Behaviour of Beef Cattle

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How much do we know about the behaviour of cattle? Of course we know they spend their days eating grass, chewing their cud, lying down, walking, drinking, etc., but just how much time is spent in these ways? And do they eat at the same time every day, or at any time of day or night?

TO answer such questions as these, a research project was recently initiated at the N.G. Lowlands Livestock Station at Erap in the Markham Valley. A 12 ft tower was erected in the centre of a five-acre paddock containing shade and water. There were about 20 head of cattle grazing in the paddock but only three or four were observed at a time. It would have been physically impossible to observe all 20 at once, but if there had been only four or five in the paddock the cattle would not have displayed normal herd behaviour. Observations lasted for 48 hours continuously with sufficient observers to maintain a continuous watch. The cattle were observed on moonlit nights, with binoculars and a spotlight to assist the observers. The observers noted down everything that the selected animals did—how much time they spent eating grass, in chewing the cud, how often they had a drink from a water trough, when they lay down and got up and when they moved into the shade of the trees.

The observers did not interfere with the cattle in any way and there is no reason to think that the behaviour of the cattle would have been different if the observers had not been there.

The observations were repeated several times, always on moonlit nights, and some were on different pastures. Bulls and calves were included in some of the trials. All the cattle had medium to fine coat types with the exception of two cows. The cows were approximately half Zebu content and the bulls from half to purebred.

The total average time spent grazing by the cows was 8¾ hours per day, while for the bulls observed, the average time was 6¼ hours. The time spent grazing by calves depended primarily on their age. As they became older their grazing time increased and they spent less time sleeping. It is not known how milk consumption was affected. Other activities which were noted included number of defecations (on average, 5 per day), urinations (4 per day), drinks (2 to 4 per day) and the time spent in walking, standing and lying down. Time spent ruminating could not be observed accurately but probably included a large proportion of the time that the animal was resting.

Plate 1.—An observer on the tower. Normally two observers were on duty together

From the graph of grazing duration (*Figure* 1) it can be seen that tropical breeds of cattle in fact do most of their grazing during the daylight hours (0600 to 1800 hours) with peaks in the early morning and late afternoon. The

