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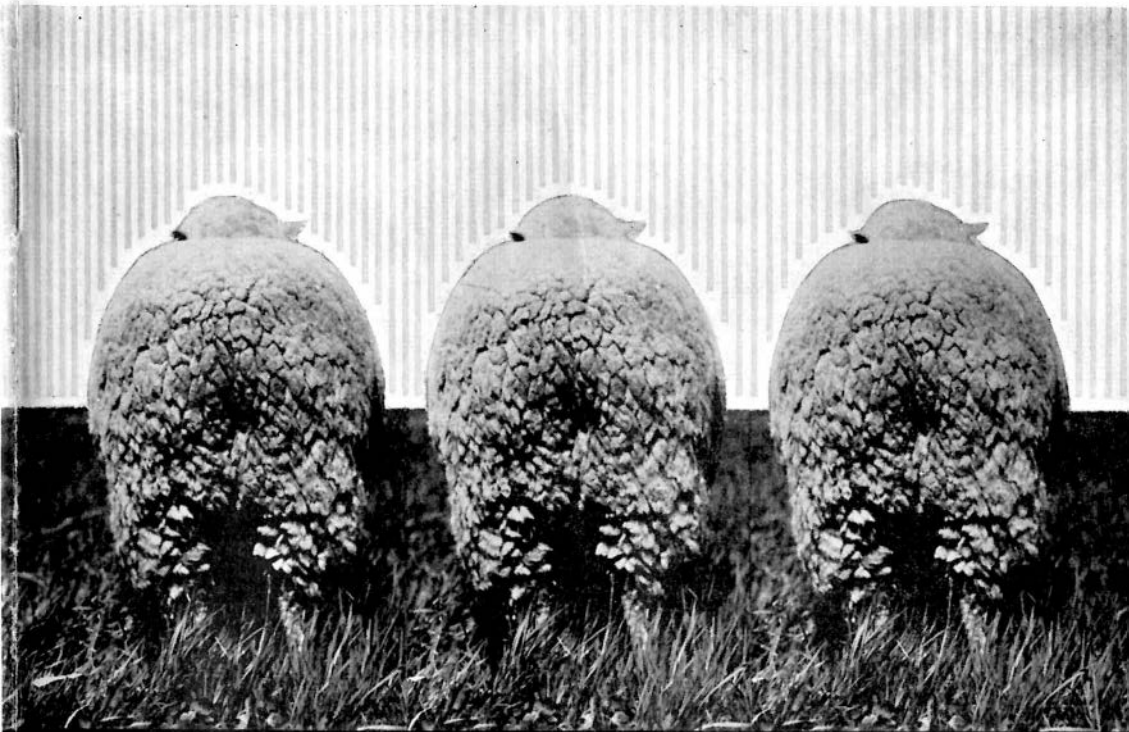


Animal Husbandry Department
AGRICULTURAL EXPERIMENT STATION
South Dakota State College
BROOKINGS, S. D.

COVER PAGE. *The picture at the top shows a group of ewes, progeny of a Southdown x Notail mating. The Southdown, one of the oldest long tail breeds, was used to improve the mutton quality of the Notails. The lower picture shows the uniform natural dock on the Notail breed and the development of the leg.*

Development of the Notail Sheep

By James W. Wilson

Introduction

This is a progress report of an effort to develop, if possible, a breed of sheep without tails and with other desirable characteristics.

The possibilities for developing such a breed originated in 1913 when Dr. N. E. Hansen, horticulturist at the South Dakota Agricultural Experiment Station, went to Siberia in search of seeds and plants that might be of value to the conditions in this state. While there his attention was attracted to the condition of the fat-rumped sheep grazing on the comparatively scanty vegetation of that country. He had an idea that if this breed of sheep was so well suited to the conditions of that section it might be of value to the sheep industry of South Dakota.

Accordingly he purchased six head—four ewes and two rams—and brought them back. This was the only flock of fat-rumped sheep, as far as known, in the United States. The two rams were not closely related and their pictures (Fig. 1) would indicate some variation in type.

A breed of sheep without a tail should be of value to the sheep industry for several reasons:

1. There are no tails to be docked.
2. They are cleaner at the rear and less subject to troubles caused by blow flies than sheep with long or improperly docked tails.
3. At shearing time there are no tails or docks to be shorn and there are fewer tags.
4. Due to the ancestry of the Notail breed the individuals are exceptionally hardy and appear to be good rustlers.

The long tail is a well fixed character in practically all breeds of sheep in this country. There are no statistics on the percentage of lambs that die each year from the infestation of maggots in the tail. Furthermore, no facts are available concerning the percentage of non-breeders in the ewe flock where the tails have been allowed to fully develop. Success or failure in sheep production depends upon systematic attention to the smallest details.

History shows that many valuable improvements have been made in the development of the different breeds of sheep kept in South Dakota. For example, consider the Shropshire and the Hampshire which years ago were far from what they are today. The early improvers were careful to eliminate the horns, to improve the quality of the wool and to conform to the market requirements for a good mutton carcass. These characters were improved by rigid selection, careful mating and the introduction of outside blood. Yet, it is not indicated than an effort was ever made to eliminate the tail by mating and selection. Perhaps there may be a function for the tail to perform but from

Fig. 1. The two original fat-rumped rams imported from Russia. The ram on the right was shorn to show the fat-rump character.

experience with the Notail breed of sheep, it may be questioned. Perhaps the greatest advantage is cleanliness. It has also been noted that the lambs at birth have great vitality. This is probably due to the infusion of genetic factors for hardiness obtained from the fat-rumped breed.

Regarding the history of the fat-rumped sheep, R. Lydeker, in his book "The Sheep and Its Cousins", published in 1913, is quoted as follows: "This sheep, of which there are several local breeds or sub-breeds is an Asiatic type, of which the range extends from the Black Sea and the confines of Europe throughout Central Asia and the greater part of China and Siberia. Hence, enormous flocks are kept by nomad Kirghiz, Kalumka and Mongols, while in Siberia it is largely bred by the Russians. The typical representative of the group is the Fatarian breed of which the distributional area extends from the Volga to the Irtish and the Attai range, that is to say, from the Kirghiz Steppes to southern Siberia. It is a rather large sheep, with a flat forehead, slightly convex chaffron, the lower jaw shorter than the upper and moderately long pendant ears.

