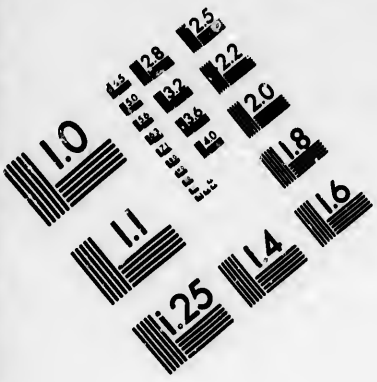


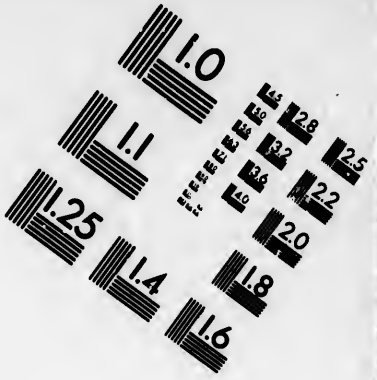


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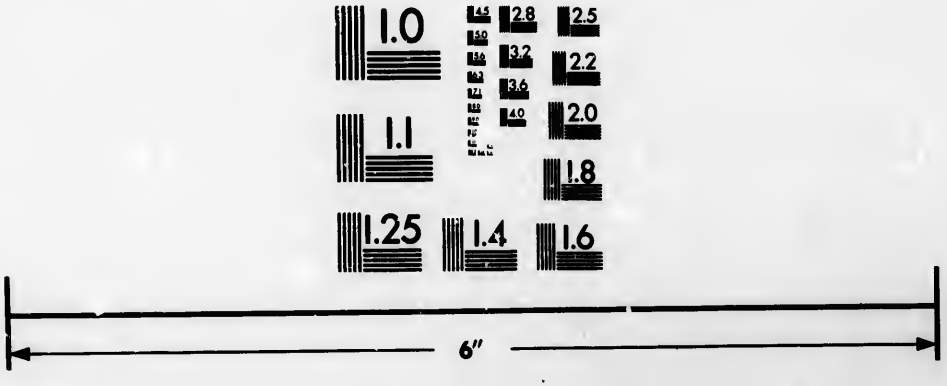


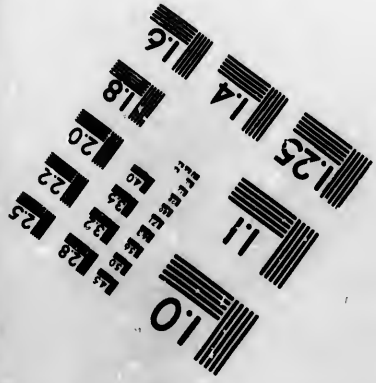


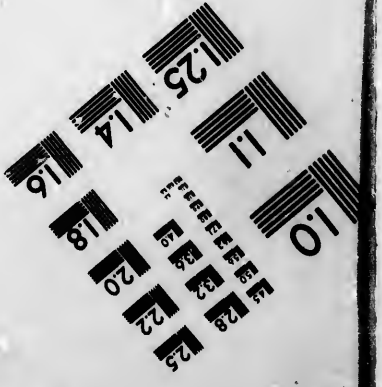


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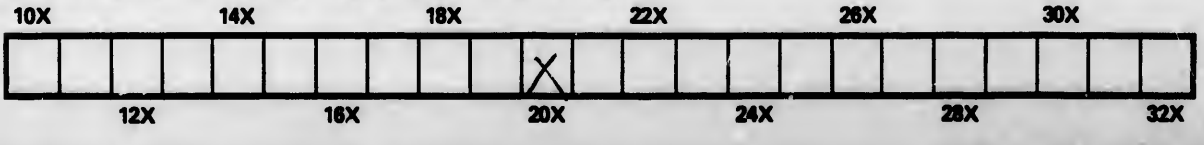

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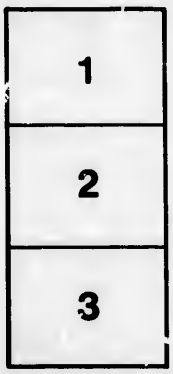


