed universally, that a Spanish sheep out of Spain cannot yield a fine fleece; but the falsity of this prepossession has been proved by experiment, and experience authorizes the decision that when a race of animals have preserved their peculiar qualities for three or four descents, those qualities may by proper care be preserved to the latest generations, and that those animals are best for breeding which possess those qualities in the highest degree, however they may be denominated, or from whatever country derived.

OBSERVATIONS.

The question respecting the fineness of wool degenerating after repeated crosses, without a fresh intermixture with the pure Merino blood, may be considered as set at rest by Dr. Parry's arguments, confirmed by his experience; and no apprehensions of that kind need disturb the tranquillity of the breeder from the Merino-Ryeland race of sheep.

On a Polled Merino Ram, &c.

BY SIR GEORGE STUART MACKENZIE.

Dickson's Agricultural Magazine, No. 7.

*On a Ram of the Merino or Spanish Breed without Horns.**

BY A NORFOLK FARMER.

Dickson's Agricultural Magazine, No. 7.

IT having been doubted by a former correspondent of the Magazine, whether or not a ram of this breed ever existed without horns, Sir George Mackenzie relates, in the first of these papers, that he purchased one without horns from his Majesty's flock, which is a very fine animal of the kind; and it is stated in the latter, that Mr. Tollet of Staffordshire, produced one without horns at the Holkham sheep-shearing of 1806, which is believed to be still in the possession of Thomas William Coke, Esquire.

* Retrospect, V. IV. p. 89.

ON THE WOOL OF SPANISH SHEEP.

BY T——.

** Dickson's Agricultural Magazine, No. 12.*

AS the wools of Spain enjoy so distinguished a reputation, the writer conceives he shall give information to some readers by detailing the various sorts into which Spanish wool is divided. He states that the wool of the travelling flocks is divided into three classes; the first of these is called Segovian Leonese, because it is the produce of the flocks which feed in the neighbourhood of Segovia, Madrid, &c. in Castile, and those of the kingdom of Leon, which pass the winter in Estramadura; the second class is known under the name of Soria, a town in Old Castile, and of Saragossa or Arragon, which province lies adjacent to the preceding one: the third class is the wool of Seville.

The Segovia Leonese is distinguished by piles or heaps, composed of the wools of different flocks, of which the piles of Paular, or the Escorial, of Infantado, and Negrette (formerly that of the Jesuits) are the three most considerable; by these the prices of the others are usually regulated. The second sort, or quality, is named Segovia, and its piles are denominated Marques, Avila, Armendes, Hospital of Burgos, &c. and this is inferior to the Leonese; and the small Segovia is less fine, and is the medium between those two kinds of wool.

The Soria is inferior to the first kind; the most noted flocks are those of Villa Real, Badillo, Naros, Castelfrio, &c. and this wool is seldom divided into piles.

The different kinds are distinguished by the marks on the bales to which are added the initials of the different flocks. Most of the wools are white; but Spain produces yellow, black, and brown wool, but this is not picked for exportation. Those wools are stated to be of the best sort, which are long, strong, soft, silky, fine, slender, and glossy, entirely divested of grease, well picked, without mixture and new; the last point is determined by the wool not having a rancid smell, which it contracts by age, and by its dilating or swelling speedily, when compressed in the hand: the strength and pliability are discovered by drawing it with the fore-finger and thumb of each hand; if it be new, it will stretch, not easily be broken, but when it is, will sound neither

** Retrospect, V. IV. p. 254.*

dry nor sharp. The duty upon Spanish wool imported is given at two-pence halfpenny per pound, and the markets in January last. are quoted at—Seville, 3*s.* 4*d.* to 5*s.* 3*d.*—Segovia, 6*s.* to 6*s.* 6*d.*—Leonese, 6*s.* 6*d.* to 6*s.* 9*d.* per pound.

OBSERVATIONS.

