

The History of Sheep Breeds in Britain

By M. L. RYDER

(Continued from p. 12)

THE main point that emerges from the foregoing survey is that about 1800 the different breeds could be grouped into three or four broad types associated with certain areas of the country. This distribution is summarized very diagrammatically in Fig. II. In fact these broad types are still mostly evident today.

First, Scotland and the western parts of Britain had a white-faced (or often tan-faced) type in which only the rams were horned. Today even the rams of some of these breeds are hornless. It has already been mentioned that the Shetland sheep provides a link between the primitive brown Soay and the rest of the group exemplified by the Cheviot breed, and although both the Soay and Shetland have soft, fine wool, the Shetland has far less pigment than the Soay. Two stuffed Shetland sheep that came from Unst in 1871, and are now at the Wool Industries Research Association, Leeds, were described by Elwes as unusual in being pure white.¹ The Soay and Shetland, like most other members of this group, have fleeces lacking the long hairs common in the fleeces of the black-faced group, but they are likely to be kempy. In fact the Welsh Mountain sometimes has 'red' kemps, any pigment in this group being brown, as opposed to the black fibres often found in the fleeces of black-faced sheep. Low (1842) shows some as brown animals like the Soay. The Herdwick is an exception; it has a double-coated fleece, often with black fibres, similar to those of the black-faced horned group, in addition to brown coloration. This and its higher frequency of the gene for haemoglobin A suggests fairly recent introduction of black-faced blood. Some Scandinavian sheep have a white face, suggesting a link with the above British type, and this is supported by the high gene frequency for haemoglobin A (about 0.90) in Scandinavian sheep,² and in the Shetland (0.93), but this similarity could be due to selection in a similar environment. The link with Scandinavia was supported by the examination of Norse wools from Scottish sites. Compared with earlier and later specimens from Scotland these were predominantly hairy, differing from the native Soay. The Herdwick is therefore possibly the

¹ H. J. Elwes, *The Scottish Naturalist*, 1912, p. 7.

² J. V. Evans, *Advancement of Science*, XIII, 1956, pp. 198-200.