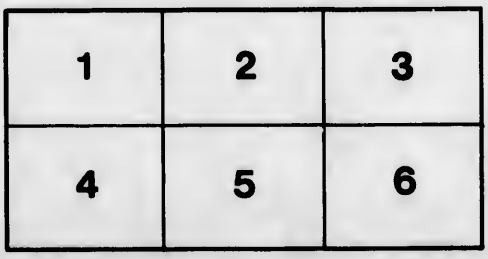


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ONTARIO AGRICULTURAL COLLEGE

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# BULLETIN LXVIII

# FEEDING SHORN AND UNSHORN LAMBS IN WINTER.

BY THOMAS SHAW, PROFESSOR OF AGRICULTURE, AND
C. A. ZAVITZ, EXPERIMENTALIST.

*PUBLISHED BY THE DEPARTMENT OF AGRICULTURE*
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# BULLETIN LXVIII.

## FEEDING SHORN AND UNSHORN LAMBS IN WINTER.

This experiment began on January 6, 1891, and closed on April 29 following, thus covering a period of 113 days. The objects of the experiment include the following, viz: 1. To ascertain whether shorn lambs or unshorn lambs will give the best returns for the food consumed in winter. 2. To ascertain the relative gains that will result from liberal feeding at such a time. 3. To ascertain the cost of feeding lambs for fattening purposes in the winter season on the ration used in this experiment. 4 To ascertain the adaptability of the work to the conditions of Ontario.

THE ANIMALS SELECTED. During the early part of October, 1890, as stated more fully in the report of the College for that year (pp. 130-132), 537 sheep and lambs were purchased and brought to the farm to be fattened; of these 505 were lambs. From the lambs 100 were selected and shorn early in October with a view to fattening them for the British market during the winter months. The particulars relating to these will be fully given in a Bulletin which is the complement of this one. Subsequently 20 others were selected, and of these 10 were shorn, the remaining 10 retaining their fleeces until after the close of the experiment. The animals used in this experiment were therefore the second choice, as 100 had previously been seleted from the whole lot. They were good grade lambs of both sexes, but the males were all wethers. The breeding was mixed, no accurate particulars were obtained regarding it, but judging from the appearance of the animals they were the offspring of the common ewes, and from pure rams of the various long and short wool varieties used in the country, as the Leicester, Cotswold, Oxford-Down, Shropshire and Southdown, but the Leicester blood evidently predominated. Some of the animals would have passed for pure Leicesters. They were in fair condition at the commencement of the experiment, so much so that they would have readily sold at that time for the American market at the price at which they were valued, viz, 5 cents per pound live weight.

PERIOD OF PREPARATION. At the close of November, 10 of the lambs were shorn. They were all then placed in the same pen on December 2, and were fed together until January 6, when the experiment proper commenced. The long preparatory period to which they were thus subjected gave the animals composing the two lots an even chance on entering the experiment. At the commencement of this preparatory period the weights were as follows:

| | Aggregate weight. | Average weight. |
|---|---|---|
| 20 lambs, shorn and unshorn.. | 1,936.50 lb | 96.83 lb |
| 10 lambs, unshorn..... | 1,018 50 " | 101.85 " |
| 10 lambs, shorn..... | 918.00 " | 91.80 " |

The wool from the 10 shorn lambs weighed 45.31 pounds and was sold at 13 cents per pound. In development therefore, there was a slight advantage in favor of the 10 unshorn lambs.