"The most distinctive feature, however, is the excessive development of fat on the rump, which takes the form of two great cushions, divided by a median

cleft on the buttocks; the upper surface of these being clothed with wool and hair, while the contiguous inner surfaces are bare. Between these two great fatty cushions is embedded the minute vestige of the tail, the position of which can only be ascertained by feeling with the fingers; its skeleton contains only three vertebrae with a combined length of about 3½ inches. These sheep are chiefly valued for the sake of their flesh and fat, despite the fact that the mutton is far inferior in quality to that of even second class European breeds. The fat, of which that on the buttocks is semi-fluid and butterlike, constitutes the great bulk of Russian tallow."

MacDonald, in his fourth edition of Cattle, Sheep and Deer published in 1872 under the heading "Various Kinds of Wild Sheep", is quoted as follows: "There is a breed of sheep now extending over the north and south of Asia, as well as Palestine and Russia, and of which the flocks of the Calmucks and Tartars are almost entirely composed. They are distinguished by two hemispheres of fat commencing at the loins, gradually swelling into a considerable mass towards the rump, and presenting behind two enlargements of a more or less globular form." This no doubt has reference to the same breed of sheep (Fig. 1), the fat-rump, used as foundation stock in this experiment.

The Experiment

The object of this experiment was to develop a breed of sheep that would not have to be docked and still retain desirable mutton and wool qualities.

The small flock of sheep imported from Semipalatinsk, Siberia, by Dr. Hansen was turned over to the Animal Husbandry Department of the Agricultural Experiment Station. Close examination disclosed that the breed had long coarse hair underlaid with a very fine fleece which resembled the down on a duck. They all had the prominent fatrumps but none of the six head had a tail of any sort or a scar to show that the tail had been cut off. To increase this flock, as such, would have been a mistake because of the excess fat on their rumps and the long coarse hair. Sheep tallow is not relished by the American consumer of mutton and the coarse hair would not bring as much as wool on the market.

Inasmuch as neither the rams or ewes had tails, it was decided to try the rams out on some ewes and ascertain if the lambs would be without tails and free of the fat-rump feature. Consequently, ewes of different purebreds and grades were used. These ewes consisted of eight purebred Shropshires, one purebred Hampshire, one grade Shropshire and four grade Cheviots.

Before the ewe and young were turned with the flock, the lambs were tagged in each ear, tails measured and any peculiarity of lambs or ewes recorded.

Experimental Results
Progress 1915-17

1915. The lamb crop of 1915 was sired by imported rams No. 145, horned, and No. 150, hornless and out of above mentioned ewes. No. 145 sired nine lambs and No. 150 seven. Twelve of the 16 lambs were ewes and 4 rams. The first year's results were not encouraging as all of the lambs had to be docked and the fleeces were badly mixed with hair and wool. However, the lambs were active and showed great vitality. It was not deemed necessary to use the four imported fat-rump ewes.

1916. This year 16 ewes—6 grade Cheviots, 5 purebred Shropshires, 3 purebred Hampshires and 2 grade Shropshires—were bred to the two imported fat-rumped rams. Each ram sired 13 lambs, or a total of 14 ram and 12 ewe lambs. At the end of two years there was a lamb by each of the imported rams out of each of the above ewes. The rams were used only for the 1915-16 lamb crops. As a whole the lambs were large and vigorous but not one in the first two years was without a tail.

Fig. 2. The first short tail lamb that showed no evidence of a fat rump. The fleece was coarse and undesirable.

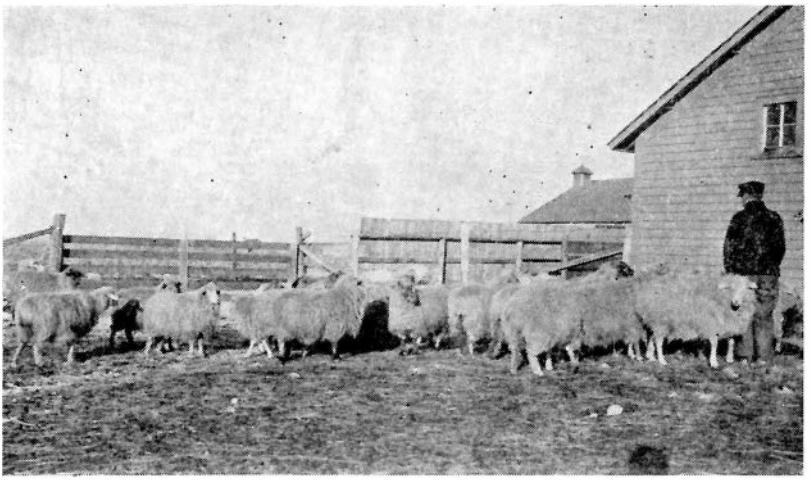


Fig. 3. The ewe flock in 1917. There are some cross-breds as well as some of the purebred fat-rumps shown. The tails of these crossbred lambs were cut off.

1917. Selected ewes sired by No. 145 were mated to the best ram from No. 150 for the 1917 lamb crop. From this cross the first short tailed lamb, No. 417, was produced (Fig. 2). His tail was only two inches long and he showed no evidence of a fat rump although the fleece was a mixture of coarse hair and wool. He was kept and used as a sire for part of the 1918 lambs.

Progress 1918-24

1918-22. The closest to a no-tailed lamb in this five-year period, during which 236 lambs had been born, were lambs with a tail of one and one-half inches in each of the years 1921 and 1922. These two lambs were free from the fat-rump character. Some of the lambs had a short pad and others had a short pad with a short tail suspended at the end. Selected rams sired by Nos.145 and 150 and ewes, not closely related to the rams, were mated for these lamb crops.

1923. In the fall of 1922 eight short-tailed rams were crossed on a flock of grade western ewes. The results were very encouraging in view of the fact that the average length of tail for the 92 lambs was 6½ inches, with a range from 5 to 9 inches. Although none of the 1923 lambs were without tails, some of the rams got shorter tails than others and it was decided that some progress had been made.

