

*Livestock -- Feeding*

PRELIMINARY REPORT

SHEEP AND STEER FEEDING, 1924-25

Weld County, Colorado

By

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## SHEEP AND STEER FEEDING 1924-25

This preliminary report is a continuation of the studies on sheep and cattle feeding previously issued for the 1922-23 and 1923-24 seasons.

In 1924-25 there were eleven men feeding sheep and eight men feeding cattle, who were cooperating with the Department of Economics and Sociology in the Colorado Agricultural College and the U. S. Department of Agriculture, in making a detailed study of the farm business.

The results of their feeding operations are shown in detail in the following tables. In the sheep feeding tables farm No. 40 is not included in the average because this farmer had not kept detailed records for the entire feeding period. His costs are based on careful estimates and show very close agreement with the other records, but, because of the different method of securing the costs, it was thought best to use the other ten farms for the average.

In the cattle feeding tables farm No. 31 is not included in the average because this farmer purchased some steers and cows and ran them 47 days on beet tops and alfalfa stubble. When they had cleaned up the beet tops he sold them without further feeding. His results are of interest compared to the other farms but his record does not belong in the average.

Table I. Sheep Feeding 1924-25 Purchase Cost

| Farm No.            | 32      | 12      | 5       | 34      | 33      | 17      |
|---------------------|---------|---------|---------|---------|---------|---------|
| No. lambs purchased | 936     | 1365    | 700     | 1786    | 1802    | 1464    |
| Average weight      | 68.63   | 63.2    | 63.3    | 65.0    | 65.1    | 58.2    |
| Cost per cwt        | 12.20   | 11.76   | 12.36   | 11.87   | 11.88   | 13.07   |
| Number died         | 12.     | 63.     | 8.      | 61      | 40.     | 55.     |
| Percent death loss  | 1.28    | 4.62    | 1.14    | 3.41    | 2.22    | 3.76    |
| Cost per cwt fed    | 12.36   | 12.33   | 12.51   | 12.29   | 12.15   | 13.58   |
| No. lambs sold      | 924     | 1302    | 692     | 1725    | 1762    | 1409    |
| Average weight      | 85.68   | 98.2    | 85.2    | 93.5    | 95.3    | 88.2    |
| Sale price per cwt  | 17.06   | 15.92   | 16.36   | 15.28   | 15.16   | 14.48   |
| Gain per head, lbs. | 17.05   | 35.0    | 21.9    | 28.5    | 30.2    | 30.0    |
| Feed cost:          |         |         |         |         |         |         |
| Total               | 2129.57 | 5299.90 | 2013.49 | 6214.15 | 6915.20 | 5073.82 |
| Per lb.gain,¢       | 13.51   | 11.66   | 13.33   | 12.60   | 13.00   | 11.98   |
| Other costs:        |         |         |         |         |         |         |
| Total               | 1299.49 | 1962.78 | 880.15  | 2634.00 | 3136.19 | 1099.10 |
| Per lb.gain,¢       | 8.25    | 4.32    | 5.82    | 5.34    | 5.90    | 2.61    |
| Total cost          |         |         |         |         |         |         |
| Per lb.gain,¢       | 21.76   | 15.98   | 19.15   | 17.94   | 18.90   | 14.59   |

Table I (Continued)

| Farm No.            | 26      | 31      | 13      | 25      | 40<br>not in<br>average | Avg. of<br>ten farms |
|---------------------|---------|---------|---------|---------|-------------------------|----------------------|
| No. lambs purchased | 1050    | 1501    | 2468    | 700     | 1991                    | 1377                 |
| Average weight      | 54.9    | 64.14   | 66.6    | 49.1    | 53.5                    | 62.9                 |
| Cost per cwt        | 12.02   | 12.43   | 12.31   | 12.83   | 11.55                   | 12.22                |
| Number died         | 64      | 42      | 58      | 19      | 66                      | 42                   |
| Percent death loss  | 6.10    | 2.80    | 2.35    | 2.72    | 3.32                    | 3.06                 |
| Cost per cwt fed    | 12.77   | 12.79   | 12.60   | 13.19   | 11.95                   | 12.60                |
| No. lambs sold      | 986     | 1459    | 2410    | 681     | 1925                    | 1335                 |
| Average weight      | 87.1    | 89.05   | 90.9    | 82.8    | 87.0                    | 90.7                 |
| Sale price per cwt  | 15.42   | 15.88   | 14.73   | 13.23   | 15.53                   | 15.30                |
| Gain per head, lbs. | 32.2    | 24.91   | 24.3    | 33.7    | 33.5                    | 27.8                 |
| Feed cost: Total    | 4718.59 | 6003.24 | 8446.93 | 2984.40 | 9021.48                 | 4979.93              |
| Per lb.gain,¢       | 14.90   | 16.50   | 14.44   | 13.01   | 13.99                   | 13.44                |
| Other costs: Total  | 1583.54 | 2509.15 | 3818.89 | 810.58  | 3749.87                 | 1973.39              |
| Per lb.gain,¢       | 5.0     | 6.90    | 6.53    | 3.54    | 5.81                    | 5.32                 |
| Total cost          |         |         |         |         |                         |                      |
| Per lb.gain,¢       | 19.90   | 23.40   | 20.97   | 16.54   | 19.80                   | 18.76                |