CONDITIONS GOVERNING EXPERIMENT. 1. The unshorn and shorn lambs, designated groups 1 and 2 respectively, were put in separate pens on January 6, when the experiment commenced and were kept in these until it closed. These pens were in a closed shed, with ceiling $10\frac{1}{2}$ feet high, and hay loft overhead. The pens were $24\frac{2}{3}$ feet long and $13\frac{1}{2}$ feet wide. The length of manger was $20\frac{1}{2}$ feet, which gave practically 2 feet to each sheep, and this was found to be sufficient. In the rear and front of each there was a window, and also in front were double doors, each 3 feet wide and cut in two across the centre. The top doors were kept constantly shut except on fine sunny days. The bottom doors were kept constantly open for the unshorn lot day and night, unless when very stormy, and for the shorn group they were kept open only in fine weather in the cold months. The pens opened into yards facing the south-west. These yards were $28\frac{1}{2}$ feet long and $13\frac{1}{2}$ feet broad. To have the yards facing the south or south-east would be preferable, but in this instance the play of west and south-westerly winds is arrested by the barn. 2. Both groups were given the same kinds of food and the same quantities throughout the experiment, except in the case of hay, of which they were given all they would take. Of this, however, the two groups took the same amount. 3. The lambs in each lot were weighed monthly throughout the experiment, except in the case of the last weighing, which of necessity had to be made before the month had expired, as these lambs formed part of the lot shipped to England early in May. These weights are given singly in Table 1 of this bulletin.

FOOD AND FEEDING. The food fed to the lambs throughout the experiment consisted of hay, grain, bran and roots. The hay was composed of mixed grasses, the common red clover predominating. It was fed uncut. The grain ration was made up of three parts oats, two parts pease, and one part bran, by weight. The oats and pease were fed whole. The roots included both turnips and mangels, but these were not fed together. They were sliced before feeding them. The food was given in two feeds per day, morning and evening. The water was so furnished from taps in the pens, that the lambs could virtually partake of it at will.

ESTIMATED VALUE OF THE FOOD. The food was estimated at the current market values in Guelph, less the cost of marketing from an Ontario farm under average conditions. These conditions relate to the size of the farm, its distance from market, and the state of the roads. The average market price for oats was 40 cents per bushel, for pease 60 cents, for bran $14.00 per ton, for roots 11½ cents per bushel, and for hay $7.00 per ton. A careful estimate was made of the cost of marketing under the conditions named above. In the case of the grain it included the cleaning, and also took into account the difference between the quality of grain as usually fed and as prepared for market. The estimate was made on the basis of hired labor for man and team. The cost of marketing these respective foods was thus found to be in the case of oats, 5½ cents per bushel, pease 8 cents, roots 4½ cents, and hay $2.50 per ton. One cent per bushel was charged for slicing the roots. The home value of the food components was therefore as follows: Oats 34½ cents per bushel, pease 52 cents, bran $14.00 per ton, roots, when sliced, 8 cents per bushel, and hay $4.50 per ton.

FOOD EATEN. The total amount of food eaten by the lambs of each group was practicaliy the same during the experiment. Each group consumed 2,136 lb. grain and bran, 2,167 lb. hay, 5,615 lb. roots. The amount of food eaten by each lamb per day on an average throughout the experiment was therefore:

| | | |
|---|---|---|
| Oats | .95 lb. | 1.90 lb. grain and bran |
| Pease | .63 " | |
| Bran | .32 " | |
| Hay | 1.91 " | |
| Roots | 5.00 " | |
| Total | 8.81 " | |

At the end of the first month or period, a slight increase was made in the quantity of the grain ration given. This was the only change that was made in the quantity of food fed, but it should be remembered that all the hay was given that the lambs would eat.

WEIGHTS. Table I gives the weights of individual animals at the commencement and close of the experiment.

| Group 1. | | | Group 2. | | |
|---|---|---|---|---|---|
| Weight of each animal | | Individual increase during the experiment. | Weight of each animal | | Individual increase during the experiment. |
| At commencement of test. | At close of test. | | At commencement of test. | At close of test. | |
| lb. | lb. | lb. | lb. | lb. | lb. |
| 132.5 | 184.0 | 51.5 | 94.0 | 164.0 | 70.0 |
| 116.0 | 162.5 | 46.5 | 111.0 | 169.0 | 58.0 |
| 105.0 | 149.0 | 44.0 | 105.5 | 151.0 | 45.5 |
| 103.5 | 147.5 | 44.0 | 101 0 | 149.0 | 45.0 |
| 110.5 | 153.5 | 43.0 | 107.5 | 148.5 | 41.0 |
| 130.0 | 171.5 | 41.5 | 90.0 | 129.5 | 39.5 |
| 117.5 | 158.0 | 40.5 | 94.0 | 130.0 | 36.0 |
| 104.0 | 144.5 | 40.5 | 103.5 | 139.0 | 35.5 |
| 107.0 | 146 0 | 39.0 | 113.0 | 144.0 | 31.0 |
| 93:0 | 129.0 | 36.0 | 106.0 | 132.0 | 26.0 |