1924. Two rams, Nos. 739 and 1008, the best of the Notail flock, were mated to ewes of similar breeding, yet not closely related, for the 1924 lamb crop. Both rams and ewes were selected because of their individuality, short

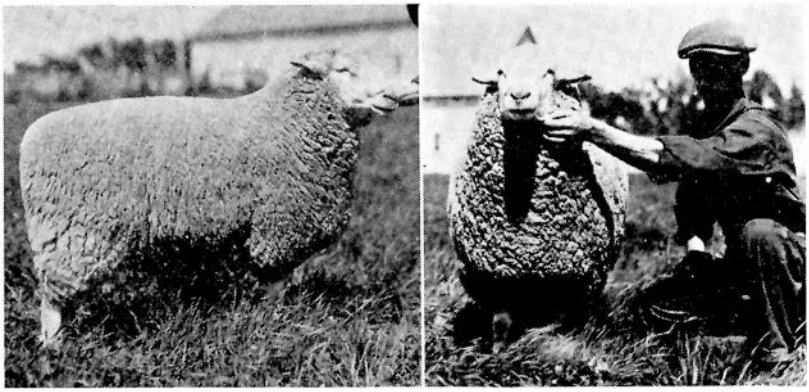


Fig. 4. Ram No. 1663 from the 1924 crop was born without a tail, had a good fleece and was free from the fat-rump character. A yearling at the time these pictures were taken, he weighed 185 pounds.

tails, comparative freeness from the fat-rump feature and the fact that their fleeces were relatively free from hair. Among the 45 lambs dropped there were two, a ram and a ewe (both sired by the same ram, No. 739), without tails, good fleeces and no fat-rump characteristic. Unfortunately the ewe died before maturity but the ram was used when a lamb and for the following four years. He is shown in Fig. 4.

Progress 1925–29

1925. Two rams were used for the 1925 lamb crop—No. 1663, shown in Fig. 4, and No. 739, his sire. The dams were decendents of the original fat-rumps. The quality of the progeny was very satisfactory. No. 1663 sired two lambs without tails.

1926. It was again decided to try these rams on western ewes. Ten ram lambs and their sire, No. 1663 shown in Fig. 4, were used on a flock of 100 ewes. One of the ram lambs was a non-breeder but the other 10 sired 97 lambs with an average length of tail of 4.9 inches. The shortest average for any ram was 4.1 and the longest 5.9 inches. This is a shorter dock than often noticed at the market. Ram No. 1663 sired 27 lambs out of Notail ewes with an average tail length of 2.51 inches including one without a tail, seven with tails 1 inch or less, six with tails 2 inches or less, four with tails 3 inches or less and the other nine lambs had tails from 3½ to 5½ inches. He also sired nine lambs from the western ewes that had an average tail length of 5.33 inches.

1927. Three different rams were used for the 1927 lambs—the ram shown in Fig. 4, No. 1663, and two of his best sons, Nos. 1770 and 2435. The object in using these two rams was to improve the quality of some of the fleeces as well as to reduce the length of tail. The three rams sired five lambs without

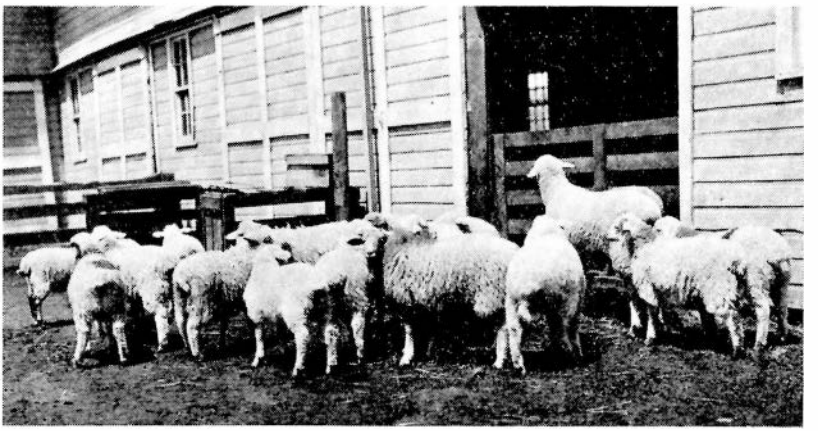


Fig. 5. No. 1663 with his first crop of lambs. Two were born without tails and only four had a tail six inches long.

tails and the remaining 53 head had an average length of tail of 2.72 inches. This included the eight western ewes. The remaining ewes were members of the Notail flock. Their lambs had tails that ranged from 3 to 7 inches or an average of 5.62 inches.

1928. The 99 lambs born in the spring of 1928 were sired by four different rams, Nos. 1663, 1770, 2784 and 3187. There were 7 without tails. In this crop there were 10 lambs out of crossbred western ewes. These 10 had tails that ranged from 4 to 7 inches with an average of 5½ inches. The remaining 82 head had an average length of tail of 2.69 inches. These were out of ewes in the Notail flock.

1929. Four different rams were used for the 1929 lambs, Nos. 1663, 3758, 3867 and 3895. Of the 49 head there were 7 that had no tails. Three of these seven were out of crossbred western ewes. This was the second cross of the Notail breed on the western ewe. The average length of tail for the other 42 head was 3.03 inches, notwithstanding the fact that 17 of the dams were first cross western bred ewes. The tails of the lambs out of the crossbred western ewes varied from no tail to 6 inches, with an average length of 3 inches. The reason for including these crossbred western ewes in the experiment was to improve the quality of the fleeces. The pad was included in measuring the tail. These pads varied in length and width and it is believed this excess fat, instead of being stored in the rump, was stored to an extent in the base of the tail. An example of this may be noticed in the lamb third from the right in Fig. 5.

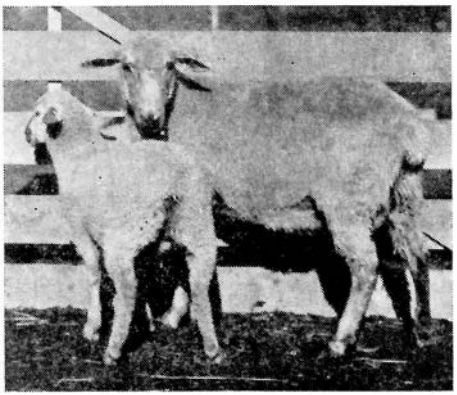


Fig. 6. Crossbred western ewe, No. 3114, and her ram lamb. The lamb not only had a three-fourths inch tail but there was an absence of a pad or fat about the tailhead and he was covered with a fine fleece. His sire, No. 1663, is the ram shown in Fig. 4.

Progress 1930-34

1930. Two rams were used for the 1930 lambs—No. 2784, a first cross of the Notail breed on a western ewe that had a tail of 4 inches and No. 3867, the second cross on a western ewe that had a tail one-half inch and a pad one half inch long. The reason for using these rams was to increase the quality of the fleece in the flock.