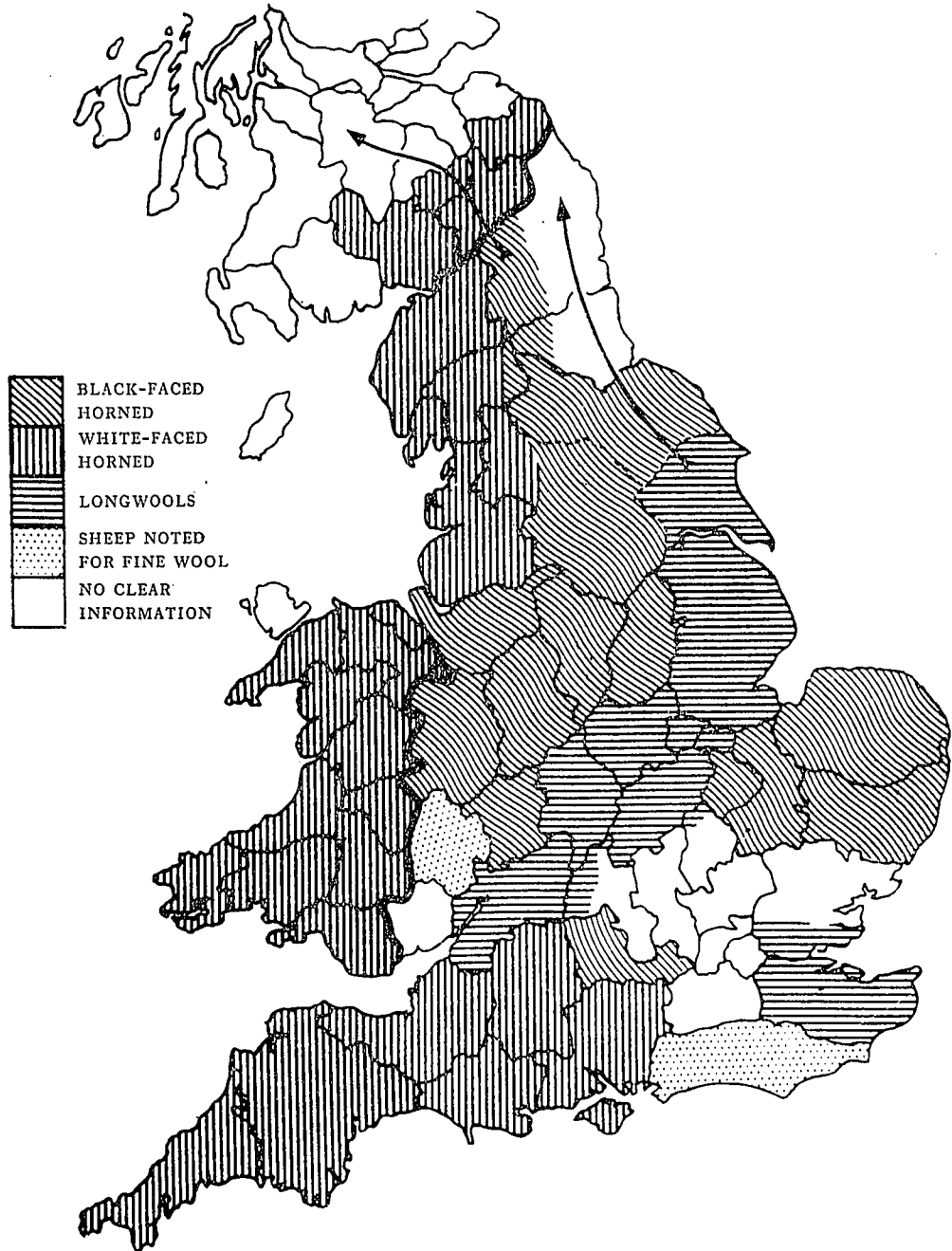


FIG. II
DISTRIBUTION OF BREED TYPES ABOUT THE YEAR 1800

sole survivor of a hairy Norse sheep that came from the north, and it is said that a similar sheep existed in south-west Scotland two hundred years ago.

Some breeds of this group that are now extinct, or almost so, are the Silverdale of north Lancashire and the White-faced Woodland of south-east Lancashire. The white-faced horned group may have extended farther east, as I have a photograph taken by my grandfather about 1905 showing white-faced horned sheep (with one or two black-faced ones) at Deepdale, Upper Wharfedale, which is now a stronghold of the Dalesbred breed (derived fairly recently from the Swaledale). It may have been therefore from this group that the Lonk and Gritstone acquired their lower gene frequencies for haemoglobin A. And it may have been from the same source that these breeds acquired a relatively finer fleece in addition. In this connection it is of interest to mention a sample of wool that was found when the upper story of an eighteenth-century cottage was being demolished in Addingham, Wharfedale. This could be dated only as being between fifty and two hundred years old. It, however, comprised fine wool and coarse hairs that had brown as well as black locks. The hairs had the roots of shed fibres, and the wool was matted amongst the hair as happens in the moulting of primitive sheep. This fleece was like that of the Herdwick and unlike that of the Swaledale.

This leads to the next broad type, the black-faced horned group (the Linton of Mr Trow-Smith). The breeds of this group, typified by the Scots Blackface, have horns with a second spiral like those of the wild Argali sheep. These are unlike the more tightly curled horns of the white-faced horned group, such as those in the Cheviot and Welsh Mountain, which are similar to those of the Soay, and which can probably be ultimately related to those of the wild Moufflon. The black-faced horned type was widespread around 1800 from Berkshire and East Anglia to the Pennines and the mountains of Scotland (Fig. II). But it had reached the Highlands as recently as the second half of the eighteenth century. It appears from the almost extinct Norfolk that the fleeces of these sheep in the south were less hairy than those in the north.

Hornless sheep noted for their fine wool occurred in two widely separated places: the Ryeland in Hereford, and the Southdown in Sussex. Both breeds tend to have woolly faces today. The dusky face of the Southdown may be the result of influence from the black-faced group in the eastern counties. The Romney of Kent is something of an enigma, but it appears to represent a primitive long-wool. The more typical (lustre) long-wools first appeared in the Midlands from the Cotswolds to Lincoln, whence they spread into the south-west and Yorkshire respectively.

TABLE II
SUMMARY OF WOOL TYPES FOUND IN PARCHEMENTS
simplified from Ryder in *Nature*, CLXXXVII, 1960, pp. 130-2, and including additional specimens

	"England"	Yorkshire	Scotland	Canterbury	Spain	Soay	British Totals Fine F M Med. Hairy
A.D. 1100-1200	1193 fine-medium				1163 hairy sheep or goat	-	- 1 -
1200-1300	undated ? Soay 1217 fine 1220 fine-medium 1231 fine-medium 1274 ? Soay 1297 fine-medium						
1300-1400	1305 ? Soay 1314 fine-medium 1322 fine 1341 fine-medium 1344 hairy sheep or goat 1387 ? Soay 1392 fine	1328 fine-medium 1346 medium 1350 fine 1350 fine-medium 1350 fine-medium 1365 hairy 1374 medium or hairy 1376 fine 1393 ? Soay				1	1 1 3 - -
1400-1500	1405 fine-medium (pigmented) 1413 fine-medium 1415 fine-medium 1462 medium 1478 fine	1402 fine 1403 hairy 1494 ? hairy		1450-7 medium		3	4 6 1 3
1500-1600	1503 fine-medium 1527 hairy 1560 fine-medium 1572 medium "Elizabeth" medium	1505 ? hairy 1506 medium 1509 hairy 1511 fine-medium 1511 fine-medium 1513 medium 1537 fine-medium	1519 ? Soay 1574 ? Soay 1580 ? Soay 1594 ? Soay 1597 ? Soay 1597 medium (pigmented)	1502 fine-medium	1608 hairy sheep or goat	-	2 3 2 2
						5	- 6 5 3

SHEEP BREEDS IN BRITAIN

TABLE II—continued

A.D. 1600-1700	"England"	Yorkshire	Scotland	Canterbury	"Hereford"*	British Totals				
						Soay	Fine	F/M Med. Hairy		
	1607 fine-medium 1610 medium 1613 medium 1632 ? Soay 1643 ? hairy 1647 ? fine 1655 fine-medium (pigmented) 1656 fine-medium 1659 medium 1677 medium 1687 medium	1689 medium	1603 medium (pigmented) 1661 ? Soay 1664 ? Soay	1692 fine						
	1702 fine-medium 1710 medium 1736 medium				1743 medium 1747 hairy 1747 medium 1762 medium × 2 1766 hairy/goat 1767 medium 1769 medium 1771 fine-medium 1775 medium 1779 medium 1784 hairy/goat 1792 medium 1793 medium	3	2	3	7	1
1700-1800										
1800-1900					1840 medium 1843 fine-medium	-	-	1	1	-

* Many of the Hereford parchments were from other parts of Britain.