It will be observed that there is a wide difference in the gains made by individual lambs. The highest increase made by one animal during the experiment was 70 lb., a daily gain of .62 lb. The lowest gain was only 26 lb., a daily gain of but .23 lb. The five lambs in each group which gave the highest increase in weight gained .43 lb. per day, and the five which gave the lowest increase gained but .32 lb. per day. The profits therefore in all probability came largely from the lambs which made the best daily gains. But to be quite clear on this point, we would require to know the food consumed by each lamb. The marked difference in the gains, however, emphasises the importance of making careful selections when lambs are to be fattened.

Table II gives a summary and an analysis of weights.

| ——— | Unshorn lambs. | Shorn lambs. |
|---|---|---|
| | lb. | lb. |
| Weight at commencement | 1119.000 | 1028.500 |
| Weight at close | 1545 500 | 1456.000 |
| Increase per group | 426.500 | 427.500 |
| Average daily increase per group | 3.774 | 3.783 |
| Average individual increase | 42,1650 | 42.750 |
| Average individual daily increase | .377 | .378 |

The average daily gain of the lambs in the two groups was practically the same, there being but one pound of difference in favor

of the shorn lambs. This difference would probably have been more had the lambs been shorn earlier in the season. The average daily gain of each lamb was .38 lb. or nearly ⅜ pound per day.

VALUES. Table III gives the financial results of the experiment.

| —— | Unshorn lambs. | Shorn lambs. |
|---|---|---|
| Value of animals at commencement of test. | $55 95 | $51 42 |
| Cost of Shearing | .... | 50 |
| Cost of Food | 31 45 | 31 45 |
| Cost of attendance | 2 82 | 2 82 |
| **Total Cost** | **$90 22** | **$86 19** |
| Value of animals at close of test | $108 18 | $101 92 |
| Value of wool | ..... | 5 93 |
| Value of manure | 8 48 | 8 48 |
| **Total Value** | **$116 66** | **$116 33** |
| **Gain** | **26 44** | **30 14** |
| **Gain per cent. on Investment** | **29.31** | **34.97** |

The lambs were valued at five cents per pound at the commencement of the experiment, as stated elsewhere. At its close they were valued at seven cents per pound, as we were offered this sum by Mr. L. O. Barber, live stock dealer, of Guelph. It is only fair to state here that this is more than has hitherto been paid for lambs at that season of the year. The offer was refused, as we desired to ship some of them to Great Britain, along with a number more fed for that purpose, to make the number so shipped an even hundred. Full particulars are given regarding the feeding of these lambs and the shipment of the same in bulletin LXIX.

The manure was valued at ¾ of a cent per day per lamb. This estimate is based upon the results of an experiment conducted by Prof. I. P. Roberts, of Cornell University experiment station, New York, wherein the value of the manure made from one sheep per day is reckoned at one and a half cents. For reasons which we do not stay to mention now, we consider the estimate referred to too high to apply to Ontario conditions. We have therefore put the value of the manure as stated above.

The cost of attendance was reckoned on the basis that one man would feed and care for 400 lambs per day under ordinary conditions when the food has all been made ready. This estimate is probably very near the truth. At all events it is not an extravagant one, as anyone who has engaged in this work must know very well. It will be observed that the gain on the shorn lambs was $3.70 more

than on those unshorn. But too much should not be made of this at present, as in the offer for the lambs no distinction was made between those shorn and unshorn. It is important, however, to note that the shorn lambs shipped better than the unshorn, as will be more fully stated in the bulletin relating to the whole lot which were exported to Great Britain. The total average gain on the investment during the 113 days which the experiment lasted, viz., 32.07 per cent., is a very satisfactory one.

A few of the lambs in this experiment were sent to England, to take the place of others in the larger experiment which were not considered suitable, hence the difficulty of giving the actual returns realised. Should the price offered for these lambs be considered unduly high, the reader can estimate values based upon the current prices in his neighborhood.

