

## JACOB LAMB BIRTH COATS

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My last article outlined A phenomenon in which piebald lambs having a coat of intermediate hairiness have black wool which is not only longer and coarser than the white wool on the same animal, but which has a different coat structure in terms of the fibre type array.'

It can be argued that the effect cannot occur in woolly lambs since the white fibres are already short and fine. Similarly the hairiness of hairy lambs is so strong' that any effect is swamped, according to M L Ryder and S Adalsteinsson, and their findings are summarized in Table 1.

Possible explanations for this effect, which is apparently caused by the gene that restricts the production of pigment of certain areas of the skin. M L Ryder suggests there might also be two kinds of spotting gene, one (SI) producing long wool and the other (S 2) producing short wool.

Jacob members who are particularly interested in improving wool quality may find this information helpful.

### FINE WOOL

The Histerotrich fibres are the shortest and finest fibres of the birthcoat. See Fig 4. The shorter, even length fibres of the black and white areas, predict a finer fleece at maturity.

According to M L Ryder and S K Stephenson in their book 'Wool Growth', "In the mature fleece the different types of wool fibre are related to the type of birthcoat fibre which preceded them. Where these birthcoat fibres are fine and have little medulla, e.g. sickles, fine sickles and checked curly tips, there is little shedding of such fibres and the birthcoat grows continuously."

### HALO-HAIRS

M L Ryder goes on to say, "With a fine woolly type of birthcoat the first tendency for hairiness is always shown by the appearance of Halo-Hairs on the breech and the tail, and as the coarseness of the birthcoat increases the density of halos in these regions increases.

FIGURE 1 Wool Fibres



FIG. 1.

The next change is an increase in the coverage, so that halo-hairs are found on the back and withers of the lamb. Still coarser birthcoats have Halo-hairs on the side of the trunk and on the shoulder, these often protruding above the rest of the birthcoat in the young lamb to give the appearance of a halo.

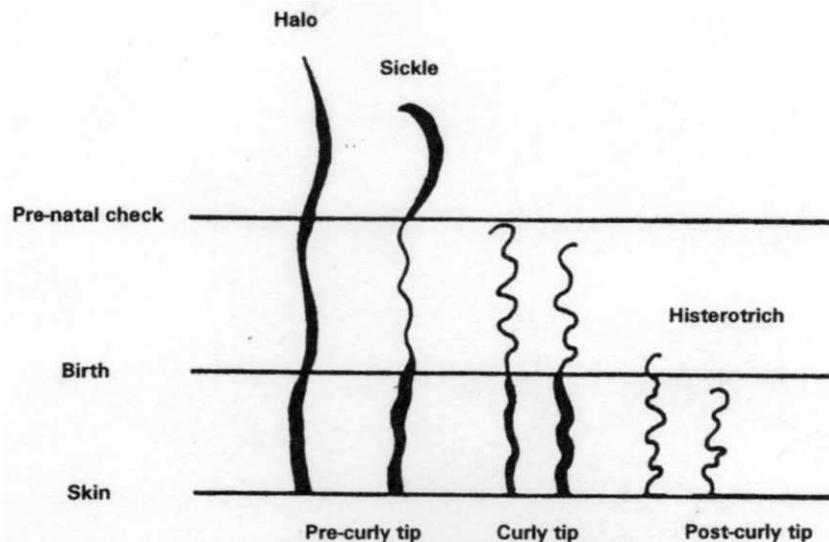
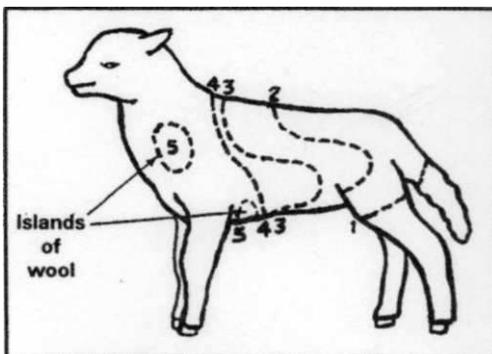


FIGURE 2 Fibre types in lamb birthcoats (after Ryder)

Figure 3



As illustrated in Fig 3, birthcoats of this type have two small areas where halo-hairs are still absent or few in number, one on the side of the neck, and the other on the side of the body behind the elbow. Therefore the theoretical expectation is that the proportion of kemp will be highest in those areas of the body with the greatest abundance of Halo-hairs.

Grades of hairiness (halo-hair coverage) in the birthcoat. Grade 6, complete coverage.