THE SIXTEENTH AND SEVENTEENTH CENTURIES

The next step is to move further backward in time to see how far these groups can be defined in earlier periods. We are fortunate again here in that Mr Trow-Smith has reviewed much of the historical evidence in his first volume. The sixteenth and seventeenth centuries were a time of change from the subsistence farming of the feudal system to the commercial agriculture carried out by yeoman farmers. More land became available as a result of enclosure, and this enabled greater control to be kept on breeding, but changes in livestock husbandry were entirely due to an increased demand for meat in the expanding towns, and the result was that meat became as valuable as wool. In fact, in Britain, wool was never again to receive the attention paid to it in the Middle Ages, and Dr Bowden has shown from historical records that wool became coarser, as well as longer, during the sixteenth and seventeenth centuries.¹

This finding has been supported by the examination of parchments.² Hairy sheep were apparently kept in all periods (these on the whole appeared like the black-faced, horned type). Whereas most of the parchments with fine wool came from the medieval period, the medium wools became more common in the sixteenth century and predominated after that date (Table II), these are likely to have come from the white-faced hornless type, although some of the medium wools could have come from the white-faced horned type. But as many of the medium-wools are likely to have been long-wools, historical evidence of an increased supply of long wool in the sixteenth and seventeenth centuries is therefore supported. The medium fibres were the coarsest in eighteenth-century parchments, which is in keeping with the records of large, coarse-fleeced Leicesters and Lincolns in that century.

There is no doubt that this change in the type of wool, beginning in the sixteenth century and continuing into the eighteenth, came about as a result of a change in the type of sheep, and was not a direct consequence of the increased feed resulting from enclosure as implied by Dr Bowden.³ Sinclair (1791) said that farmers *introduced* larger animals after 1750. I put *introduced* in italics to emphasize that the better feed resulting from enclosure did not in itself make sheep grow longer and coarser wool: it enabled bigger and longer-woolled sheep to be kept, and allowed the full expression of a genetic potentiality to produce long wool. Dr C. H. Parry confirmed this in 1800 when referring to the enclosures of the eighteenth century, and the same

¹ P. J. Bowden, *Econ. Hist. Rev.*, 2nd series, ix, 1956, pp. 44-58.

² M. L. Ryder, in *Nature*, CLXXXVII, 1960, pp. 130-2; and *idem*, 'Remains derived from skin' in D. R. Brothwell and E. S. Higgs (eds.), *Science in Archaeology*, London, 1963.

³ P. J. Bowden, *The Wool Trade in Tudor and Stuart England*, London, 1962.

thing must have happened after the earlier enclosures. He said: "The secret then is this: that when commons and downs abounded and food was short and scanty, the farmers were compelled to stock them with those breeds of sheep which they would fatten, or at least support. But after these commons had been enclosed, and by cultivation and manuring yielded more abundant crops of nutritious vegetables, the farmer, able to choose which breed he pleased, gratified his fancy by sacrificing his Ryelands for a grosser and more fashionable stock. Thus, then, if enclosures have diminished the fineness of the wool, this event has been not the natural effect of the food on the body of the animal, but the moral effect of the change of crop on the mind of the farmer."¹

Surveying the broad groups again, there is little documentary evidence from Scotland before the eighteenth century, but in the late sixteenth century the sheep of the Scottish border were apparently small, horned, and dun-faced. It seems likely, as Mr Trow-Smith suggests, that this was the ancestor of the Cheviot. Lisle (1757) said that this sheep had good wool and had as many as six horns. This multi-horned trait occurred also in the sheep of Cornwall, and still persists in the primitive Loaghtan (mouse-coloured) breed of the Isle of Man that is related to the Soay. Such characters provide further support for the suggestion that these sheep had a common ancestor.

A group of Scottish parchments from the sixteenth and seventeenth centuries nearly all had pigmented follicle remains, suggesting the Soay sheep, and several of the English medieval parchments had pigmented fibres closely resembling those of the Soay (see Table II).

The Welsh Mountain Breed is well attested in the sixteenth and seventeenth centuries as a small, horned sheep with a tan face. And in the south-west there was a similar type which Mr Trow-Smith aptly terms the South-West Horned. The sheep of Cornwall seem to have been the most primitive; even in Youatt's time there were both horned and hornless animals, and both light and dark faces, among the Cornish sheep. This gives a vivid picture of the variability that must have existed in the most primitive sheep of Britain. The unimproved Portland breed, now almost extinct, is probably a good example of what the South-West Horned type was like before it evolved into such breeds as the Wiltshire Horn and Dorset Horn. It is of interest that the long breeding season for which the Dorset Horn is now famed was noted by Edward Lisle as early as 1757, in the Wiltshire breed. The only other breed

¹ C. H. Parry, *Facts and Observations tending to Show the Practicability and Advantage to the Individual and the Nation of Producing in the British Isles Clothing Wool Equal to that of Spain; together with some hints towards the management of fine-woolled sheep*, Bath, 1800.

that is so fertile is the Merino, and this has led some to suggest Merino blood in the modern Dorset.