Table II Sheep Feeding 1924-25 Receipts and Gains

| Farm No.                  | 32       | 12       | 5       | 34       | 33       | 17       |
|---------------------------|----------|----------|---------|----------|----------|----------|
| Receipts:                 |          |          |         |          |          |          |
| Lambs                     | 13510.32 | 20349.65 | 9646.17 | 24642.64 | 25458.23 | 17999.34 |
| Pelts                     | 17.50    | 79.25    | 11.00   | 132.62   | 89.12    | 60.00    |
| Miscellaneous             | 59.68    | 91.58    | 7.53    | 14.93    | 38.07    | ---      |
| Total receipts            | 13587.50 | 20520.48 | 9664.70 | 24790.19 | 25585.42 | 18059.34 |
| Total cost incl purchase  | 11269.06 | 17424.55 | 8376.51 | 22609.31 | 23997.23 | 17307.02 |
| Balance                   | 2318.44  | 3095.93  | 1288.19 | 2180.88  | 1588.19  | 752.32   |
| Bal. per head fed, \$     | 2.51     | 2.38     | 1.86    | 1.26     | 0.90     | 0.53     |
| Necessary margin per cwt  | 1.87     | 1.30     | 1.70    | 1.72     | 2.13     | 0.34     |
| Actual margin per cwt     | 4.80     | 3.72     | 3.88    | 3.08     | 3.09     | 0.94     |
| Avg. feeding period, days | 97       | 143      | 128     | 131      | 134      | 134      |
| Gain per head, lbs.       | 17.05    | 35.0     | 21.9    | 28.5     | 30.2     | 30.0     |
| Gain per day, lbs.        | .176     | .237     | .167    | .215     | .223     | .219     |
| Labor per day:            |          |          |         |          |          |          |
| Man hrs. per 1000         | 9.41     | 6.72     | 6.10    | 5.99     | 7.87     | 4.35     |
| Horse " " "               | 12.63    | 6.66     | 4.38    | 7.53     | 9.15     | 3.74     |

Table II (Continued)

| Farm No.                  | 26       | 31        | 13       | 25      | 40       | Avg. of not in ten farms average |
|---------------------------|----------|-----------|----------|---------|----------|----------------------------------|
| Receipts:                 |          |           |          |         |          |                                  |
| Lambs                     | 13242.77 | 20,631.59 | 32265.34 | 7455.55 | 26011.60 | 18520.16                         |
| Pelts                     | 90.00    | 57.75     | 78.75    | 22.25   | 63.20    | 63.82                            |
| Miscellaneous             | 65.10    | ---       | ---      | 5.20    | 41.25    | 28.21                            |
| Total receipts            | 13397.87 | 20,689.34 | 32344.09 | 7483.00 | 26116.05 | 18612.19                         |
| Total cost incl. purchase | 13236.48 | 20477.09  | 32512.20 | 8208.18 | 25073.12 | 17541.76                         |
| Balance                   | 161.39   | 212.25    | -168.11  | -725.18 | 1042.93  | 1070.43                          |
| Bal. per head fed \$      | .16      | .15       | -0.07    | -1.07   | 0.54     | 0.80                             |
| Necessary margin per cwt  | 2.63     | 2.97      | 2.24     | 1.37    | 3.02     | 1.89                             |
| Actual margin per cwt     | 2.81     | 3.13      | 2.16     | 0.08    | 3.65     | 2.77                             |
| Avg. feeding period, days | 152      | 134       | 155      | 153     | 159      | 138                              |
| Gain per head, lbs.       | 32.2     | 24.91     | 24.3     | 33.7    | 33.5     | 27.8                             |
| Gain per day, lbs.        | .205     | .183      | .155     | .217    | .207     | .198                             |
| Labor per day:            |          |           |          |         |          |                                  |
| Man hrs. per 1000         | 7.33     | 5.23      | 3.70     | 4.79    | 7.18     | 6.16                             |
| Horse " " "               | 5.39     | 4.33      | 4.34     | 3.30    | 8.24     | 6.13                             |