Six lambs were sired by No. 2784, out of crossbred western ewes. These lambs had tails ranging from 4 to 6 inches in length with an average of 5 inches. There were 15 other lambs sired by this crossbred western ram out of ewes of the Notail flock. Four of these had no tails and the other 11 had an average tail length of 3.31 inches.

The ram No. 3867 with two crosses of Notail blood, and a western bred ewe, sired 19 lambs of which 10 were out of crossbred western ewes. The tails of these 10 varied from ½ to 7 inches in length with an average of 4.2 inches. This ram No. 3867 sired 2 lambs (dams Notail breed) without tails and the other 7 had tails ranging in length from 1½ to 6 inches with an average length of tail of 3 inches.

The object of using rams bred in this manner was not only for wool improvement through the western bred ewe but also to furnish information as to how many crosses should be made with the Notail breed on a long-tailed ewe to eliminate entirely or reduce the length of tail so lambs would not need to be docked. Some rams are more prepotent than others. Further observations were made in 1934 when purebred Southdown blood was brought into the flock.

1931. There were 41 lambs of the 1931 crop sired by two different rams, Nos. 4051 and 4023. Again, it was decided to use western bred ewes to im-

prove the fleeces. The ram lamb, No. 4023, shown with his dam, the crossbred western ewe, Fig. 6, was one of the rams and a Notail bred ram with a one inch tail and good fleece was the other. The first ram proved to be an excellent breeder. He sired 25 lambs, one of which, No. 4297, had no tail and a good fleece. This lamb was kept in the flock for several years for wool improvement. The eight lambs out of this ram and crossbred western ewes had an average length of tail of 2.2 inches, the longest being 6 inches and shortest ½ inch. The remaining 15 head had an average length of tail of 2 inches.

Perhaps the question asked more than any other is: How long will it require to breed the tails off an ordinary flock? This evidence shows that one half blood x one-half blood equals only one lamb of the eight that required docking. The tails of the other seven were 3 inches and shorter.

The other ram, No. 4051, sired 16 lambs. The dams of two were crossbred western ewes. One of these lambs had a 4-inch tail and the other a one-half inch tail. The remaining 14 lambs had an average tail length of 1.3 inches. This was the most uniform lot of lambs as far as shortness of tail was concerned that had been born up to this time, notwithstanding the fact that the dams of 10 head were crossbred western ewes.

1932. In the fall of 1931 two ram lambs, Nos. 4297 and 4211, were used for the 1932 lambs. They were sired by the two rams used in the fall of 1930 for the 1931 lambs. One of the lambs had no tail and the other had a ½ inch

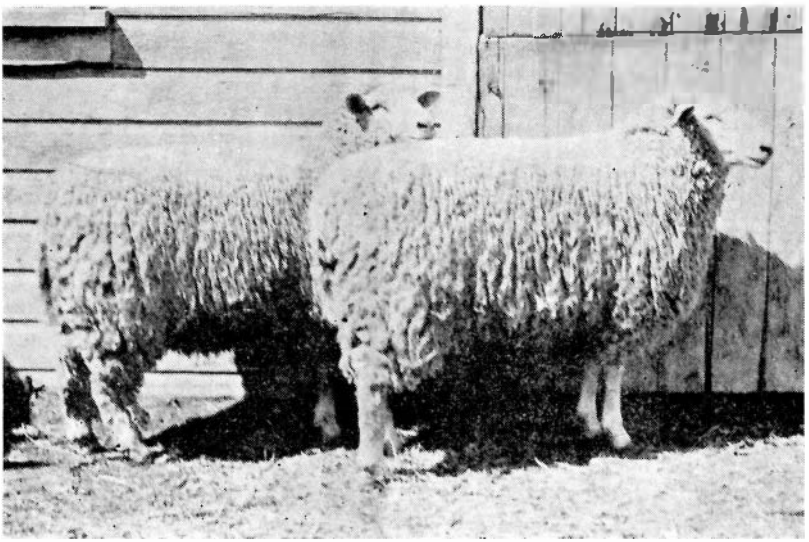


Fig. 7. Two 14 months old Notail ewes, Nos. 4413 and 4589, sired by the Notail ram, No. 4297, used for the 1932 lambs. It will be noticed in comparing these ewes with ram No. 1663 (Fig. 4) that the type has been maintained during these several years.

tail. The no-tailed lamb, No. 4297, had an extra good heart girth, broad back, extra good leg of mutton and comparatively dense fleece. This density of fleece was undoubtedly inherited from western grade Rambouillet ewe on the sire's side.

The other ram lamb, No. 4211, was an extra good individual with a ½ inch tail and a good fleece although not so dense as the no-tailed lamb.

No. 4297 sired 20 lambs, 19 out of Notail ewes not closely related to the ram and 1 out of a crossbred western ewe. Eight of the 19 were without tails and the remaining 11 had an average tail length of .9 inch. The lamb out of the crossbred western ewe had a 4½ inch tail.

No. 4211 sired 32 lambs, including seven without tails. Thirteen of the 32 were from crossbred western ewes and had tails ranging from ½ to 6 inches in length with an average of 3.19 inches. Only three of these required docking. The remaining 12 lambs out of the Notail ewes had tails ranging from ½ to 3½ inches with an average of 1½ inches. None of this ram's lambs required docking.

1933. Three rams were used for the 1933 lambs. A ram lamb, No. 4421, was used in Lot 1. He had no tail, was a trifle weak back of shoulders, had an excellent fleece, a fair back and an extra good leg. His dam was a crossbred western ewe. He sired 18 lambs of which 5 were without tails. One of these no-tailed lambs was out of a crossbred western ewe and one was out of a one-quarter blood western ewe. Two other lambs out of one-half blood western ewes had an average length of tail of 1.12 inches. An additional lamb out of a one-fourth blood western ewe had a tail one inch long. The other 10 lambs by this ram had tails ranging from 1 to 3 inches with an average of 1½ inches. None required docking.

In Lot 2 a ram lamb, No. 4511, was used. This lamb was not suitable in every respect but was used because of his pedigree. On both sides of his ancestry there were many no-tailed or short-tailed individuals. He had an excellent fleece, an open face and no wool below the knees or hocks. This lamb sired 21 lambs of which 5 had no tails. One was out of a crossbred western ewe and another out of a one-fourth blood western ewe. He sired four lambs out of crossbred western ewes. One of these lambs had no tail and the other three had an average length of tail of 3 inches. He also sired four lambs out of one-fourth blood western ewes, one had no tail and the other three had an average length of tail of 1.3 inches. The other 10 lambs had tails ranging from ½ to 5½ inches with an average of 2.9 inches.