The Wiltshire breed extended through Hampshire to meet the fine-woolled "hillish breed," no doubt the ancestor of the Southdown, kept by Toke of Kent in the early seventeenth century. Toke also had a large "marshe" sheep, doubtless the ancestor of the Romney. Gilbert White, a very reliable observer, said in 1773 that west of the river Adur in Sussex all the flocks had horns, and smooth, white faces and white legs, while to the east the sheep were hornless with black faces, and a white tuft of wool on their foreheads. These, he said, had the shortest legs and the finest wool, which holds good for the Southdown today.

The Ryeland was spread through Herefordshire, Shropshire, and Worcestershire, and the Norfolk was widespread in East Anglia. Starting on the hills of the north Midlands, and extending northwards, was the black-faced stock, already mentioned as the Linton. The Cotswold was already known by name, and the Midland counties were inhabited by a large long-woolled sheep typified by the Leicester and Lincoln, and named by Mr Trow-Smith the Midland Longwool.

The broad types evident at the end of the eighteenth century seem therefore to go back to the sixteenth century as regional types which gave rise to the native breed that each county had in the eighteenth century. But the evidence for this is not as strong as that of 1800. For instance, Henry Best of East Yorkshire who wrote in 1641, and gave an excellent account of contemporary sheep farming, did not describe his animals, and spoke of sheep as if they were all of the same type.¹ He did, however, have "pasture sheep" which produced finer wool than his "folded sheep." He preferred sheep to be without horns, because he said that horned sheep affected with lice tear their wool when they scratch with their horns. This suggests a variability in horns like that found in the Cornish sheep. Could his folded sheep have been longwools that had spread northwards from Lincoln? The East Riding today has more Leicester Longwools than Leicestershire itself. Best was very conscious of wool quality. He said that rams should have a smooth, fine staple, and said that wool men found fault with wool that was hairy, and were "desirous of a long fleece." It was unprofitable, he said, to have many black sheep, although a few of them were useful to provide wool for grey stockings.

He mentions lambs being born coloured and then becoming white during the first few months of life. This occurs today in at least two breeds: the Herdwick and the Suffolk. He also writes of rams with speckled faces, which

¹ Henry Best, *Rural Economy in Yorkshire*, 1641, ed. C. Best Robinson, *Surtees Soc.*, xxxiii, 1857.

suggests black-faced horned animals because these often have faces with black and white patches.

THE LINK-UP WITH THE MIDDLE AGES

We push back finally to the Middle Ages, during the latter part of which, at any rate, Britain produced the most wool, and the finest wool (fineness meaning narrowness of fibre diameter); British wool apparently had a greater reputation for fineness than even Spanish wool at that time.

From the foregoing evidence on distribution, it can be suggested that there were three main influxes of different types of sheep into Britain. The first of these was, probably, the Soay type, arriving during prehistoric times. The next main influx perhaps came with the Romans. This Roman stock was probably white-faced and hornless (at least in the ewes, like the Merino) and perhaps had a fleece like the generalized medium-wool of the Near East. It has already been mentioned that this medium-wool probably gave rise to the fine-woolled Merino on the one hand, and it could have given rise to the short-wool (down type) and the long-wool on the other. Such a link of continental with British sheep cannot be supported by the low gene frequency for high blood potassium in the Spanish Merino (0·14), the British long-wools (about 0·1), and the fine, short-woolled Ryeland (0·23) (Table I) because of the possibility of selection, so Evans's suggestion of a link of sheep between Iberia and south-west England in association with Megalithic (Neolithic) remains is untenable.¹ The Devon Longwool (gene frequency 0·13) almost certainly reached the south-west, from the main Midland Longwool stock, much later. The white-faced, horned stock probably originated from crosses of the Roman sheep with the indigenous Soay type. This stock persisted mainly in the north and west, and may have been pushed there with its owners by the Romans. At some time, a third stock arrived, with black faces and horns, possibly with the Danes.

Medieval archaeology is beginning to yield skeletal material that may throw light on the size and shape of medieval sheep. The bones found have been mainly from slender animals,² but many more bones from other sites need to be measured before possible carcass differences between types can be detected. When horned and hornless sheep skulls were first found at Kirkstall Abbey it was thought that the horned skulls might indicate hairy, Pennine hill sheep (possibly black-faced horned) and that the hornless skulls might indicate long-wools. But they could have been from horned rams and hornless ewes, or have resulted from general variability within the same type,

¹ J. V. Evans, *Advancement of Science*, *loc. cit.*

² M. L. Ryder, in *AHR* IX, 1961, pp. 105-10.

e.g. if the white-faced horned type had originally extended further east, or the horned skulls may have been rams or wethers of the medium-woolled type, which is likely to have been the sheep that the monasteries kept to produce wool of good quality.