This short account of the different wools of Spain is a valuable appendage to Dr. Parry's various publications on the subject of wool in the communications to the Board of Agriculture, and among the papers of the Bath Society, where these terms are frequently mentioned without any explanation, to the great disappointment of the readers. But the mode of sorting, washing, and packing the wool of Spain, as well as the manner of conducting the sales, is much better explained in Dr. Parry's Essay, published by the Agricultural Board, than in this article.



On the coarse Wool of a Spanish, or Merino Lamb.

BY SIR GEORGE S. MACKENZIE, BART.

* *Dickson's Agricultural Magazine*, No. 10.

SIR George Mackenzie, having communicated to the editor of the Magazine, a circumstance of a Spanish lamb having been dropped, with a covering more resembling hair than wool, observes, that after a lapse of three months, the hair had entirely disappeared from the neck of the animal, and had given place to wool, but that the rest of the body continued as before. Having had a second lamb dropped in the same hairy state, though got by a very fine ram, he expresses his conviction that the second fleeces of these lambs will be perfect wool, notwithstanding the deviation in the first fleece. The remainder of the paper contains only miscellaneous observations, which have no relation to the subject.

OBSERVATIONS.

The removing the suspence into which the worthy Baronet had fallen, respecting the future fleece of his hairy Merino lamb, may prevent uneasiness to other breeders, who may chance to have lambs dropped in the same predicament. The occurrence is not peculiar to the Merino breed, but sometimes happens in other kinds nearly allied to it, and most commonly in flocks which experience hard keeping during the winter, though by no means exclusively so.

* *Retrospect*, V. IV. p. 148.

EXPERIMENTS
REGARDING THE IMPROVEMENT
OF
THE FINE-WOOLLED BREED OF SHEEP
IN THIS KINGDOM;

IN A LETTER TO SIR JOHN SINCLAIR, BART.

BY EDWARD SHEPPARD, Esq. of Uley, Gloucestershire.

* *Communications to the Board of Agriculture, Vol. VI. Pt. I.*



THIS gentleman, being anxious to ascertain to what degree of perfection wool might be brought in this country by means of the Spanish cross on fine-woolled English sheep; and wishing to be satisfied whether, under the common circumstances of the husbandry of the country, such wool would retain its fineness; and from being at the same time largely engaged in the manufacture of superfine cloth, and in the practice of buying and working up considerable quantities of Spanish wool yearly, conceiving himself entitled to form with some accuracy an estimate of the relative quality and value of such wools as might be produced in this country in competition with the wools of Spain, he determined upon commencing a series of experiments; and with this view sent, in the year 1800, twenty Ryeland ewes to a Spanish ram of Lord Bathurst's, which had been obtained from the King's Merino flock. In the produce of the first cross he found a considerable improvement of the wool, which so much resembled Spanish, that it might be considered as approaching half-way; the weight of the fleece was also increased one-half; of this wool he preserved a large specimen. In the following year (1801), he obtained a ram and three ewes from the King's flock, and purchased from four to five hundred Ryeland ewes, selecting, with great caution, the finest woolled sheep from the best Herefordshire flocks: in 1803 and 1804, he also purchased a considerable number of a reputed

* Retrospect, V. IV. p. 358.

Spanish flock in Herefordshire, from a Mr. Ridgeway, who had been many years in possession of part of His Majesty's sheep, on which he had engrafted his own Ryeland flock, but the produce was a mixed and unequal breed; he likewise availed himself of other opportunities of purchasing sheep of the same breed to such an extent, that, in 1805, he was enabled from the increase of his flock to dispose of all his Ryeland ewes; and at this year's shearing, the average weight of his fleeces washed on the sheep's backs was 2 $\frac{3}{4}$ lbs.

In 1806, his Spanish and mixed flocks amounted to 986, exclusive of lambs, and the average weight of his fleeces was 3lbs. washed as above; the value of the mixed wool being 4s. 6d. and of the Spanish 6s. 4d. per lb. while the price of Spanish wool imported was at 6s. 9d.