In Lot 3 a yearling Notail ram, No. 4297, was used. This ram was used when a lamb for part of the 1932 lamb crop when he proved to be a strong breeder of no-tailed and short-tailed lambs. Of the 20 lambs sired by this ram 5 were without tails. One of these was out of a crossbred western ewe. The tails of the lambs out of the other crossbred western ewes had an average length of 3¼ inches and one out of a one-fourth blood western ewe had a tail ½ inch long. There were 2 of the remaining 10 lambs out of purebred Ram-

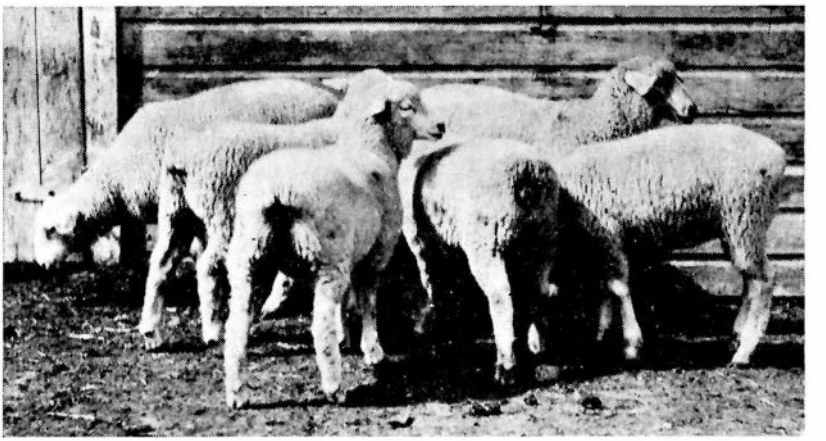


Fig. 8. Ewe lambs showing the uniform natural docking and other breed characteristics.

bouillet ewes, one out of a purebred Hampshire and one out of a purebred Shropshire ewe. Tails of these crossbred lambs varied in length from 3½ to 5 inches with an average of 4.12 inches. The other six lambs had an average length of tail of 1.37 inches.

From these results it is evident that the Notail breed, as far as length of tail is concerned, is more prepotent than the long established long-tailed breeds mentioned.

1934. There were 59 lambs of the 1934 crop, 52 out of Notail and 7 out of crossbred ewes sired by four different rams. Twenty-two were without tails. The ram in Lot 1, No. 4421, got 9 of 18 without tails and the other 9 had an average length of tail of 1½ inches. Ram in Lot 2, No. 4511, sired 2 no-tailed lambs out of 13 and the average length of tail of the other 11 was 1½ inches. Ram in Lot 3, No. 4664, sired 9 no-tailed lambs out of 20 and the other 11 lambs had an average length of tail of 1.8 inches. Ram in Lot 4, No. 4297, sired eight lambs, two were no-tailed, one out of a crossbred western dam, and the average tail length of the remaining six was 2.2 inches. The longest tailed lamb of the 59 head had a tail of 5½ inches.

Progress 1935-39

1935. Since the results for 1933-34 breeding operations were so successful it was decided to repeat this lead on a larger scale. Eight purebred Southdown ewes were mated to ram No. 4664, considered to be the best Notail breeding ram in the flock. He was not only the most prepotent as to the no-tail feature, but also the best developed individual. This Notail ram sired eight lambs with tails ranging in length from 3½ to 6 inches and the average length was 5.12 inches. A purebred Southdown ram was also mated to eight Notail ewes that

Fig. 9. These ewes were taken out of pasture in the summer of 1935 and the picture taken without trimming or fitting. Note how clean they are behind and the uniform natural dock.

were considered to be of the best breeding in the flock. He sired 10 lambs with tails ranging in length from 3 to 6 inches and the average length of tail for the 10 head was 3.95 inches. It is difficult to account for the difference in length of tails with these crosses, unless the dam had more influence on the progeny than the sire. These results were encouraging and conformed quite closely to those mentioned for 1933.

The Southdown was used because it is one of the oldest breeds. Then, too, it was thought by using this breed the mutton quality of the flock might be improved.

The other lambs for 1935 were sired by three Notail rams, Nos. 4421, 4509 and 4664. Thirty-two were without tails, one out of a crossbred western ewe. Five other lambs in addition to the one with no tail, had crossbred western ewes for dams. The remaining ewes were from the Notail flock. The longest tail was 4½ inches and the shortest 1 inch long with an average of 2½ inches for the five. Thirty-nine other lambs by these rams had tails ranging from ½ inch to 3¾ inches long with an average of 1.3 inches. It was not necessary to cut off any of these tails.

1936. There were 70 lambs born in the spring of 1936, sired by four different rams. Three of these rams belonged to the Notail breed and the fourth was a purebred Southdown. This Southdown ram sired eight lambs, out of Notail ewes, one of which had no tail (See Fig. 10).

The other seven lambs sired by a purebred Southdown ram on Notail ewes had tails ranging from 3 to 4¾ inches and the average was 3.96 inches. This result is comparable to that of 1935, when the average length of tail by this same cross was 3.95 inches.

Six lambs were sired by Notail ram, No. 4825, on purebred Southdown ewes. The tails of these lambs varied in length from 4½ to 6 inches with an average length of tail of 5.16 inches.

There were 35 other lambs during 1936 that were sired by the other three Notail rams and out of no-tailed and short-tailed ewes with tails ranging from ¼ to 5¼ inches long. The average length of tail for the 35 was 1.4 inches. There were but two lambs in the lot that needed to have tails cut off and one of these was out of a crossbred western ewe.

1937. Four rams were used for the 1937 lamb crop of 69 lambs. The dams, with the exception of six crossbred Southdowns were regular Notail ewes. A yearling ram, No. 4989, out of a purebred Southdown ewe and Notail ram No. 4664, was used on a flock of Notail ewes for lambs in Lot 1. He sired 10 lambs, 1 of which had no tail and the other 9 had tails ranging in length from ¼ to 3 inches with an average length of 1.47 inches. None of these lambs needed to be docked. The Notail ram in Lot 2, No. 4441, sired 10 lambs, 3 of which had no tails and the length of tail for the others varied from ½ to 4 inches with an average length of 1.27 inches.