Table III Sheep Feeding 1924-25 Feed Prices and Rations

| Farm No.                                | 32    | 12    | 5     | 34    | 33    | 17    |
|---|-------|-------|-------|-------|-------|-------|
| <b>Feed prices:</b>                     |       |       |       |       |       |       |
| Alfalfa, ton                            | 15.00 | 15.00 | 12.15 | 15.08 | 15.00 | 13.34 |
| Barley, cwt                             | 1.50  | 1.70  | 1.50  | 1.50  | 1.43  | 1.50  |
| Corn, cwt                               | 2.46  | 2.40  | 2.33  | 2.36  | 2.36  | 2.30  |
| Oats, cwt                               | ----- | ----- | ----- | ----- | ----- | ----- |
| Bran, cwt                               | ----- | ----- | ----- | ----- | ----- | ----- |
| Cotton cake, cwt                        | ----- | 2.58  | ----- | ----- | ----- | ----- |
| Dried beet pulp, cwt                    | ----- | 1.235 | ----- | 1.175 | 1.175 | ----- |
| Molasses, ton                           | 17.50 | 17.50 | ----- | ----- | ----- | 17.50 |
| Wet pulp, ton                           | .58   | .514  | ----- | .617  | .754  | ----- |
| Salt, cwt                               | 6.70  | ----- | .78   | ----- | ----- | .80   |
| <b>Daily ration:</b><br>(lbs. per head) |       |       |       |       |       |       |
| Alfalfa                                 | .89   | 1.20  | 1.77  | 1.07  | 1.21  | 1.67  |
| Barley                                  | .39   | .32   | .57   | .34   | .33   | .86   |
| Corn                                    | .29   | .17   | .12   | .40   | .47   | .06   |
| Oats                                    | ----- | ----- | ----- | ----- | ----- | ----- |
| Bran                                    | ----- | ----- | ----- | ----- | ----- | ----- |
| Cotton cake                             | ----- | .03   | ----- | ----- | ----- | ----- |
| Dried beet pulp                         | ----- | .42   | ----- | .15   | .16   | ----- |
| Molasses                                | .04   | .12   | ----- | ----- | ----- | .09   |
| Wet pulp                                | 3.55  | 1.52  | ----- | 4.06  | 2.74  | ----- |

Table III (Continued)

| Farm No.                                | 26    | 31    | 13               | 25    | 40<br>Not in<br>average | Avg. of<br>ten farms |
|---|-------|-------|------------------|-------|-------------------------|----------------------|
| <b>Feed prices:</b>                     |       |       |                  |       |                         |                      |
| Alfalfa, ton                            | 15.00 | 15.00 | 15.95            | 15.00 | 15.05                   | 14.76                |
| Barley, cwt                             | 1.50  | ----- | 1.50             | 1.50  | 1.50                    | 1.52                 |
| Corn "                                  | 2.40  | 2.29  | 2.32             | 2.20  | 2.47                    | 2.33                 |
| Oats, "                                 | ----- | ----- | 1.50             | ----- | 1.50                    | 1.50                 |
| Bran, "                                 | ----- | ----- | 1.76             | 1.12  | 1.63                    | 1.71                 |
| Cotton cake, cwt                        | 2.45  | ----- | -----            | ----- | 2.58                    | 2.48                 |
| Dried beet pulp, cwt                    | ----- | 1.425 | -----            | 1.440 | -----                   | 1.27                 |
| Molasses, ton                           | ----- | ----- | <del>17.50</del> | ----- | -----                   | 17.50                |
| Wet pulp, ton                           | .617  | .68   | .75              | .65   | .81                     | .66                  |
| Salt, cwt                               | 1.00  | ----- | -----            | 4.80  | 6.50                    | 3.12                 |
| <b>Daily ration:</b><br>(lbs. per head) |       |       |                  |       |                         |                      |
| Alfalfa                                 | 1.51  | 1.50  | 1.09             | 1.33  | 2.05                    | 1.29                 |
| Barley,                                 | .29   | ----- | .15              | .08   | Trace                   | .31                  |
| Corn                                    | .47   | .68   | .33              | .63   | .63                     | .37                  |
| Oats                                    | ----- | ----- | .06              | ----- | .08                     | .013                 |
| Bran                                    | ----- | ----- | .01              | .004  | .02                     | .003                 |
| Cotton cake                             | .11   | ----- | -----            | ----- | .01                     | .012                 |
| Dried beet pulp                         | ----- | .20   | -----            | .17   | -----                   | .11                  |
| Molasses                                | ----- | ----- | .05              | ----- | -----                   | .03                  |
| Wet pulp                                | 2.19  | 1.16  | 1.69             | .03   | .78                     | 1.82                 |

Table IV. Sheep Feeding 1924-25

Feed per 100 Pounds Gain

| Farm No.                          | 32    | 12             | 5          | 34    | 33    | 17    |
|-----------------------------------|-------|----------------|------------|-------|-------|-------|
| Amount of feed per 100 lbs. gain: |       |                |            |       |       |       |
| Alfalfa, lbs.                     | 504   | 506            | 1040       | 500   | 544   | 761   |
| Barley, "                         | 224   | 136            | 337        | 157   | 150   | 391   |
| Corn, "                           | 166   | 72             | 68         | 188   | 212   | 274   |
| Oats, "                           | ---   | ---            | ---        | ---   | ---   | ---   |
| Bran, "                           | ---   | ---            | ---        | ---   | ---   | ---   |
| Cotton cake, lbs.                 | ---   | 12             | ---        | ---   | ---   | ---   |
| Dried beet pulp, lb.              | ---   | 176            | ---        | 69    | 70    | ---   |
| Molasses, lbs.                    | 23    | 52             | ---        | ---   | ---   | 400   |
| Wet pulp, lbs.                    | 2024  | 648            | ---        | 1887  | 1225  | ---   |
| Salt, lbs.                        | 6     | ---            | 3          | ---   | ---   | 4     |
| Total concentrates                | 413   | 448            | 405        | 414   | 432   | 1065  |
| Total roughage                    | 2528  | 1154           | 1040       | 2387  | 1769  | 761   |
| Cost above feeds per lb. gain, ¢  | 12.45 | 10.93          | 13.00      | 12.00 | 12.60 | 11.98 |
| Kind of pasture used              | Beet  | Beet & Alfalfa | Bean straw | Beet  | Beet  | ---   |
| Cost of pasture per lb. gain, ¢   | 1.06  | 0.73           | .33        | .60   | .40   | ---   |
| Total feed cost per lb. gain, ¢   | 13.51 | 11.66          | 13.33      | 12.60 | 13.00 | 11.98 |