TABLE III
SOME ILLUSTRATIONS OF SHEEP IN PAINTINGS AND SCULPTURE

<i>Date</i>	<i>Country</i>	<i>Title</i>	<i>Face colour</i>	<i>Horns</i>	<i>Fleece and other details</i>
Roman	Scotland	Carving on Antonine Wall (Mus. Antiq., Edinb.)	—	horned	'rough' wool
c. A.D. 800	Scotland	Carving at St Andrews Cathedral (Mus. Antiq., Edinb.)	—	horned	'rough' wool
c. 1000	England	Harley MS. 603, fo. 69b	white	polled	long tails
11th cent.	England	MS. Cotton Julius A vi	white	4 horned	suckling a lamb
12th cent.	England	Natural History, Royal 12. cxix fo. 19	white	1 polled	
12th cent.	England	Psalter, Trin. College, Camb. R 17, 1.	white	horned	
c. 1200	England	Bestiary, Ashmole 1511 sheep, fo. 29 ^v	white	short	closely shorn
		wether, fo. 30	white	horned	closely shorn
		lamb, fo. 30	white	polled	closely shorn
13th cent.	England	Bestiary, St John's College, Oxford, M61, fo. 21	5 white 2 brown (1 all brown)		closely shorn
		sheep grazing, fo. 25 ^v	white	horned	black or brown parts interpreted as shadow
		wether, fo. 26	white	horned	
		lamb, fo. 26 ^v	white	polled	short wool
1230	France	Relief at Chartres Cathedral	—	5 polled sheep	
c. 1340	England	Luttrell Psalter	apparently white	2 of 20 horned	being milked and shorn; fleece of short curls
2nd qtr 14th cent.	England	Holkham Bible Picture Book Add. MS. 47,682, fo. 2b	white	horned	Idealized wavy wool with curly ends
c. 1350	England	Carving in Byton Church, Hereford	—	polled	short wool (Capt. Sir Hugh Rhys Rankin thinks that this might be an ancestor of the Border Leicester)
14th cent.	Spain	Add. MS. 20,787, fo. 112b	white	horned and polled	long legs and neck; stylized long wavy wool
14th cent.	Italy	Nativity by Ghissi	white	horned with 2nd spiral	

<i>Date</i>	<i>Country</i>	<i>Title</i>	<i>Face colour</i>	<i>Horns</i>	<i>Fleece and other details</i>
about 1423	France	Bedford Book of Hours Add. MS. 18,850 fo. 3, Aries	white	yellow horns from side horned	short wool, tail to hocks
early 15th cent.	France	fo. 16b, Leaving the Ark Adoration of the Magi	white white	4 polled	small and indistinct
early 15th cent.	Flanders	"Adoration of Immaculate Lamb" by brothers van Eyck	white	polled ram	good mutton conformation, brown legs
15th cent.	N. France	Angel and Shepherds, Book of Hours Nat. Lib. Scot. Add. MS. 18.7.12	white	5 polled	short wool
15th cent.	Flanders	"Angel appearing to Shepherds" in book of hours	white	1 of 8 horned	short wool
1452-60	France	"St Margaret" by Jean Fouquet in book of hours of Etienne Chevalier	white	5 polled sheep	short wool
1st half of 15th cent.	France	Angel and Shepherds in above book of hours Add. MS. 16,997, fo. 63	white	8 polled	remainder have heads hidden
1470	France	Dance of Shepherds	apparently white	horned ? ram polled ? ewe and lamb	short wool
15th cent.	France or Flanders	The Shepherds in the Fields, Book of Hours Edinb. Univ. Lib., MS. 305	white	9 polled	short wool
late 15th cent.	England	Bestiary	white	horned	short, tight stylized curls (as 1340 above)
about 1500	Flanders	Angel and Shepherds Add. MS. 38,126, fo. 79b	14 white 2 brown	polled	short wool, details not clear
1510	Germany	"The Crucifixion" by Mathias Grunewald	white	polled	short wool
about 1520	Flanders	Sforza book of hours Shepherds at Bethlehem Add. MS. 34,294, fo. 91	white	polled flock	short wool like Ryeland, good detail
1st half of 16th cent.	Italy	Nativity by Lotto of Venice	white	polled	short wool (excellent detail)
16th cent.	? South European shore	"The Fall of Icarus" by Peter Brueghel	white but two completely black sheep	polled	has Dutch plough yet shows high cliffs
16th cent. 1530	Flanders Flanders	Grimani Breviary Simon Bening, book of hours	white white	polled polled	July shearing June shearing
2nd half 16th cent.	Italy	"Animals entering the Ark" by Bassano	white woolly (concave nose)	polled	short wool
1595		"Europa" by Adrian Collaert	white	polled	short wool

<i>Date</i>	<i>Country</i>	<i>Title</i>	<i>Face colour</i>	<i>Horns</i>	<i>Fleece and other details</i>
about 1600	Flanders	"Spring" by Peter Brueghel the younger	white	polled	women shearing sheep on their laps
mid-17th cent.	Spain	"The Divine Shepherd" by Murillo	white	polled	short wool
mid-17th cent.	Italy	"Castel Gandolfo"	white	polled	also all-black and ? black face
		"Sermon on the Mount"	white	16 polled sheep	long legs, neck, and tail, bare face
		"Moses in Burning Bush" by Claude Lorraine	white	polled	short wool
mid-17th cent.	Holland	"The Bull" by Paul Potter	white	polled ewe and lamb horned (with 2nd spiral) ram	short wool
			brown		
mid-17th cent.	Holland	"The Annunciation to the Shepherds" by Nicholas Bercham	some white some brown	polled	short wool
mid-17th cent.	Holland	"The Migration of Jacob" by A. Van de Velde	dusky	short horns	short wool, tan patch on shoulder (? attempt to depict Jacob's sheep)

From the late eighteenth century onwards there are numerous paintings including illustrations of known breeds for which descriptions, too, are in existence, so the illustrations alone assume less importance. The following are a few examples.