The Notail ram in Lot 3, No. 4865, sired 22 lambs, 10 of which had no tails. Two of the dams were crossbred Southdown ewes. The tails of these

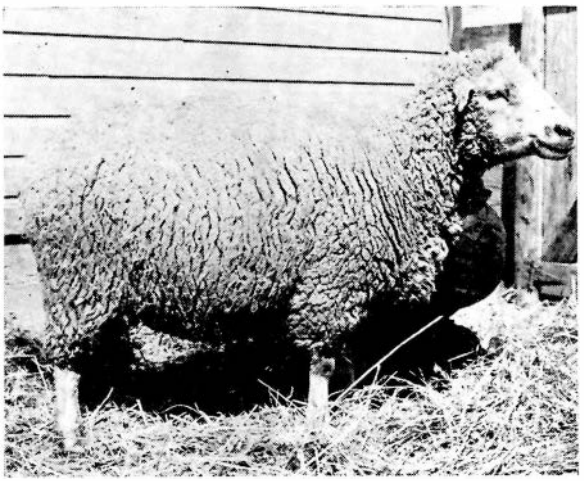


Fig. 10. First sheep with no tail to be born by crossing with a distinct long-tailed breed. In fleece she resembles the Southdown and in other respects the Notail breed. See report for the year 1939.

lambs were 3 and 4¼ inches long. The remaining lambs out of Notail ewes and this ram had tails ranging from ¼ to 3 inches with an average of 1.2 inches. It was not necessary to dock any of them.

The Notail ram in Lot 4, No. 4664, which was probably the best breeder of no-tailed lambs up to this time, sired 27 lambs. Of this number nine were without tails. Four were out of crossbred Southdown ewes. These four lambs had tails ranging from ¾ to 3 inches with an average of 1.68 inches. The other 14 lambs sired by this ram and out of no-tailed and short-tailed ewes had tails that varied in length from ¼ to 3 inches with an average of 1.23 inches. None of this ram's progeny needed to be docked.

1938. Five different rams were used in the fall of 1937 for 1938 lambs. There were 96 lambs of which there were 45 without tails. The ram in Lot 1, No. 4664, sired 12 no-tailed lambs out of 16. These other four lambs had an average length of tail of 1½ inches. The dams were regular Notail ewes.

The ram in Lot 2, No. 4865, sired 31 lambs of which 20 had no tails and the other 11 had an average length of tail of 1.81 inches. There were three lambs in this lot that had three inch tails. The dams were Notail ewes.

Ram in Lot 3, No. 5019, sired 18 lambs out of Notail ewes of which eight had no tails. The other 10 had an average length of tail of 2.2 inches. When born this ram had a tail 2¼ inches long. He was an excellent individual, blocky in conformation, with an extra well developed loin and a better than average fleece. He was sired by one of the best rams in the flock, No. 4509,

Fig. 11. A 1938 lamb, No. 5824, as a yearling. His dam was a crossbred Southdown and his sire, No. 5460, the ram used in Lot 5 (1938). He sheared 11¾ pounds of wool on a 13 months growth.

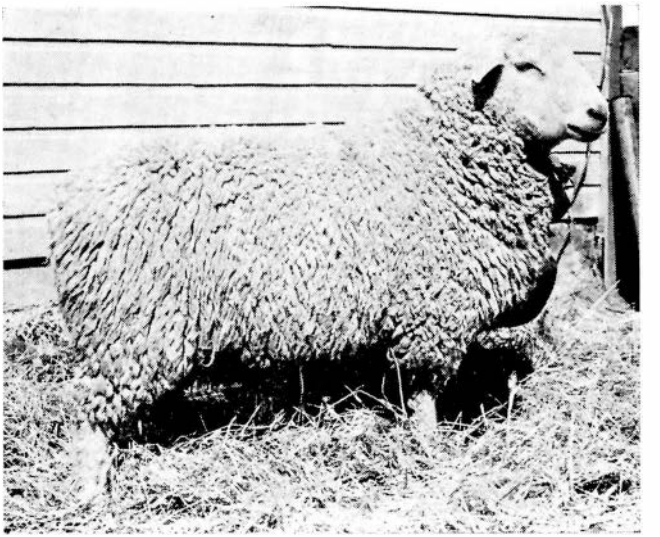


Fig. 12. A 1938 ram, No. 5766, as a yearling. He was an extra valuable ram because of his fleece—see sample in Fig. 14. He was used in 1939 for 1940 lambs.

although not a strong breeder of no-tailed lambs. The dam of No. 5019 was a crossbred western ewe with a 7 inch tail. The principal reason for using him was for fleece improvement.

The ram used for lambs in Lot 4 was a purebred Southdown. This was an extra good low set ram. Since the first cross of the Southdown on the No-tail ewes gave such good results, it was decided to repeat on a few ewes to get new blood in the flock. There were 14 lambs sired by this ram with tails ranging from 2 to 6 inches in length with an average of 4.57 inches.

A ram lamb, No. 5460, was used in Lot 5. This lamb was an excellent individual, had a choice fleece but was a trifle crooked in the hind legs. His dam was sired by a purebred Southdown ram and had a 3 inch tail. The sire was a no-tailed ram and this lamb had a 1 inch tail. There were a total of 17 lambs sired by this ram lamb, 5 of which had no tails. Two of these no-tailed lambs were out of crossbred Southdown ewes. The four Notail dams contributed the remaining three notailed lambs and an additional lamb with a tail of 2 inches. There were 11 other lambs sired by this ram lamb and out of crossbred Southdown ewes. The tails of these 11 lambs varied from 1 to 6 inches in length with an average of 3.36 inches.

1939. Four rams were used for the 1939 lambs. In Lot 1 the ram lamb, No. 5824, shown as a yearling in Fig. 11, sired 13 lambs of which 8 had no

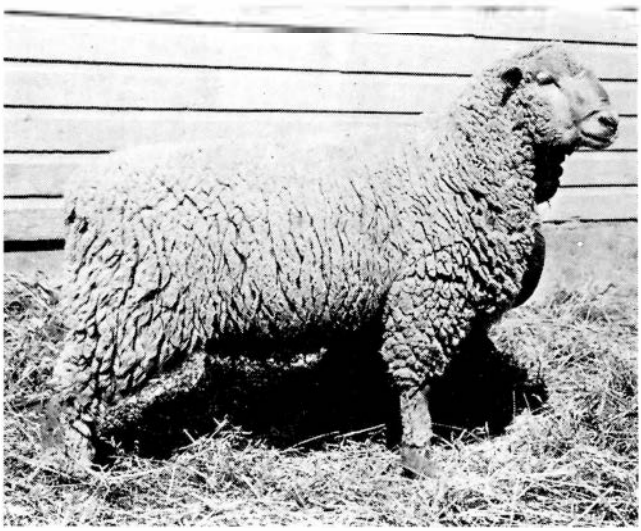


Fig. 13. Ram lamb, No. 6312, was not quite 11 months old when this picture was taken and he weighed 140 pounds. At 12 months he sheared 9¾ pounds of wool. This lamb never had a tail, there was no evidence of fat rump and his fleece was longer in staple than the purebred Southdown. His tabulated pedigree appears on page 19.

tails and one of these was out of a crossbred Southdown ewe. The dams of the other 12 lambs were Notail ewes. There was one lamb in this lot that had a tail 3 inches long and the other four lambs had an average length of tail of 1.12 inches.