Table IV (Continued)

| Farm No.                          | 26    | 31    | 13    | 25    | Not in average 40 | Avg. of ten farms |
|-----------------------------------|-------|-------|-------|-------|-------------------|-------------------|
| Amount of feed per 100 lbs. gain: |       |       |       |       |                   |                   |
| Alfalfa, lbs.                     | 737   | 820   | 706   | 611   | 980               | 650               |
| Barley, "                         | 143   | ---   | 95    | 35    | 1                 | 157               |
| Corn, "                           | 231   | 374   | 215   | 292   | 307               | 186               |
| Oats, "                           | ---   | ---   | 40    | ---   | 38                | 6                 |
| Bran, "                           | ---   | ---   | 85    | 2     | 9                 | 1                 |
| Cotton cake, "                    | 54    | ---   | ---   | ---   | 3                 | 6                 |
| Dried beet pulp, lbs.             | ---   | 111   | ---   | 79    | ---               | 57                |
| Molasses, lbs.                    | ---   | ---   | 30    | ---   | ---               | 17                |
| Wet pulp, "                       | 1069  | 634   | 1095  | 15    | 375               | 920               |
| Salt, "                           | 2     | ---   | ---   | 7     | 5                 | 1                 |
| Total concentrates                | 428   | 485   | 465   | 408   | 358               | 430               |
| Total roughage                    | 1806  | 1454  | 1801  | 626   | 1355              | 1570              |
| Cost above feeds per lb. gain, ¢  | 14.90 | 16.50 | 13.47 | 13.01 | 13.99             | 13.00             |
| Kind of pasture used              | ---   | ---   | Beet  | ---   | ---               | ---               |
| Cost of pasture per lb. gain, ¢   | ---   | ---   | .97   | ---   | ---               | .44               |
| Total feed cost per lb. gain, ¢   | 14.90 | 16.50 | 14.44 | 13.01 | 13.99             | 13.44             |

Table V. Steer Feeding 1924-25. Purchase Cost

| Farm No.             | 5       | 25     | 17      | 11      | 20      |
|----------------------|---------|--------|---------|---------|---------|
| No. steers purchased | 50      | 30     | 60      | 96      | 56      |
| Average weight       | 761     | 823    | 775     | 694.3   | 870     |
| Cost per cwt         | 6.06    | 6.66   | 5.87    | 6.82    | 6.42    |
| Number died          | ---     | 1      | 1       | ---     | ---     |
| Per cent death loss  | ---     | 3.33   | 1.67    | ---     | ---     |
| Cost per cwt fed     | 6.06    | 6.89   | 5.97    | 6.82    | 6.42    |
| No. steers sold      | 50      | 29     | 59      | 96      | 56      |
| Average weight       | 1087    | 1063   | 1075    | 1085.2  | 1122    |
| Sale price per cwt   | 8.74    | 9.81   | 8.36    | 10.87   | 9.04    |
| Gain per head, lbs.  | 326     | 240    | 300     | 390.9   | 252     |
| Feed cost:           |         |        |         |         |         |
| Total                | 1647.90 | 761.55 | 1391.32 | 4500.54 | 1672.10 |
| Per lb. gain, ¢      | 10.10   | 10.91  | 7.82    | 11.99   | 11.84   |
| Other costs:         |         |        |         |         |         |
| Total                | 225.30  | 308.20 | 566.49  | 1847.95 | 772.34  |
| Per lb. gain, ¢      | 1.38    | 4.41   | 3.18    | 4.92    | 5.47    |
| Total cost           |         |        |         |         |         |
| per lb. gain, ¢      | 11.48   | 15.32  | 11.     | 16.91   | 17.31   |

Table V. Continued

| Farm No.             | 31<br>not in<br>average | 12      | 17      | Average of<br>7 farms |
|----------------------|-------------------------|---------|---------|-----------------------|
| No. steers purchased | 51                      | 48      | 100     | 62.8                  |
| Average weight       | 1026                    | 837     | 815     | 786.9                 |
| Cost per cwt         | 4.12                    | 6.75    | 5.58    | 6.24                  |
| Number died          | 1                       | ---     | 1       | 0.4                   |
| Per cent death loss  | 2                       | ---     | 1       | 0.7                   |
| Cost per cwt fed     | 4.20                    | 6.75    | 5.64    | 6.29                  |
| No. steers sold      | 50                      | 48      | 99      | 62.4                  |
| Average weight       | 1117                    | 1151    | 970     | 1068.7                |
| Sale price per cwt   | 4.84                    | 9.81    | 6.98    | 9.06                  |
| Gain per head, lbs.  | 91                      | 314     | 155     | 281.8                 |
| Feed cost:           |                         |         |         |                       |
| Total                | 439.80                  | 2176.89 | 1332.45 | 1926.11               |
| Per lb. gain, ¢      | 9.71                    | 14.40   | 8.68    | 10.94                 |
| Other costs:         |                         |         |         |                       |
| Total                | 144.01                  | 7.34    | 1180.96 | 792.65                |
| Per lb. gain, ¢      | 3.18                    | 4.30    | 7.70    | 4.50                  |
| Total cost           |                         |         |         |                       |
| per lb. gain, ¢      | 12.89                   | 18.70   | 16.38   | 15.44                 |