## KEMP

According to M L Ryder, "One of the problems in getting rid of kemp is its association with a protective birthcoat, since kemp in the birthcoat are shed by the lamb to be replaced by other kemp in the adult fleece. Observations on lambs in the Welsh Mountain breed have shown that those with intermediate hair coverage survived better than those with either very hairy or very fine coats. In addition, it is not birthcoat kemp as such that provide protective insulation, but the length and density of the coat. What are required in the birthcoat are long, coarse fibres that are replaced, not by kemp, but by finer fibres in the adult fleece.

Kemp is not essential for hardiness, and it should be possible to breed hardy animals lacking kemp

Coat structure differences in piebald lambs.

Table 1. Lamb coat characteristics (From Ryder and Adalsteinsson 1987)

Coat description	Animal identity	Coat length (mm)		Coat grade
		Black	White	
Long black long white	3 Jacob	55	55	Hairy
	8 -	-	-	Hairy
	10 -	-	-	Hairy
	13 -	-	-	Hairy
	15 -	-	-	Hairy
	12 -	-	-	Hairy
	27 Jacob	-	-	Hairy
	28 -	-	-	Hairy
	32 Shetland	-	-	+Iairy
	35 Shetland	-	-	Hairy
Long black short white	6	40	22	Intermediate
	7	50	35	Woolly
	9	40	20	Hairy
	12	40	25	Intermediate
	14	35	30	Intermediate
	24	30	20	Intermediate
	31	40	30	Hairy

	33	45	27	Intermediate
	34	40	30	Not recorded
Short black long	2 Jacob	45	55	Hairy
white	11 Jacob	35	50	Hairy
Short black short	29 Jacob	45	55	Intermediate
white	1	-	-	Woolly
	4	-	-	Woolly
	5	-	-	Woolly
	16	-	-	Woolly
	21	-	-	Woolly
	25	-	-	Woolly
	26	-	-	Woolly
	30	-	-	Woolly
	22	20	20	Woolly

## HAIR

"Hair in contrast to kemp, as well as being much longer, is less coarse and has more solid substance, being therefore stronger.

Hair is a product of domestication and is intermediate between coarse kemp and finewool. Whereas kemp does not grow to a great length before shedding, hair grows for a much longer period, merely thinning down and continuing to grow when kemp sheds.

When a hair thins down owing to seasonal influences during winter it loses its hollow core (the Medulla) See Fig 1. It is therefore coarse and kemp like in summer, becoming fine and wool like during winter, suggests M L Ryder

## SHAPE OF WOOL TIP

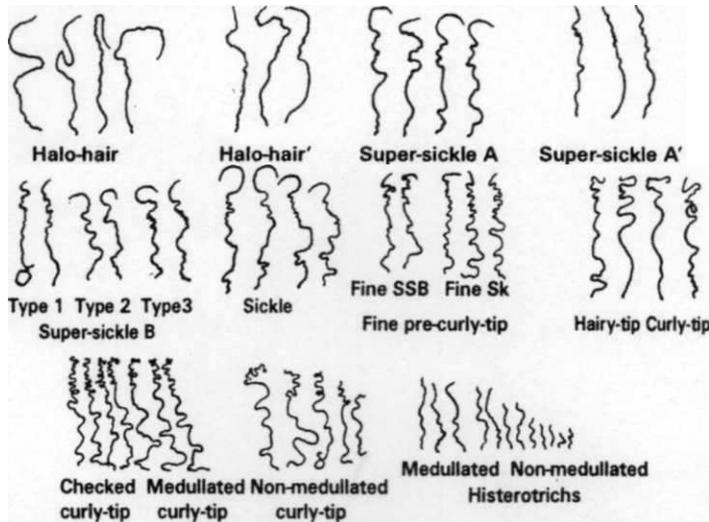


Figure 4. Fibre Types

Members wishing to test their own lamb wool sample may follow this procedure: In order to determine the types of fibre in the coat of a lamb, a lock of about 100 fibres is split into the individual fibres it contains, and these are laid out on a board covered with black velvet in a sequence according to the shape of the tip which is related to the order in which they began to grow.

Figure 4. Fibre Types. Thick lines indicate medullated portions of fibre. (From Stephenson, 1956)

Jacob lambs with our own Bentley Flock, when determined either woolly (level black and white staple) or intermediate (longer black and shorter white staple), when sheared at maturity, produced fleeces which gained top scores in Ciba-Geigy/BWMB Wool Competitions.

## REFERENCES

I wish to thank Dr Ryder who has kindly assisted me in allowing the use of published text and illustrations.

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