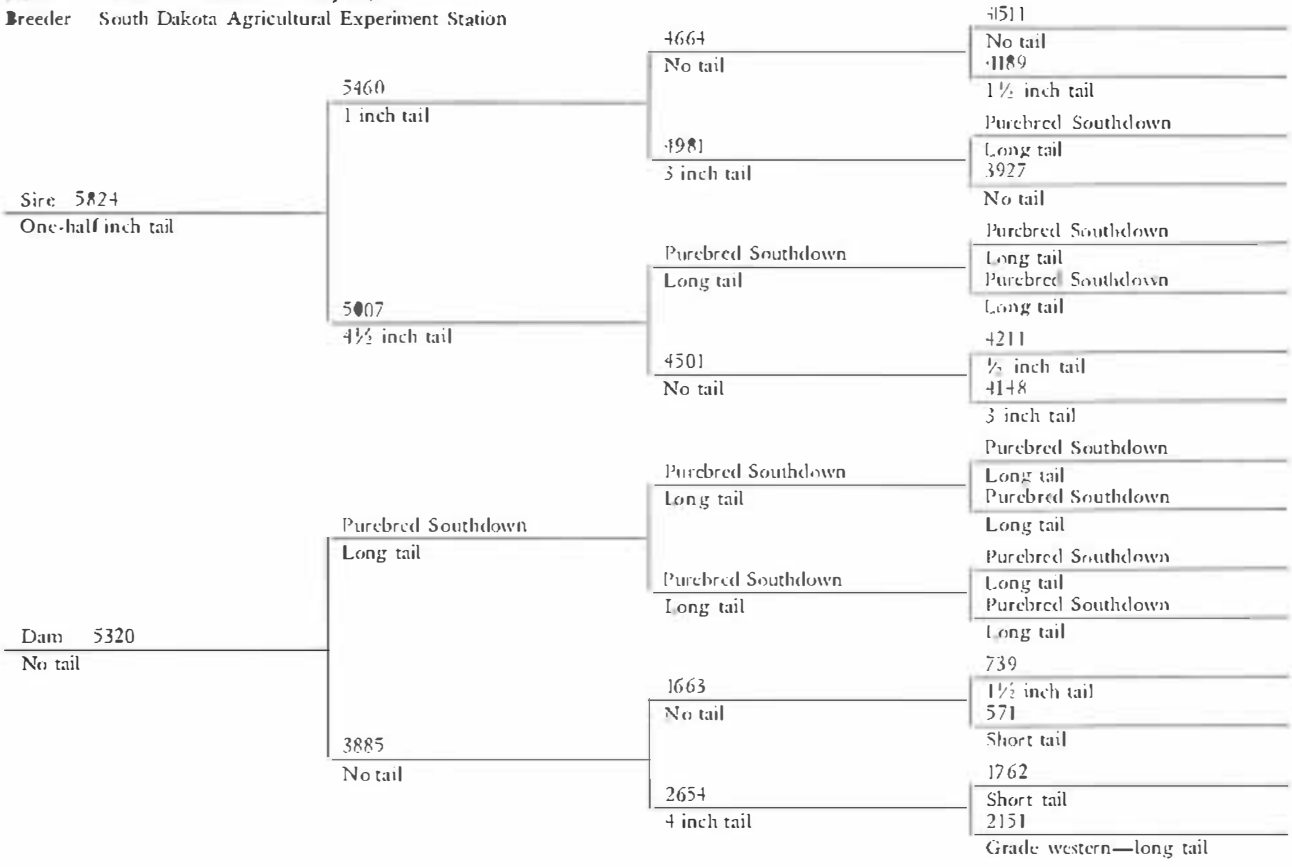
The ram in Lot 2, No. 4664, sired 24 lambs out of Notail ewes of which 15 had no tails. There was one lamb in this lot that had a tail five inches long but the average length of tail for the eight remaining lambs was 1.59 inches.

The ram in Lot 3, No. 4865, sired 19 lambs out of Notail ewes of which there were 8 without tails. One lamb had a tail of 3 inches and the average for the other 10 head was 1.07 inches.

The ram in Lot 4, No. 5442, sired 36 lambs—13 from crossbred Southdown dams and 23 from Notail ewes—of which there were 5 without tails. Two of these no-tailed lambs were out of crossbred Southdown ewes. Of the remaining 11 head out of crossbred Southdown ewes, the tails averaged 3.86 inches in length, the shortest 2 inches and the longest being 5 inches. The average length of tail for the remaining 20 lambs in this lot was 1.03 inches. It was not necessary to dock any of these lambs since the longest tail was 2 inches.

A Notail Ram Lamb

Name 6312 Birth May 21, 1939
Breeder South Dakota Agricultural Experiment Station



The Wool

Sheep are kept mainly for the production of wool and mutton. In selecting a breeding ram, one having these characters is preferable to one that does not possess them, because the butcher considers the fleece the principal by-product in lamb slaughter. Bearing this in mind it was decided that it was necessary to have a good fleece as well as the no-tail feature.

The 1938, 1939 and 1940 wool clips were graded by a cooperative wool marketing association when pooled, as follows:

	1938	1939	1940
Fine Choice	6		
Fine Average	22	181	13¾
½ Blood, Choice	4		14½
½ Blood, Average	80	304	153
½ Blood, Semi	24		
⅜ Blood, Average	514	268	411½
⅜ Blood, Semi	58		
¼ Blood, Choice			40¾
¼ Blood, Average	334		202½
¼ Blood, Semi		161	
Low ¼, Average	96		87
Braid	105		
	1243	914	922½

The Station Home Economics Department has conducted a study designed to compare the fiber, yarn and fabrics of the Notail sheep and four other breeds of sheep raised in South Dakota—Hampshire, Southdown, Rambouillet and Shropshire.