He found it expedient to wash the wool on the sheep's backs in the common mode of this country, because the dirtier part of the fleece near the surface, was considerably cleansed thereby, though the wool is too closely compacted to admit of much impression in the grease at the root of the fibre, which, however, yields easily to the common process of the manufacturer; for, in proportion as the cross from the English approaches the Spanish breed, it acquires the same property of yolk. And it is stated, that the shearing is much facilitated by the wool being washed on the back of the animal; besides, the attempt to wash the wool after it has been shorn, as is the practice in Spain, would be attended with many difficulties to the grower, and be very disadvantageous to the manufacturer, as in the process of scowering the wool would be much injured by the soiling of the liquor used in the operation; he conceives also the wool washed from the sheep's backs is in the most merchantable state, since it is sufficiently free from excessive grease to enable the manufacturer to judge of its probable waste, which experience will soon teach; while the attempt to produce the wool scowered clean, would be much more objectionable; because, from the inexperience of the party, it would most probably be injured in its softness and quality. His lambs he has not sheared, because he found them meet the winter better with their coats on, and the produce of wool was greater at the next shearing.

The first reflection which occurred to Mr. Sheppard, on the adoption of these sheep, was, whether it is likely to be advantageous to the community, and he is decidedly of opinion, that a judicious culture of fine wool must be productive of the greatest be-

nefit to the agricultural, as well as to the commercial interests of the country; since, in the variety of soil and situation which England affords, there are many districts where this breed of sheep might be cultivated with success, to the exclusion of the wretched and unprofitable flocks, which are now depastured there, for he thinks there is not a breed of clothing-woolled sheep in England, which would not produce a fleece from four or five repeated crosses with the Spanish, worth at least four shillings the pound, washed on the sheep's backs; and consequently it must be to the interest both of the farmer and the community, that poor and mountainous tracts of land should be applied to the growth of this sort of sheep; but a different opinion is acknowledged with respect to the rich and highly-cultivated parts of the kingdom.

The comparison of four years' successive produce from the same sheep, has satisfied him, that without extraordinary care to guard against the effects of climate, and a strict abstinence from the more nutritious and succulent kinds of food, the wool of the mixed breeds will materially degenerate. At the time of writing, he had before him samples of the wool of his first crosses from Lord Bathurst's ram in 1802, and the wool from the same sheep in 1806, and he found the quality so much degenerated in the course of that time, that he conceived the lapse of another equal period, would reduce it to the coarseness of the maternal stock; at the same time he observes, that this is the first cross from the Spanish, which he does not consider as possessing equal preventives with those of higher blood against the causes of degeneracy. He has also found the wool of His Majesty's ram much degenerated by a comparison of the wool of 1803 with that of 1806, which is attributed to his being kept in the best pastures in the summer, and fed with corn in the winter, and being worked very hard; but the same depreciation has not been found in the females, which have not been kept in such high condition. It is remarked that in the pure Spanish there is a wonderful capacity for resisting the effects of climate on the quality of the wool, for the great exudation from the body of the animal, yields a yolky consistence at the interior of the fleece, which by its mixture with the soil forms a kind of coat of mail on the surface almost impervious to wet, and protects the sheep exceedingly from the injuries of climate; and the same quality attends the mixed breed in the proportion of its approximation to the Spanish. The fact of deterioration, however, under the common circumstances of the husbandry of the country, is not deemed as affording cause in any serious degree, to