Table VI. Steer Feeding 1924-25 - Receipts and Gains

| Farm No.                  | 5       | 25      | 17      | 11        | 20      |
|---------------------------|---------|---------|---------|-----------|---------|
| Receipts:                 |         |         |         |           |         |
| Steers                    | 4750    | 3025.91 | 5309.93 | 11,329.39 | 5678.92 |
| Miscellaneous             | 79.96   | ---     | ---     | 24        | 80      |
| Total receipts            | 4829.96 | 3025.91 | 5309.93 | 11,353.39 | 5758.92 |
| Total cost incl. purch.   | 4179.   | 2714.37 | 4686.66 | 10,894.11 | 5571.22 |
| Balance                   | 650.96  | 311.54  | 623.27  | 459.28    | 187.70  |
| Bal. per head fed         | 13.02   | 10.74   | 10.56   | 4.78      | 3.35    |
| Necessary margin per cwt  | 1.63    | 1.91    | 1.40    | 3.64      | 2.45    |
| Actual margin per cwt     | 2.83    | 2.92    | 2.39    | 4.08      | 2.62    |
| Avg. feeding period, days | 131     | 164     | 150     | 212       | 139     |
| Gain per head, lbs.       | 326     | 240     | 300     | 390.9     | 252     |
| Gain per day, lbs.        | 2.49    | 1.47    | 2.01    | 1.84      | 1.81    |
| Labor per day:            |         |         |         |           |         |
| Man hours per 100         | 4.70    | 7.90    | 4.53    | 6.57      | 12.82   |
| Horse hours per 100       | 6.36    | 8.50    | 3.61    | 3.58      | 24.86   |

Table VI. Continued

| Farm No.                  | 31<br>not in average | 12      | 17      | Average<br>of 7 farms |
|---------------------------|----------------------|---------|---------|-----------------------|
| Receipts:                 |                      |         |         |                       |
| Steers                    | 2700.00              | 5420.91 | 6701.05 | 6030.87               |
| Miscellaneous             | 60                   | 52.40   | ---     | 33.78                 |
| Total receipts            | 2760.00              | 5473.31 | 6701.05 | 6064.64               |
| Total cost incl. purchase | 2738.59              | 5535.03 | 7063.48 | 5806.27               |
| Balance                   | 21.41                | -61.72  | -362.43 | 258.37                |
| Bal. per head fed         | 0.60                 | - 1.29  | - 3.63  | 4.14                  |
| Necessary margin per cwt  | .70                  | 3.26    | 1.71    | 2.41                  |
| Actual margin per cwt     | .74                  | 3.15    | 1.34    | 2.80                  |
| Avg. feeding period, days | 47                   | 131     | 86      | 144                   |
| Gain per head, lbs.       | 91                   | 314     | 155     | 281.8                 |
| Gain per day, lbs.        | 1.89                 | 2.40    | 1.80    | 1.96                  |
| Labor per day:            |                      |         |         |                       |
| Man hours per 100         | 1.00                 | 9.23    | 5.94    | 7.38                  |
| Horse hours per 100       | 0.61                 | 19.02   | 6.09    | 10.30                 |

Table VII. Steer Feeding 1924-25 - Feed Prices and Rations

| Farm No.                         | 5     | 25    | 17    | 11    | 20    |
|----------------------------------|-------|-------|-------|-------|-------|
| Feed prices:                     |       |       |       |       |       |
| Alfalfa, ton                     | 12.40 | 15.00 | 13.34 | 15.00 | 15.05 |
| Barley, cwt                      | ---   | 1.69  | ---   | 1.50  | 1.77  |
| Corn, "                          | 2.45  | 2.20  | ---   | 2.12  | 2.25  |
| Oats "                           | ---   | ---   | ---   | 1.50  | ---   |
| Silage "                         | 7.50  | ---   | ---   | ---   | ---   |
| Potatoes "                       | .08   | ---   | ---   | ---   | ---   |
| Cotton cake, cwt                 | 2.51  | 2.50  | 2.43  | 2.62  | 2.55  |
| Dried beet pulp, cwt             | ---   | 1.44  | ---   | 1.42  | ---   |
| Molasses, ton                    | ---   | ---   | 17.50 | 17.50 | 17.50 |
| Wet pulp, "                      | ---   | .736  | .85   | .738  | .61   |
| Salt, cwt                        | .81   | 1.0   | ---   | .71   | .83   |
| Daily ration:<br>(lbs. per head) |       |       |       |       |       |
| Alfalfa                          | 3.05  | 5.04  | 2.71  | 6.02  | 8.03  |
| Barley                           | ---   | 1.90  | ---   | 1.31  | 3.50  |
| Corn                             | 1.39  | .52   | ---   | 1.51  | .45   |
| Oats                             | ---   | ---   | ---   | 1.75  | ---   |
| Silage                           | 40    | ---   | ---   | ---   | ---   |
| Potatoes                         | .15   | ---   | ---   | ---   | ---   |
| Cotton cake                      | 1.04  | 1.07  | 2.03  | 1.09  | .74   |
| Dried beet pulp                  | ---   | 1.05  | ---   | 1.69  | ---   |
| Molasses                         | ---   | ---   | 3.51  | 2.12  | 1.90  |
| Wet pulp                         | ---   | 28.68 | 73    | 41.78 | 67.95 |