Conclusions. The following are the chief of the conclusions to be deduced from this experiment:

1. That good grade lambs when being fattened in winter will make satisfactory gains on a daily ration of 1.90 lb. grain and bran, 1.91 lb. hay and 5 lb. roots, or a total of 8.81 lb.

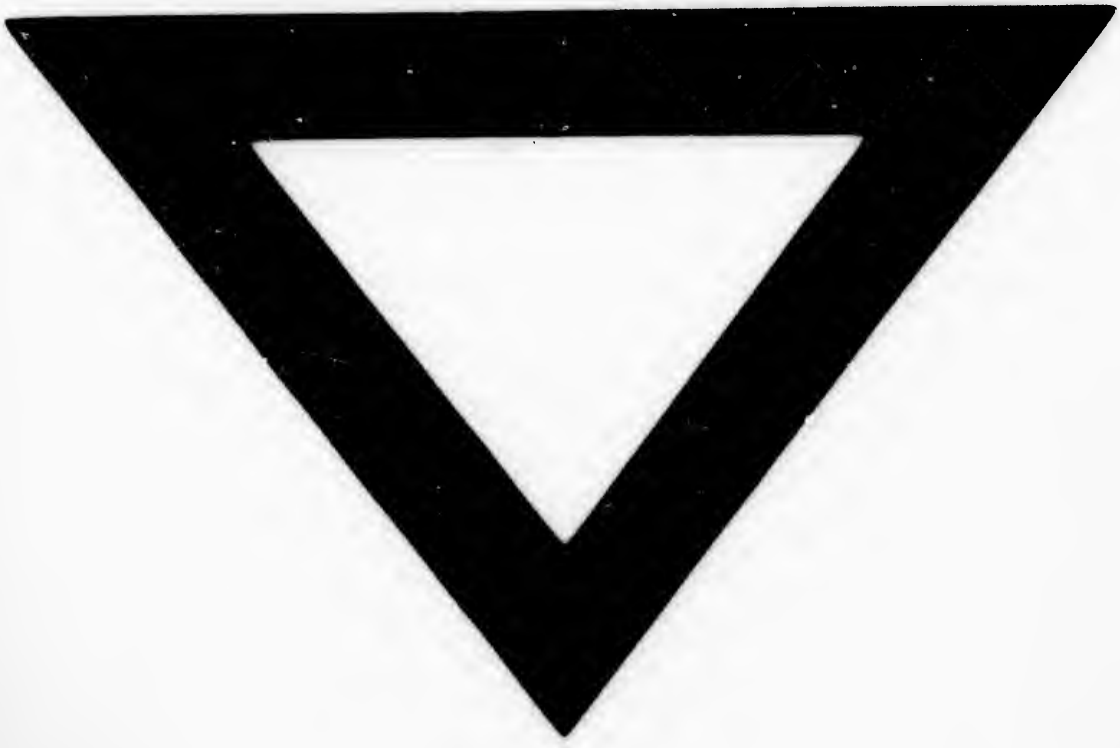
2. That lambs when properly fed and cared for in the winter, the ration being the same as that used in this experiment, will make an average gain per day of .38 or nearly 2-5 lb.

3. That good grade lambs may be made to gain .38 lb. per day at an outlay of 2.78 cents per day for food, when the prices are the same as those charged in this experiment.

4. That there is some advantage to be derived from shearing lambs in autumn for winter feeding, although the extent of the advantage was not very marked in the experiment.

5. That about 12 per cent. represents the relation which the value of the wool when shorn bears to that of the animal under conditions similar to those which relate to this experiment.

6. That when good grade lambs are fattened in winter, the prices of mutton and food being the same as in this experiment, a profit of 32.07 per cent. may be realised on 113 days' feeding.

7. That as the lambs in this experiment cost $3.76 when laid down at the farm and would bring $10.80 per head at the close of the experiment, the advance in value was $7.04 per head, that is to say, they were worth nearly three times as much as they cost in the first place.

8. Inasmuch as the opinion has very generally prevailed among farmers that lambs cannot be fattened in the winter at a profit, in view of the above this opinion should be carefully reconsidered.