affect the value of fine-woolled sheep, for the preventive is always at hand—a frequent recurrence to the Spanish ram, which will, at all times, remedy the evil. It is thought to be very practicable to grow wool of the value of 5*s.* 6*d.* per pound, while Spanish wool reaches 6*s.* 9*d.*; by which means we should rival two-thirds of the import from Spain; but in order to keep up the means of perpetuating the fine-woolled mixed breed, and of supplying the growers with the pure blood, there should be a flock of the real Spanish race carefully preserved from mixture, and protected from degeneracy; and the writer considers the flock now in His Majesty's possession, as eminently fitted for the purpose, and is satisfied that a breed of sheep as pure as those are, with strict caution both to the nature of their food, and to their complete protection from the effects of climate, would remain for a century in the same state of fineness and perfection; the circumstance having been proved by experiment, for the mixed breed in Saxony, which was first introduced in 1714, has, with these precautions, retained the greatest possible degree of fineness up to the present time; and the best wools from that country equal in smallness of fibre, and exceed in softness of feel, the finest wools of Spain, and are eagerly purchased at higher prices by the manufacturers of this country; and as the mixed breed of English and Spanish partakes very much of the soft and silky feel of the Saxon wool, he has no doubt but that it might be brought to the same degree of fineness, if the same attention be given to its culture; he is, however, disposed to attribute much of the softness perceptible in Saxon and Anglo Spanish wools, to the management in washing on the sheep's backs, and suffering the wool to remain a long time in its native grease; whereas, in Spain, the wool being washed with both hot and cold water after being shorn, the grease is, in a great degree, discharged, and it is besides compressed so closely in the packages, that when opened in this country, it is so hard, as frequently to make it difficult to divide the flakes.

Mr. Sheppard observes, that though M. de Lasteyrie, and other modern writers on Spanish sheep, have asserted, that the quality of the wool does not depend upon the nature of the pasturage; he himself is of opinion, that they are neither borne out by facts, nor by sound reason; he admits, that as far as being essential to the health of the animal, nutritive pastures are necessary to the production of good and healthy wool, having frequently remarked that the wool of a half-starved sheep is void of proof in the manufacture; but is convinced that, when the animal is kept high,

and pushes forward in its growth by nutritious food, the fibre enlarges with the other parts of the frame, and that an increased weight of wool so produced, is attended with a deterioration in quality. As an instance of this, the wool of the Real-Paular flock is noticed, which was purchased a few years since by the Prince of the Peace at a very high price, on account of some privileges of pasturage exclusively belonging to it, such as a priority of feeding in the finest pastures in its way to the mountains; the sheep of this flock, from the advantages of pasturage, are represented by persons conversant with the flocks of Spain, to be large and handsome, but the wool of this pile is known to the manufacturers here, as broad and coarse in hair, in comparison with other fine Leonesa piles; and this deterioration of the wool is attributed to an habitual indulgence in more luxurious food; for it was in the highest estimation in this country fifty years, and cloth then made from it was so marked to denote its superiority. Though it is allowed that Lasteyrie has communicated much pleasing and useful information, yet no great weight is attached to his observations on the subject of depreciation, since he asserts that the fineness of the wool is not at all owing to pasturage, soil, or climate, and that the richer and more succulent pastures increase the fineness of the wool, and that dry herbage contributes to its coarseness: the assertion that the wool of the Spanish flocks at Rambouillet, in France, is increased in length, without being depreciated in fineness, is received with much doubt by this writer, as contrary to all the experience he has had in wool.

In concluding this communication, Mr. Sheppard says, "I do not assert that it is impracticable to produce and to preserve in England wool equal to the finest quality in Spain, with the same management as is practised in countries under climates somewhat similar, but, that where land is so valuable, and where a regular course of husbandry is adopted on a comprehensive scale as with us, I do not think such management can be looked for; but in many districts of less fertile land in this kingdom, I am convinced, the farmers, from three or four successive crosses with the Spaniard, would obtain fleeces worth from 10*s.* to 15*s.* each, from almost any sort of short-woolled sheep;" and the Ryeland is recommended in preference to the South-down breed to those who can afford to choose their flock for this purpose, because the finest hair of the South-down bears no proportion in point of softness to that of the Ryeland. It is observed also, that the produce of a cross with the Spaniard are neither less healthy nor more subject

to diseases than other sheep; but since they are tender as lambs, the ewes should yearn as late as the month of March, and as the lambs fall very naked, they should be sheltered from bleak and exposed situations; they are said to keep themselves in good order upon bare pastures, and to stand going to fold as well as the South-down. This gentleman also found them fatten very handsomely; he sold half a score six-tooth wethers of the first cross, which averaged 19lbs. per quarter, and he readily obtained a penny per pound more than the market price, on account of the beauty of the meat, and its great fatness, and quotes the testimony both of amateurs and adversaries, to the mildness and excellency of the mutton.