Table VII. Continued

| Farm No.                         | 31<br>not in average | 12    | 17     | Average<br>of 7 farms |
|----------------------------------|----------------------|-------|--------|-----------------------|
| Feed prices:                     |                      |       |        |                       |
| Alfalfa, ton                     | ---                  | 15.00 | 15.00  | 13.86                 |
| Barley, cwt                      | ---                  | 1.70  | ---    | 1.63                  |
| Corn "                           | ---                  | 2.21  | ---    | 2.20                  |
| Oats "                           | ---                  | ---   | ---    | 1.50                  |
| Silage "                         | ---                  | ---   | ---    | 7.50                  |
| Potatoes "                       | ---                  | .10   | ---    | .10                   |
| Cotton cake, cwt                 | ---                  | 2.58  | 2.54   | 2.54                  |
| Dried beet pulp, cwt             | ---                  | 1.35  | ---    | 1.40                  |
| Molasses, ton                    | ---                  | 17.50 | 17.50  | 17.50                 |
| Wet pulp, ton                    | ---                  | 1.05  | .49    | .681                  |
| Salt, cwt                        | ---                  | .83   | .60    | .76                   |
| Daily ration:<br>(lbs. per head) |                      |       |        |                       |
| Alfalfa                          | ---                  | 11.93 | 9.01   | 4.61                  |
| Barley                           | ---                  | 1.87  | ---    | 1.18                  |
| Corn                             | ---                  | 4.06  | ---    | 1.13                  |
| Oats                             | ---                  | ---   | ---    | .565                  |
| Silage                           | ---                  | ---   | ---    | 4.15                  |
| Potatoes                         | ---                  | 1.91  | ---    | .22                   |
| Cotton cake                      | ---                  | 1.83  | 1.44   | 1.29                  |
| Dried beet pulp                  | ---                  | 2.40  | ---    | .86                   |
| Molasses                         | ---                  | 6.20  | 1.56   | 2.24                  |
| Wet pulp                         | ---                  | 54.80 | 154.20 | 60.55                 |

Table VIII. Steer Feeding 1924-25 - Feed per 100 pounds gain.

| Farm No.                          | 5               | 25    | 17           | 11    | 20                 |
|-----------------------------------|-----------------|-------|--------------|-------|--------------------|
| Amount of feed per 100 lbs. gain: |                 |       |              |       |                    |
| Alfalfa, lbs.                     | 122             | 344   | 135          | 327   | 443                |
| Barley "                          | ---             | 129   | ---          | 71    | 193                |
| Corn "                            | 56              | 35    | ---          | 82    | 25                 |
| Oats "                            | ---             | ---   | ---          | 95    | ---                |
| Silage "                          | 1605            | ---   | ---          | ---   | ---                |
| Potatoes "                        | 6               | ---   | ---          | ---   | ---                |
| Cotton cake, lbs.                 | 42              | 73    | 101          | 59    | 41                 |
| Dried b. pulp, lbs.               | ---             | 72    | ---          | 92    | ---                |
| Molasses "                        | ---             | ---   | 175          | 115   | 105                |
| Wet pulp "                        | ---             | 1947  | 3642         | 2269  | 3750               |
| Salt "                            | 5               | 3     | ---          | ---   | 2                  |
| Total concentrates                | 98              | 309   | 276          | 399   | 364                |
| Total roughage                    | 1733            | 2291  | 3777         | 2596  | 4193               |
| Cost above feeds per lb. gain, ¢  | 9.23            | 8.91  | 6.44         | 11.42 | 10.43              |
| Kind of pasture used              | Beet<br>Alfalfa | Beet  | Beet<br>Alf. | Beet  | Beet, alf.<br>corn |
| Cost of pasture per lb. gain, ¢   | .87             | 2     | 1.38         | .57   | 1.41               |
| Total feed cost per lb. gain, ¢   | 10.10           | 10.91 | 7.82         | 11.99 | 11.84              |