Plate II.—Cattle grazing in the shade

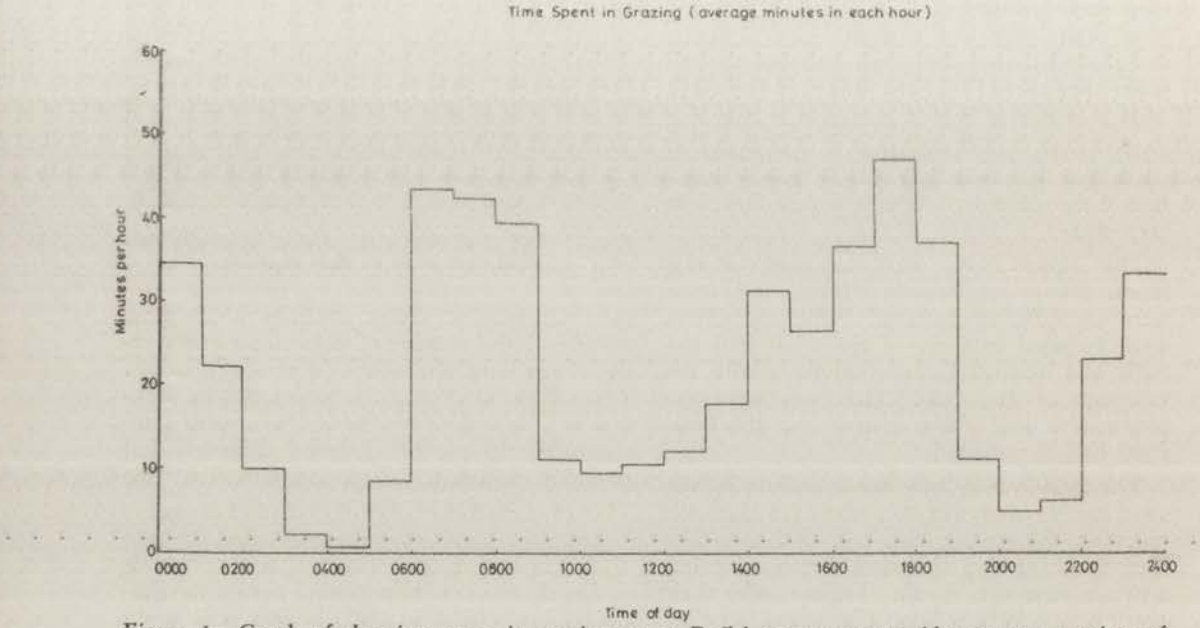

Figure 1.—Graph of the time spent in grazing on a Buffel grass pasture (the average number of minutes in each hour calculated from figures obtained from observations on 28 cows)

reduction in grazing activity during daylight hours corresponded to the hottest part of the day. Of the total of $8\frac{3}{4}$ hours per day spent grazing, $5\frac{1}{2}$ hours (62.8 per cent) was during daylight and $3\frac{1}{4}$ hours (37.2 per cent) during the night.

Only two cows with long coats were available for this trial. It was expected that they would graze more at night than the other cows, but this was not so. They did however, graze for longer periods during the early morning and late afternoon, when conditions were cooler. But their grazing time was an average of $1\frac{1}{2}$ hours shorter than the other cows.

The graph shows the number of minutes out of each hour that the cows spent in grazing. These are average figures obtained from observations on many cows grazing a buffel grass/legume pasture. From the graph (*Figure* 1), it can be seen that from midnight to 1 a.m. the average time spent in grazing was 35 minutes, but by 4 to 5 a.m. most cows had stopped grazing and the average time out of the hour spent in grazing was only half a minute. With the coming of daylight at 6 a.m. however, they spent two-thirds of the time in grazing. The graph shows that there was little grazing between 9 a.m. and 2 p.m. Grazing was resumed again in the late afternoon until dark. There was a less amount of grazing around midnight.

These observations are part of a programme designed at obtaining maximum utilization of pastures. The productive output of the animal is determined by the amount and quality of the food the animal eats, so that it is important to have knowledge of the animal's grazing habits for efficient management, particularly on smallholder farms.

High Grade, Purebred and Fullblood—What's the Difference?

THESE three terms were used in the news item on page 82. Mr David Purdy, Chief Animal Production Officer, gave this explanation.

1. A "high grade" Brahman is a crossbred with a high percentage of Brahman blood, but not high enough to be called "pure".

2. A "purebred" is one which is not 100 per cent Brahman but is close enough (say 15/16) to be registered by a breed society. Such a situation often arises in the early years ("early" meaning the first 50 or so years) of the introduction of a breed to a country. Because there are usually limited numbers of cattle of the new breed, they are crossed with other breeds and the cattle are then "graded up" to the new breed. First progeny are $\frac{1}{2}$, then by breeding back to the fullblood every time, succeeding generations are $\frac{3}{4}$, $\frac{7}{8}$, 15/16, 31/32, etc.

During those early years breed societies are usually prepared to register, say, $\frac{7}{8}$ cattle and then they progressively get stricter. After a number of generations, as the cattle get closer to 100 per cent of the breed, the breed societies may finally call them fullbloods. Since the two bulls mentioned in the cattle auction news item (Burnside and Cherokee) were registered when they were $\frac{7}{8}$ and 15/16 respectively, they and their progeny are called purebreds.

3. "Fullbloods" obviously are 100 per cent. The Department's imports from U.S.A. can be traced right back to the original Indian and South American cattle and are legitimately called fullbloods.

Fullbloods generally demand higher prices, particularly in this case where the blood we have is not readily available in Australia—hence the "spirited bidding" for the fullblood cow at the auction, compared to the other cows.

The "Appendix B registered cows" mentioned in the news item are an example of the grading up process. These cows were $\frac{3}{4}$ Brahman (high grade) and can be registered in an appendix of the herd book so that it will then be possible to register some of their progeny as purebreds. As a matter of interest, the Brahman breed in Australia has progressed to the stage that $\frac{7}{8}$ bulls (which would be the progeny of these cows) now cannot be registered as purebreds—it is necessary to go one step further to 15/16. The $\frac{7}{8}$ heifers are however, registered as purebreds and some of these are already in the Department's stud herd.