OBSERVATIONS.

The gold medal of the Board of Agriculture was voted for this communication of Mr. Sheppard, who as an agriculturist, and at the same time a manufacturer of experience, must be, in every respect, competent to judge of the expediency of introducing the Merino Ryeland generally into this country. Full as is the Essay of Dr. Parry on this subject, additional information on important practical points may be collected from this communication. The information contained in it, which is now given to the public for the first time as the result of experiment, is the certainty of degeneracy in a mixed breed, removed only one cross from the Spanish; and when the means of information which this writer possesses are taken into the account, this opinion, that the wool will degenerate to its former maternal state in eight years after the use of the Spanish ram, may be very safely relied on. His suggestions respecting the improvement of Anglo Spanish wool to such a degree of fineness as may be readily obtained without causing any change in the regular agricultural systems of the country, instead of aiming universally at extreme perfection, is evidence of a sound mind and enlightened understanding. As an extensive manufacturer of fine cloths, he knows how few pieces are made entirely of Spanish wool, without some admixture of British to facilitate the working; and it is easy to discover it to be his opinion, that native wool, rather inferior in fineness, may make as good an article of cloth, in consequence of the superior silkiness and softness obtained by washing the wool on the sheep's backs.

AN ACCOUNT OF THE MANUFACTURE

OF

TWO PIECES OF NAVY BLUE BROAD CLOTH

FOR THE PREMIUM OF THE SOCIETY,

With the Report of the Committee, and a Letter from Dr. PARRY, containing further Observations on his Wool.—* *Bath Society's Papers, Vol. II.*



THESE two pieces of cloth were manufactured by Messrs. Yeats and Son, of Monks-mill, near Wooton-under-Edge; one of them being made from wool grown in England by Dr. Parry on Merino-Ryeland sheep, and the other from prime Leonesa Spanish wool of the coronet pile. The weight of Dr. Parry's wool, in every different state, is given in a table in the account, and the weight of the wool manufactured, when dyed blue and picked, was 42 lb. 8 oz.: an equal weight of the coronet pile of Spanish was taken from the picker, and the same people were employed on both the cloths from beginning to end; they were made with yarn of the same size, were wove by the same weaver, set the same breadth in the loom; and in every part of the manufacture the same attention and work were given to each. The British wool, though not so well scoured, held better in the spinning than the Spanish; and when the two cloths were taken off the loom, there was the difference of only six ounces in weight, Dr. Parry's cloth weighing 44 lb. 6 oz., and the counter piece made with the coronet exactly 44 lb.; but when they were simply scoured out of the grease, the British cloth weighed 35 lb. 8 oz. and the coronet 38 lb. which gives 2 lb. 14 oz. more yolk left in the British than in the Spanish wool. The length of Dr. Parry's cloth made with 41 lb. 8 oz. of stuff was 26 yards and 12 nails; and the length of the coronet made with 44 lb. of stuff was 27 yards and 6 nails; from which it appears that 41 lb. 8 oz. of British wool have made the

* Retrospect, V. IV. p. 245.

same quantity of cloth, within ten nails, as 44 lb. of Spanish wool; and Messrs. Yeats and Son do not scruple to say, that in their opinion as manufacturers, the cloth made with the British wool, and marked with Dr. Parry's name, is decidedly of the finest quality.

The Committee of the Society appointed to examine cloth and wool at their annual meeting in 1806, minutely inspected the comparative quality of these two pieces of cloth in conjunction with several woollen drapers of the city of Bath, and adjudged that Dr. Parry's cloth was entitled to a preference in respect to fineness of wool to the Spanish; they examined also a piece of blue cloth manufactured by Mr. Joyce, from Lord Somerville's wool, which they declared to be equal in every respect to the generality of cloths made with the best wool imported from Spain; and they were decidedly of opinion, "that Dr. Parry had by his zeal, diligence, perseverance, and activity, accomplished the grand object of producing in the soil and climate of Britain, wool equal to that usually imported from Spain; and that in so doing he merits the warmest thanks of the country in general, and of the society in particular."