<i>Date</i>	<i>Country</i>	<i>Title</i>	<i>Face colour</i>	<i>Horns</i>	<i>Fleece and other details</i>
1784	England	"The Harvest Wagon" by Thomas Gainsborough. Other paintings by Gainsborough show similar animals.	white	polled	thin sheep, short wool
1789	Hereford	Drawing on estate map from Bryngwyn (Capt. Sir Hugh Rhys Rankin, Bart.)	white	polled	like modern Ryeland
early 19th cent.	England	"Washing sheep in Wiltshire" by Sir David Wilkie	white	horned and polled	Also one all-black animal
			black	horned and polled	short wool
1820	Swansea	Porcelain ram in Victoria & Albert Museum	white	horned	? Welsh Mountain
c. 1825	S.E. England	"The Cornfield" by John Constable	black	polled	short wool with red raddle marks

There are several late eighteenth- and early nineteenth-century sheep illustrations in D. H. Boalch, *Prints and Paintings of British Farm Livestock, 1780-1910. A Record of the Rothamsted Collection*, Harpenden, 1958.

The illustrations in this table are a useful source of sheep history, and there are no doubt many more available for study. The assumption that the sheep illustrated are contemporary seems in general to be valid.

Most paintings and medieval illustrations (Table III) show white-faced hornless sheep, with occasional horned individuals that are probably rams. In all the illustrations examined so far the sheep are depicted with short wool, and often appear like the modern Merino, Ryeland, or Romney. No illustrations of long-woolled sheep have been found, although in a number of instances the fleece is shown with short curls like those of a recently shorn long-wool. Likewise no picture of a sheep with a recognizably hairy fleece, or with a black face, has been found. The only sheep found with coloured faces were those with brown faces in seventeenth-century Dutch paintings.

Prices are another source of information about medieval sheep. Mr Trow-Smith mentions a twelfth-century difference in price between coarse-woolled sheep at 6d. and apparently scarcer, fine-woolled sheep at 10d. each. One wonders whether these particular coarse-fleeced sheep were white-faced horned, black-faced horned, or merely the coarser-fleeced of the medium-wools that constituted the medieval fine-wool. There are three fourteenth-century wool price lists and two fifteenth-century ones in existence. The ordinances governing wool prices in 1343 and 1454 are detailed by Mr Trow-Smith. The average price in the former is shown cartographically by Pelham who also gives a map showing counties noted for coarse wool around 1400.¹ This is compiled from Parliamentary and Council proceedings; the counties with coarse wool were Cumberland, Northumberland, Westmorland, and Durham, Wiltshire, and the south-west, except Somerset, with no information from Scotland or Wales (but a hint of the white-faced, horned); the eastern and southern counties, including Cambridge, Surrey, and Sussex, also had coarse wool (a hint of the black-faced, horned type). The rest of England, from Hampshire through the midlands to Yorkshire, presumably produced finer wool.

The ordinance of 1454 is the most complete list, containing fifty grades. In both this and the 1343 list the most highly priced, and presumably therefore the finest, wool came from the Welsh border counties, and in 1454 the finest of all came from around Leominster in Herefordshire (6d. per lb. in 1454). Much has been written about the famous Lemster Ore "that with the silkworm's thread for smallness does compare," and this fineness may have been partly due to sparse pasture, but the existence of fine wool in the Middle Ages has been confirmed by examinations of parchments (Table II and see below). Considering all the evidence now available, it seems very likely that the Leominster wool was produced by the ancestor of the Hereford (now known as the Ryeland). But, as Mr Trow-Smith points out, Hereford pro-

¹ R. A. Pelham in H. C. Darby (ed.), *An Historical Geography of England before 1800*, Cambridge, 1948.

duced other wool that did not fetch such a high price, and other counties, too, produced more than one grade of wool. Captain Sir Hugh Rhys Rankin and Mr Trow-Smith hint that the coarser-woolled sheep of Hereford might have been a primitive long-wool.¹ The next highest in the 1454 price list were the Cotswold and Lincoln wools. Lincoln or Lindsey sheep, as they were then named, are mentioned as early as the beginning of the thirteenth century,² when they were being taken into Wiltshire. Could this movement have been the origin of the Bampton Longwool of Somerset which was probably the forerunner of the Devon Longwool? The Lincoln was also being taken into Yorkshire, which suggests that Henry Best could have had longwools in the seventeenth century, and this may have been the origin of the Teeswater. The high price of Cotswold and Lincoln wools almost certainly means that they were much finer, and no doubt shorter, than the wool of these breeds is today. Canterbury wool (Kent and Sussex Marsh) was on the other hand relatively low in price. This "breed" was named as early as the thirteenth century, and there are records of Canterbury fleeces being exported from Staffordshire and Nottinghamshire. This suggests a link between the Midland Longwool and the possible forerunner of the Romney. The only other "breed" that seems to have been mentioned by name was the Welsh Mountain, which already in the fourteenth century was an improved type distinct from a primitive sheep known as the Cardy.