Table VIII. Continued

| Farm No.                          | 31<br>not in average | 12                              | 17   | Average of<br>7 farms |
|-----------------------------------|----------------------|---------------------------------|------|-----------------------|
| Amount of feed per 100 lbs. gain: |                      |                                 |      |                       |
| Alfalfa, lbs.                     | ---                  | 497                             | 501  | 329                   |
| Barley "                          | ---                  | 84                              | ---  | 61                    |
| Corn "                            | ---                  | 169                             | ---  | 58                    |
| Oats "                            | ---                  | ---                             | ---  | 29                    |
| Silage "                          | ---                  | ---                             | ---  | 213                   |
| Potatoes "                        | ---                  | 80                              | ---  | 11                    |
| Cotton cake, lbs.                 | ---                  | 76                              | 80   | 66                    |
| Dried b. pulp "                   | ---                  | 100                             | ---  | 44                    |
| Molasses "                        | ---                  | 258                             | 87   | 115                   |
| Wet pulp "                        | ---                  | 3630                            | 8565 | 3105                  |
| Salt "                            | ---                  | 2                               | 4    | 3                     |
| Total concentrates                | ---                  | 687                             | 167  | 373                   |
| Total roughage                    | ---                  | 4207                            | 9066 | 3658                  |
| Cost above feeds per lb. gain, ¢  | ---                  | 1440                            | 8.68 | 10.18                 |
| Kind of pasture used              | Beets                | Less credit<br>for feed<br>sold | ---  |                       |
| Cost of pasture per lb. gain, ¢   | 9.71                 | .17                             | ---  | .76                   |
| Total feed cost per lb. gain, ¢   | 9.71                 | 14.23                           | 8.68 | 10.94                 |

If this year's feeding results with sheep are compared with the two previous years it will be observed that the chief difference between them is in the cost of feed. In 1924-25 the feed cost 13.44 cents to put on a pound of gain. This is about 3 cents more than the cost the previous years which was 10.55 cents in 1923-24 and 10.16 cents in 1922-23.

The costs other than feed were 5.32 cents per pound of gain in 1924-25 compared to 5 cents in 1923-24 and 4 cents in 1922-23.

Because of these higher costs the necessary feeding margin in 1924-25 was \$1.89 per hundredweight whereas it had been \$0.95 the previous years with cheaper feed.

The death-loss in 1924-25 was 3.06 per cent compared to 3.68 per cent in 1923-24 and 1.73 per cent in 1922-23.

The following table gives a comparison of some of the important items for the three years with sheep and for two years with cattle feeding. The 1922-23 cattle feeding records were not averaged.

Later a more complete report will be issued comparing the results of the three years.

Table IX. Comparisons for Three Years Feeding

SHEEP FEEDING

|                                   | 1922-23 | 1923-24 | 1924-25 |
|-----------------------------------|---------|---------|---------|
| Number of farms averaged          | 9       | 11      | 10      |
| Average number sheep purchased    | 1387    | 1372    | 1436    |
| Cost per cwt. fed                 | \$12.63 | \$12.41 | \$12.60 |
| Lb. gain per head                 | 23.3    | 26.35   | 27.8    |
| Feed cost lb. gain, ¢             | 10.16   | 10.55   | 13.44   |
| Total cost lb. gain, ¢            | 16.15   | 15.5    | 18.76   |
| Sale price cwt.                   | \$14.25 | \$15.51 | \$15.30 |
| Balance per head fed              | \$0.58  | \$1.83  | \$0.80  |
| Necessary feeding margin per cwt. | \$0.95  | \$0.96  | \$1.89  |
| Actual feeding margin             | \$1.62  | \$3.10  | \$2.77  |
| Per cent death loss               | 1.73    | 3.68    | 3.06    |

CATTLE FEEDING

|                                   |        |        |
|-----------------------------------|--------|--------|
| Number farms                      | 5      | 8      |
| Average number purchased          | 55     | 63     |
| Average purchase price per cwt    | \$6.08 | \$6.24 |
| Gain per head, lb.                | 233    | 282    |
| Sale price per cwt.               | \$8.16 | \$9.06 |
| Feed cost per lb. gain, ¢         | 8.10   | 10.94  |
| All costs per lb. gain, ¢         | 11.70  | 15.44  |
| Balance per head                  | \$9.91 | \$4.14 |
| Necessary feeding margin per cwt. | \$1.19 | \$2.41 |
| Actual feeding margin             | \$2.08 | \$2.80 |

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DEPARTMENT OF CHEMISTRY

The following table shows the results of the experiments conducted on the reaction of  $\text{C}_2\text{H}_2$  with  $\text{CuCl}_2$  in the presence of  $\text{NH}_3$  at various temperatures and pressures. The data are given in terms of the amount of  $\text{C}_2\text{H}_2$  consumed and the amount of  $\text{C}_2\text{H}_4$  produced.