Observations made by the workers[1] would indicate:

1. The wool in order of fineness was found to be Rambouillet, Notail, Shropshire, Southdown and Hampshire.
2. The Notail fabrics were superior to the other four materials studied in tensile strength and bursting strength.
3. The Notail fiber combined relative fineness with length of staple and was average in crimpiness.

This experiment is not completed as yet. However, in the course of the progress made desirable breed characteristics have been definitely established such as the no-tail feature, hardiness, ability to rustle for feed, desirable mutton conformation and a fleece of good quality leaving the individuals with an open face and wooled to the knees and hocks. Each generation brings an improvement in the fleece due to a careful selection of ewes and use of rams with superior fleeces. In the near future it may be possible to use rams of this breed on a long tail flock to eliminate a large percentage of the tails.

1. Barbara Bailey, Dorothy Saville, Jeanette Ross, Florence Barr and Anna Halgrim. Material contained in unpublished manuscript (1938) by Bailey and Station Rpts. 1931-36.

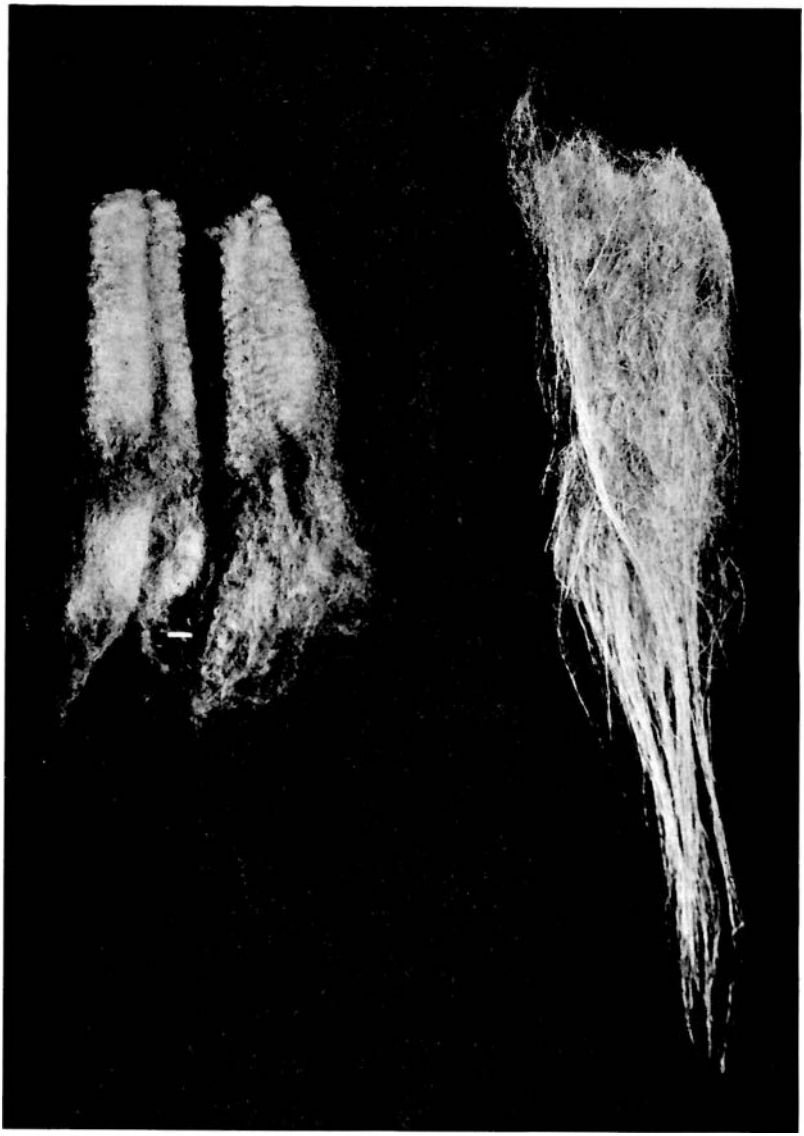


Fig. 14. Shows what has been accomplished in the way of fleece improvement. On the right is the coarse, long hair of the original sheep and on the left the fleece of a lamb used in the fall of 1939 (Fig. 12). The sample is five inches long, beautifully crimped, free from hair and graded low ¼.

Summary

Possibilities of developing a no-tail breed originated in 1913 when Dr. N. E. Hansen, horticulturist at the South Dakota Station, discovered some fat-rumped sheep grazing on the scanty vegetation of the Siberian plains, and brought six head—four ewes and two rams—back with him. Despite the objectionable fat-rump and a long coarse hairy fleece, these sheep had no tails.

The object of this experiment has been the development of a breed of sheep that would not have to be docked and still retain desirable mutton and wool qualities. Many lambs of both sexes were fattened and sold because they did not possess these characters.

The first few years were very discouraging because of the absence of short or no-tailed lambs. In recent years, however, some of the best breeders were found among the short-tailed rams. For example, the lamb shown in Fig. 6, No. 4023, had a ¾ inch tail yet he sired No. 4297, a no-tailed ram of excellent conformation and a comparatively dense fleece. This ram was used several years, mainly for fleece improvement although he also possessed the two other factors desired.

In order to improve the fleeces of this flock it was necessary to bring in outside blood. In 1926 Notail rams were used on western crossbred Rambouillet ewes. Some of the ewes of this cross were so well developed in conformation and their fleeces of such density that they were added to the ewe flock. Fig. 14 shows quality of wool at beginning of the experiment and also quality of wool of ram used in 1939 for part of the 1940 lambs. The average clip for 1940 was 9.42 pounds for rams and 7.4 pounds for ewes.

How long will it take to eliminate the tails in my flock by using a Notail ram? This is a question most commonly asked. To date there appears to be no ram in the flock that will eliminate the tails by the first cross. There is evidence that by the second cross only a very small percent will have to have tails docked. The results for 1933 show that in addition to the short-tailed lambs there were a few with no tails. For example, a Notail ewe mated to a purebred Southdown ram produced a ewe lamb with no tail (see Fig. 10). This lamb was later the dam of the good yearling ram No. 6312 shown in Fig. 13 and whose tabulated pedigree is included on page 19, yet his sire, No. 5824, shown in Fig. 11, had a ½ inch tail.