Microscopic examinations of parchment have provided incontrovertible evidence of the reputed fineness of much medieval wool. Although the source of most parchments was known, too few have yet been examined to indicate the distribution of different types. Such a study would involve the assumption that the parchment was made near the place in which the document was written, but this may not always have been so. Certainly as early as the eighteenth century there is evidence that parchments were not necessarily made locally. A parchment from Spain dated 1163 was from a coarse-woolled (hairy) sheep, i.e. it had a fleece type like that of the black-faced horned group, with hairs and fine, woolly fibres. Such a fleece type is often kempy, too, and as it is almost impossible to remove the coarse fibres, such wool today is mainly used in carpets, although the finer grades are used to make tweeds. The earliest English parchment that I have so far been able to examine (Table II) was dated 1193, and this had wool root remains of medium diameter. When the medieval parchments were examined originally, the possibility of a wide range of diameter within a medium-wool was not realized. Thus parchments having fibres less than 18 microns in diameter³

¹ AHR VII, 1959, p. 26. See Table III, c. 1350.

² R. Trow-Smith, *op. cit.*

³ One micron (μ) = 1 thousandth of a mm.

were described as fine, and parchments with fibres from 18 to 35 microns were described as fine to medium. Today little Merino wool has an average diameter of less than 20 microns (70's quality) and no British wool has an average diameter of less than 25 microns (60's quality). Parchments in these fine and fine-to-medium categories predominated in the Middle Ages (Table II), although medium-woolled and hairy types were found too. The diameter of wool described as fine ranged down to 7 microns, and it is possible that some parchments with fibres around 10 microns in diameter came from young or starved animals. It is now realized that, owing to the fragmentary nature of many of the parchments, those described as fine, fine-to-medium, and some of those described as medium could have all come from the same generalized medium-woolled type, with a wide range of fibre diameter, from about 10 to 50 microns, like that of the Near East. Wool from this was like a blend of 70-74's Merino with 15-20 per cent of coarser, 50-56's quality. But Romano-British textiles showed that this type had already given rise to the fleece type with a diameter range (18-35 microns) of the short-wool (Ryeland) now found widely in the down types, and to the diameter range of the long-wool (30-50 microns). Examination of more specimens of medieval wool that are available from textiles would add to this knowledge. Some wool from a burial dated about the thirteenth century at Thetford Priory, Norfolk, had a range of fibre diameter from 15 to 30 microns and some of the fibres were pigmented. This suggests a medium-woolled sheep possibly with Soay blood and not a hairy type as claimed by the authors.¹ The fifteenth-century Hungate boat found in York was caulked with fine wool fibres (finer than 60's quality).² Parchments with medium wool became more common in the sixteenth century and predominated after that time. In fact, the medium parchments of the eighteenth century (almost certainly long wools) had fibres approaching 60 microns in diameter; such coarse fibres are infrequent in long-wools today.

The long, lustrous fleeces of the modern long-wools are so different from those of other breeds that there has been much speculation on how they originated. The fact that the Cotswold and Lincoln sheep emerged into history as long-wools in areas noted for Roman sheep farming led Mr Trow-Smith to suggest that the long-wools might have been introduced by the Romans. Such an ancestry is supported by evidence presented above. But whether a true long-wool had emerged before the Middle Ages is not clear. No illustration of a long-woolled fleece has been found (Table III), and their wool was almost certainly not as long and coarse in the Middle Ages as it is

¹ H. B. Carter and A. S. Henshall in *Medieval Archaeology*, 1, 1957, pp. 102-3.

² L. Biek, personal communication.

now; the fleece may have been about the same length as that of the Romney, which is today intermediate in length between that of the short-woolled down breeds, and the lustre long-wools (Leicester etc., Table I), and can perhaps be regarded as a primitive long-wool. The medieval parchments with medium and fine-to-medium wool could have been from a primitive long-wool like this.

The occurrence of a hairy and horned variant in the New Zealand Romney, which is due to a gene known as the N-type, has led to the suggestion that the long-wool evolved from a hairy fleece type. It now seems more likely that the long-wools and short-wools evolved from a common ancestor—the medium-wool type with medium and fine fibres. But whether this ancestor had potential long-wools that only expressed this potentiality in the right environment is not clear. It has often been said that in earlier times sheep were closely associated with particular districts, and that their isolation and lack of movement allowed the different regional types to evolve. For instance, the Romney has a superficial resemblance to the Southdown on the hills nearby, and this leads to the speculation that the two may have arisen from a common ancestor by a process of natural selection in widely differing environments, the lush feeding of the Romney Marshes having allowed a larger sheep with coarser and longer wool to evolve. But one must bear in mind that factors such as close in-breeding in isolation, and occasional wide out-crosses, together with intentional and unintentional genetic and environmental changes by man, almost certainly contributed more than the environment alone to such divergence of types.¹ Although sheep may have been isolated in certain parts of the country, there is evidence of surprisingly large movements in medieval times.