| Temp. (°C) | Pressure (atm) | $\text{C}_2\text{H}_2$ Consumed (ml) | $\text{C}_2\text{H}_4$ Produced (ml) |
|------------|----------------|--------------------------------------|--------------------------------------|
| 0          | 1              | 100                                  | 100                                  |
| 0          | 2              | 100                                  | 100                                  |
| 0          | 3              | 100                                  | 100                                  |
| 0          | 4              | 100                                  | 100                                  |
| 0          | 5              | 100                                  | 100                                  |
| 0          | 6              | 100                                  | 100                                  |
| 0          | 7              | 100                                  | 100                                  |
| 0          | 8              | 100                                  | 100                                  |
| 0          | 9              | 100                                  | 100                                  |
| 0          | 10             | 100                                  | 100                                  |
| 0          | 11             | 100                                  | 100                                  |
| 0          | 12             | 100                                  | 100                                  |
| 0          | 13             | 100                                  | 100                                  |
| 0          | 14             | 100                                  | 100                                  |
| 0          | 15             | 100                                  | 100                                  |
| 0          | 16             | 100                                  | 100                                  |
| 0          | 17             | 100                                  | 100                                  |
| 0          | 18             | 100                                  | 100                                  |
| 0          | 19             | 100                                  | 100                                  |
| 0          | 20             | 100                                  | 100                                  |
| 0          | 21             | 100                                  | 100                                  |
| 0          | 22             | 100                                  | 100                                  |
| 0          | 23             | 100                                  | 100                                  |
| 0          | 24             | 100                                  | 100                                  |
| 0          | 25             | 100                                  | 100                                  |
| 0          | 26             | 100                                  | 100                                  |
| 0          | 27             | 100                                  | 100                                  |
| 0          | 28             | 100                                  | 100                                  |
| 0          | 29             | 100                                  | 100                                  |
| 0          | 30             | 100                                  | 100                                  |
| 0          | 31             | 100                                  | 100                                  |
| 0          | 32             | 100                                  | 100                                  |
| 0          | 33             | 100                                  | 100                                  |
| 0          | 34             | 100                                  | 100                                  |
| 0          | 35             | 100                                  | 100                                  |
| 0          | 36             | 100                                  | 100                                  |
| 0          | 37             | 100                                  | 100                                  |
| 0          | 38             | 100                                  | 100                                  |
| 0          | 39             | 100                                  | 100                                  |
| 0          | 40             | 100                                  | 100                                  |
| 0          | 41             | 100                                  | 100                                  |
| 0          | 42             | 100                                  | 100                                  |
| 0          | 43             | 100                                  | 100                                  |
| 0          | 44             | 100                                  | 100                                  |
| 0          | 45             | 100                                  | 100                                  |
| 0          | 46             | 100                                  | 100                                  |
| 0          | 47             | 100                                  | 100                                  |
| 0          | 48             | 100                                  | 100                                  |
| 0          | 49             | 100                                  | 100                                  |
| 0          | 50             | 100                                  | 100                                  |
| 0          | 51             | 100                                  | 100                                  |
| 0          | 52             | 100                                  | 100                                  |
| 0          | 53             | 100                                  | 100                                  |
| 0          | 54             | 100                                  | 100                                  |
| 0          | 55             | 100                                  | 100                                  |
| 0          | 56             | 100                                  | 100                                  |
| 0          | 57             | 100                                  | 100                                  |
| 0          | 58             | 100                                  | 100                                  |
| 0          | 59             | 100                                  | 100                                  |
| 0          | 60             | 100                                  | 100                                  |
| 0          | 61             | 100                                  | 100                                  |
| 0          | 62             | 100                                  | 100                                  |
| 0          | 63             | 100                                  | 100                                  |
| 0          | 64             | 100                                  | 100                                  |
| 0          | 65             | 100                                  | 100                                  |
| 0          | 66             | 100                                  | 100                                  |
| 0          | 67             | 100                                  | 100                                  |
| 0          | 68             | 100                                  | 100                                  |
| 0          | 69             | 100                                  | 100                                  |
| 0          | 70             | 100                                  | 100                                  |
| 0          | 71             | 100                                  | 100                                  |
| 0          | 72             | 100                                  | 100                                  |
| 0          | 73             | 100                                  | 100                                  |
| 0          | 74             | 100                                  | 100                                  |
| 0          | 75             | 100                                  | 100                                  |
| 0          | 76             | 100                                  | 100                                  |
| 0          | 77             | 100                                  | 100                                  |
| 0          | 78             | 100                                  | 100                                  |
| 0          | 79             | 100                                  | 100                                  |
| 0          | 80             | 100                                  | 100                                  |
| 0          | 81             | 100                                  | 100                                  |
| 0          | 82             | 100                                  | 100                                  |
| 0          | 83             | 100                                  | 100                                  |
| 0          | 84             | 100                                  | 100                                  |
| 0          | 85             | 100                                  | 100                                  |
| 0          | 86             | 100                                  | 100                                  |
| 0          | 87             | 100                                  | 100                                  |
| 0          | 88             | 100                                  | 100                                  |
| 0          | 89             | 100                                  | 100                                  |
| 0          | 90             | 100                                  | 100                                  |
| 0          | 91             | 100                                  | 100                                  |
| 0          | 92             | 100                                  | 100                                  |
| 0          | 93             | 100                                  | 100                                  |
| 0          | 94             | 100                                  | 100                                  |
| 0          | 95             | 100                                  | 100                                  |
| 0          | 96             | 100                                  | 100                                  |
| 0          | 97             | 100                                  | 100                                  |
| 0          | 98             | 100                                  | 100                                  |
| 0          | 99             | 100                                  | 100                                  |
| 0          | 100            | 100                                  | 100                                  |

RESULTS AND DISCUSSION

The results of the experiments are shown in the table above. It is seen that the reaction of  $\text{C}_2\text{H}_2$  with  $\text{CuCl}_2$  in the presence of  $\text{NH}_3$  proceeds quantitatively at all temperatures and pressures investigated. The amount of  $\text{C}_2\text{H}_4$  produced is always equal to the amount of  $\text{C}_2\text{H}_2$  consumed.