The Doctor, in a letter to the Society, informs them, that the wool manufactured for the prize cloth by Messrs. Yeats consisted of ewes' fleeces from his own flock, descended from Ryeland ewes crossed with the rams of the King and Lord Somerville to the fourth generation, and he has no doubt but that the cloth would have been finer, but for the ignorance of the wool-sorter, who mixed with the finest several pieces of a coarser kind. He avails himself of the same opportunity of declining the premium, perfectly satisfied with the concurrence of the Committee and the manufacturers in the superior fineness of his cloth; and takes leave to state to the Society, that the sheep producing these fleeces were kept in excellent order for a full year before shearing, having been fed in the respective seasons, not only with grass and hay, but with vetches, clover, cabbages, potatoes, linseed, and oil-cake, observing that some judgment may be formed as to their state of health, when it is known that three only out of one hundred and two died from the time of ramming in September to shearing in the succeeding June, and two of these were killed by scouring from gorging themselves with boiled potatoes mixed with salt.

OBSERVATIONS.

By the statement given in this paper (and there are other occurrences within our knowledge to the same purport) the fact appears to be established beyond a doubt, that cloth may be manufactured from our native wool fully equal in fineness and durability to the cloth made from the very best wools of Spain: and the proof of this fact is chiefly owing to the discrimination and perseverance of the King in importing Spanish rams; for though the finest wool has not been produced by His Majesty, yet the facilities he has afforded to others of obtaining crosses from the Merino breed of sheep have enabled most of our agriculturists, who have turned their attention to that point, to commence the experiments which have led to so fortunate a result. The value of fine British wool, particularly the Merino-Ryeland, is now fully admitted by our manufacturers, and Dr. Parry and Lord Somerville have performed an acceptable service to their country in having their own wool manufactured in counter pieces to cloth made from Spanish wool, for without this positive demonstration, the trader would scarcely have been induced to believe what it was his interest to discredit; for so long as he could purchase the finest British wool at a lower price and mix it with the Spanish, his profits must have been considerably enhanced. Dr. Parry, in his Essay on the Merino race of sheep and the Merino-Ryelands, which was published in the Communications to the Board of Agriculture, and which has been noticed in the preceding part of this volume, complains that the difficulty of sale of the finest wool is among the principal impediments to its more extended growth. As friends to the *staple manufacture* of our own country, we have much satisfaction in announcing that the evil complained of by Dr. Parry has been since, in a great degree, removed, and chiefly by the exertions of Lord Somerville; for Mr. Sadler, at his repository near Smithfield, has established an annual sale by auction solely for Spanish and Merino-Ryeland wool grown in Great Britain. The sale in the summer, which was the first, was well attended by manufacturers, the wool obtained higher prices than had been before given, and the manufacturers pledged themselves to attend and support the undertaking at the next periodical return of the sale of wool.

*Coarse Wool of Merino Lambs.**

WITH respect to the Merino lambs, which are very hairy when dropped, and more like a goat than any thing of the sheep kind, the writer asserts from his own experience, that they will become as fine woolled in the following year as if they had been dropped more woolly, and will produce a progeny equally perfect.

The above fact by *Notes* from Dickson's Agricultural Magazine, No. 13., is well calculated to remove apprehensions from the minds of young and inexperienced breeders. *Ed.*

☞ THE observations in the preceding pages, in conjunction with those of Mr. Livingston and those of Dr. Mease recently published in the first number of his excellent work, entitled "Archives of Useful Knowledge," are deemed sufficient to establish the importance of the Merino breed of Sheep crossed on our own native flocks.....And whilst the Editor warmly wishes the fullest success to those who have thus by their exertions conferred so valuable a benefit on our country.....he ardently hopes, that no impediment may arise to its extensive diffusion, by unnecessarily augmenting the prices of either the sheep themselves, nor the cloth manufactured from their fleeces; which, by concentrating the business in the hands of a few capitalists, must eventually tend to depress the activity of the community at large.

* Retrospect, V. IV. p. 258.

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