Alternatively, since the constant expression of a character (canalization²) can be upset by the introduction into the population of different hereditary factors, a lustrous long-wool may have come in with non-lustrous polled stock introduced at any time from the Roman period to the Middle Ages. A horned long-wool seems inconceivable today, but according to Youatt, the Romney was horned as late as 1750 (it sometimes has scurs today) and he said that the other long-wools were horned in the Middle Ages, but his evidence for this is doubtful. However, the genetic character causing lack of horns in the Merino and the Dorset Horn is not associated with long wool. But it does seem that the great length and lustre of modern long wool owe much to a mutant, with or without a genetic association with the lack of horns. That

¹ I am indebted to Mr M. R. Patchell, Senior Lecturer in Animal Breeding at New England University, for stressing this point to me.

² A. S. Fraser, *The Australian Scientist*, 1, 1961, pp. 35-42.

such a mutant is possible is shown by the recent appearance of a lustre mutant in the Australian Merino.¹

Mr Trow-Smith considers that the great wool-producing abbeys must have helped in the introduction of sheep into new districts: in particular the introduction by the Cistercians of improved sheep into the north. He mentions a record of 1323 of sheep being taken from East Anglia to restock royal manors in the north. This suggests a link between the northern black-faced sheep and the Norfolk stock. Mr Trow-Smith considers that this might have been the time when the forerunner of the northern black-faced breeds acquired their Argali-like horns. This wide-spreading type of horn is distinct from the more tightly curled horns of the white-faced horned group. But I cannot agree with him that the horns of the northern black-faced sheep differ from those of the Norfolk. It has been mentioned that these sheep may have arrived, at any rate temporarily, as early as the Bronze Age, but the fact that they are found in areas of England occupied by the Danes before the Norman Conquest has led several authors to suggest that the Danes brought them.² This does not invalidate the earlier suggestion that the Norsemen brought the ancestor of the Herdwick, as it is known that the Vikings occupying different parts of Britain came from different parts of Scandinavia. There is a strong suggestion of Asiatic origin in the horn shape and black face—many modern Asiatic breeds have black faces. An introduction by the Danes is in keeping with the suggestion of Associate-Professor Evans that the black-faced group reached Britain from Asia via northern Europe, whereas the white-faced (hornless) group followed a route further south.³ One might argue that just as the Romans tended to push the indigenous sheep to the west and north, the Danes tended to push the Roman sheep to the west and south. Thus the Hereford and Cotswold are found in the west, the Romney in the south-east, and the Southdown between may have received some black-faced blood.

It seems unlikely that this black-faced stock came as late as the Middle Ages, as Mr Trow-Smith suggests. The hairy sheep found in the medieval parchments, such as that dated 1403, appeared most like the black-faced horned group. But it is noteworthy that as yet no illustrations of a black-faced sheep have been found before the eighteenth century. Although medieval records of importation have been found, the statement in the chronicles of St Albans Abbey, that sheep scab in 1274 was brought in by imported Spanish sheep, supports the suggestion of importation at that time. The mention of Spanish sheep suggests the Merino, and it is possible that some British sheep

¹ B. F. Short, *Nature*, CLXXXI, 1958, p. 1414.

² Sir Alfred E. Pease, in *J. Yorks. Agric. Soc.*, 1930.

³ Personal communication.

acquired Merino blood at this time. And this might explain the extreme fineness of some of the medieval textiles. Mr Trow-Smith goes so far as to suggest that the black-faced stock may have obtained its horn shape from the Merino at this time. The extreme difference in fleece type between them makes this extremely unlikely; it is more probable that the ancestors of the Blackface and Merino acquired this horn shape before they left the Near East.

SUMMARY AND CONCLUSIONS

(1) There is little clear evidence on the type of sheep kept in Britain during prehistoric times. But it seems very likely that, at least during the later period of prehistory, the main sheep was the horned, brown, woolly Soay, or a sheep akin to it.

(2) The next type of sheep to arrive in Britain was probably white-faced, and mainly hornless. It seems likely that this came with the Romans. Crosses of these sheep with the indigenous Soay could have given rise to the white- or tan-faced horned type of sheep, the breeds of which are still associated with Scotland and the western parts of Britain.

(3) This hornless white-face was probably associated with the Merino of the continent, and could, on its own, have given rise, first, to the medieval short-wool, now probably represented by the Ryeland breed, and second, to the medieval long-wool that may have been like the modern Romney.

(4) The third main stock to arrive was black-faced, horned, and hairy. These sheep seem to have an Asiatic origin, and the fact that this type of sheep emerged into recent history in the north and east of England, areas occupied by the Danes, suggests that the Danes brought them. This type seems to have influenced the Southdown, the ancestor of the other modern down breeds. On its own it gave rise to the black-faced breeds of the Penines and the Scottish Blackface.

(5) Medieval and later illustrations show mostly white-faced short-wools. Wool fibres remaining in parchments indicate a predominance of fine (probably short) wools in the Middle Ages, a coarsening of the wool during the sixteenth and seventeenth centuries, and a predominance of medium wools (long-wools) during the eighteenth. This was when the long-wools were replacing the short and fine-fleeced Ryeland, the eclipse of which became complete with the rise of the modern down breeds in the nineteenth century.