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A feeding experiment

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A FEEDING EXPERIMENT.

R. P. SPEER.

Several years ago I saw an interesting account of a feeding experiment in a newspaper, but the result was not satisfactory. The statement was as follows: "Two fat steers which had been off feed for twelve hours, were fed good rations of corn meal in the morning, and as soon as it was eaten, they were driven across the street to a slaughter house and butchered. When their stomachs were examined, it was found that most of the meal had passed directly from their gullets to the third apartments or manifolds of their stomachs," but here the experiment was dropped. Dr. Armsby says in his work on cattle feeding, "that cows have been wintered on corn meal exclusively, and that, although rumination was entirely suspended for several months, no ill effects were observed." As many farmers feed meal and grain to their cows before they give them hay, it is important that we should know whether the remastication of such food is advantageous or not. When we feed meal in large quantities to fattening cattle, much of it passes through them undigested. By mixing meal with cut hay or straw, we could compel cattle to remasticate a large share of it. Would it pay to do so or not, is a question which I tried to solve in February and March of 1889. From a lot of twenty-nine calves, I selected six animals that were from 9 to 10 months old, and much alike in size and vigor. On the eighth day of February, three of them were placed in one stall and the other three in another. On the first day of the trial each lot of calves received ten pounds of corn and cob meal in the morning and as much more in the evening, and both lots received all of the hay and water that they wanted from the beginning to the end of the experiment. In the west stall the meal was fed dry and timothy hay was fed afterwards. We ran a part of the hay for the lot in the east stall through a feed cutter, and at the regular feeding times some of it was moistened and the rations of meal were thoroughly mixed with it before they were given to the calves. In a few days the daily allowance of meal for each lot of calves was increased from twenty to twenty-four pounds, which was the daily meal

ration afterwards to the end of the trial. After the 12th of March, each lot of calves received daily seven pounds of beets. The weight of each calf was recorded daily from the beginning to the end of the experiment. For the result of the trial, see the following tables and explanatory notes:

THREE CALVES FED IN WEST STALL.

Fed on dry corn and cob meal and timothy hay, (*ad libitum*) afterwards.

AVERAGE WEIGHT.	1ST CALF. Lbs.	2D CALF. Lbs.	3D CALF. Lbs.
First week, Feb. 8-15.....	450.3	420.6	484.8
Second week, Feb. 16-22.....	468.1	437.6	501.3
Third week, Feb. 23 March 1.....	473.3	450.0	513.6
Fourth week, March 2-8.....	489.4	472.0	534.1
Fifth week, March 9-15.....	508.0	486.8	544.4
Nine days, March 16-24.....	518.2	495.5	550.7
Seventh week, March 25-31.....	524.0	504.7	554.0
Total gain of each animal in 44 days.....	73.7	84.1	69.7

Sum of gains, 227.5 pounds.

Sum of initial weights, 1355.2 pounds.

Gain on original weights, 16.8 per cent.

In 51 days the three calves ate 1232 pounds corn and cob meal.

In 51 days the three calves ate 131 pounds roots (beets).

In 51 day the three calves ate timothy hay *ad libitum*.

THREE CALVES FED IN EAST STALL.

Fed on corn and cob meal and cut timothy hay moistened and mixed together.

AVERAGE WEIGHT.	4TH CALF. Lbs.	5TH CALF. Lbs.	6TH CALF. Lbs.
First week, Feb. 8-15.....	494.1	461.1	483.6
Second week, Feb. 16-22.....	508.7	473.1	497.0
Third week, Feb. 23 March 1.....	515.0	479.8	500.8
Fourth week, March 2-8.....	528.5	499.7	517.6
Fifth week, March 9-15.....	537.5	506.1	534.4
Nine days, March 16-24.....	547.1	516.3	549.1
Seventh week, March 25-31.....	554.4	526.6	562.0
Total gain of each animal in 44 days.....	61.3	65.5	78.4

Sum of gains, 205.2 pounds.

Sum of initial weights, 1438.8 pounds.

Gain on original weights, 14.3 per cent.

In 51 days the three calves ate 1232 pounds of corn and cob meal.

In 51 days the three calves ate 131 pounds roots (beets).

In 51 days the three calves ate timothy hay *ad libitum*.

As an hour and a half intervened between the feeding of meal to the calves in both stalls and the feeding of liberal supplies of hay, it is probable that none of the dry meal which was fed to the calves in the west stall was remasticated, and that most of the meal that was fed to the other calves was re-masticated. Whether more of the meal was digested in the first instance, or whether the digestibility of the crude fibre and protein of the moistened hay was depressed by the corn meal in the second instance, it was not possible for us to determine. But the result of the experiment indicates that it is best to feed corn meal and other similar food which does not need remastication before hay or other coarse fodder, so that it may be allowed to pass to the third apartment of the animal's stomach before the latter enters it. In the one instance, the gain was 16.8 per cent. on the original live weight of the animals; while in the other it was only 14.3 per cent., a difference great enough to warrant a repetition of the experiment.

[END OF VOLUME ONE.]

ERRATA TO VOLUME I, (BULLETINS I TO 12 INCLUSIVE).

- Page 11 in title, read Fodder Analysis for Fodder. (*Analysis*).
Page 307 line 18, read Glauber's Salt for Epsom Salt.
Page 500 line 33, read ten for two.
Page 25 line 32, read receive for receipt.
Page 26 line 5, read harrowed for honowed.
Page 27 line 6, read buried for burried.
Page 28 line 5, read remedies for remidies.
Page 28 line 13, read remedies for remidies.
Page 28 line 14, read emulsion for emultion.
Page 28 line 19, read remedied for remidied.
Page 31 line 37, read summarising for summarizing.
Page 33 line 15, read leaves for leavas.
Page 33 line 17, read arsenic for artenic.
Page 35 line 1, read solutions for resolutions.
Page 161 line 28, read Osborn for Orburn.
Page 168 line 33, read probable for probably.
Page 170 line 10, read wire-worms for wire-rooms.
Page 171 line 12, read cabbages for cabbage.
Page 171 line 30, read sexes for sex.
Page 171 line 37, read larva for larvæ.
Page 173 line 13, read brassicæ for Borassicæ.
Page 173 line 18, read gardener for gaidner.
Page 174 line 40, read begin for begins.
Page 175 line 17, read pupa for pupæ.
Page 176 line 13, read stupefied for stupified.
Page 178 line 31, read flat for flat.
Page 179 line 1, read codling for coddling.
Page 182 line 16, read enlarged for enlarggd.
Page 183 line 11, read insecticide for insecteide.
Page 183 line 42, read telarius for telarius.
Page 185 line 28, read shamp oed for smampooed.
Page 187 line 24, read recommend for reccommend.
Page 187 line 32, read codling for codling.
Page 196 line 12, read thrown for trown.
Page 284 line 34, read *multispinosa* for *apinostissima*.
Page 286 line 2, read Hematopinus for Hæmatopinus.
Page 286 line 4, read Com-stock for Comstalk.
Page 388 line 15, read first for middle.
Page 494 line 13, read *maculatus* for *aspersus*.
Page 497 line 13, read conclusions for emulsions.

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