OBSERVATIONS OF BOVINE PARTURITION

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Summary

A herd of 38 multiparous Hereford cows was kept under close observation during normal parturition in a 2 ha paddock.

No consistent behavioural sign that parturition was imminent was observed, and 82% of the cows calved between midday and midnight. No relationship was found between time for calf to stand and birth duration, or time for calf to stand and birth weight. There was a significant positive regression of duration of birth on calf weight, and there was a significant effect of sex of calf on placental retention time. Cows giving birth to male calves retained the placenta longer than cows having female calves.

I. INTRODUCTION

Observations of the periparturient behaviour of housed cattle have been made by Arthur (1961), Ewbank (1963), Selman, McEwan, and Fisher (1970a, b) and Dufty (1971, 1972). Similar observations do not appear to have been made on grazing cattle. As almost all beef and dairy cows in Australia calve under paddock conditions, a detailed study was made of the events associated with parturition in adult Hereford cows from a small herd at the C.S.I.R.O. Pastoral Research Laboratory, Armidale in spring 1972.

II. MATERIALS AND METHODS

Observations were made on 38 pregnant multiparous Hereford cows that had grazed with a larger herd since mating in November 1971. A week before calving was due to commence they were drafted into a 2 ha Phalaris tuberosa - Trifolium repens pasture. Lucerne hay was provided to supplement the pasture available.

Each cow was identified by a number clipped into the coat on one side, and observations were made with the aid of binoculars, and a spotlight and torch at night. Each cow came under closer scrutiny once she became restless or separated herself from the remainder of the herd. This event was recorded as were the times of appearance of the foetal membranes, recumbency, appearance of hooves at the vulva, completion of birth of the calf, and commencement and completion of grooming. The time taken for the calf to stand, time of first suckling, and the interval between birth and voiding of the placenta were also recorded.

Cows and calves were weighed and removed from the observation paddock within 24 hours after birth.

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III. RESULTS

All parturitions occurred between August 12 and September 9, 1972. No multiple births, still births, or dystokias were recorded, and all foetuses were presented normally. Ninety-five per cent of the cows calved in the recumbent position.

Eighty-two per cent of the cows calved in the 12 hours from midday to midnight, and 60% calved between 0600 h and 1800 h. The distribution of births in 2-hourly intervals is shown in Figure 1.

![Figure 1](image)

No consistent behavioural indication that parturition was imminent was observed. Aimless walking, getting up and down, and pawing the ground often developed as parturition approached, but these signs appeared from a few days to a few hours before parturition. Sometimes this restlessness was accompanied by the cow licking its flanks and/or swishing its tail, generally away from the rest of the herd. Distension of the udder and teats invariably occurred, but the timing of this varied from a few days to a few hours before parturition.

Arching of the back with the tail elevated from its normal position generally occurred from 1 to 3 hours before the rupture of the chorio-allantoic membrane. The births followed the course of normal bovine-parturition as described by Arthur (1961) for housed cattle; with the additional observation that once the first discharge of foetal fluids had occurred, most cows licked the fluid from the ground and remained at or about that spot until calving was completed.
The mean interval, with standard error, between rupture of the amnion and birth of the calf was 66 ± 8 minutes (35 observations). Cows generally stood immediately after delivery and began to groom the calf. The calf remained passive for about 30 minutes before it attempted to stand. The mean time between birth and the first successful attempt to stand was 66 ± 9 minutes (35 observations) and an average interval of 115 ± 11 minutes (33 observations) elapsed between birth and first suckling. Grooming of the calf by the cow was continuous during this interval. Birth weight of male calves averaged 31.0 ± 1.1 kg (18 observations), and of female calves 31.4 ± 0.7 kg (20 observations).

There were no significant differences between male and female calves in birth weight, duration of birth, time to stand, or time to first suckling. However, those cows giving birth to male calves retained their placenta longer (12.2 ± 3.6 hours, 17 observations) than those having female calves (6.4 ± 1.5 hours, 17 observations). After logarithmic transformation of the placental retention times to stabilize their variance, this difference was significant ($P < 0.05$).

There was a positive regression ($P < 0.001$) of duration of birth (Y minutes) on calf birth weight (X kg) that accounted for 32% of the variance in duration of birth. The regression equation was:

$$Y = 6.53X - 160.5$$

The fate of the placenta after voiding was established in only 17 of the 38 cows. Of these, 14 (82%) ate the placenta. There did not appear to be any choking or discomfort as mentioned by Craig (1937).

### IV. DISCUSSION

This study differed from those mentioned previously in that calving was observed under paddock conditions. Nevertheless, the behaviour of the dam and calf, and the sequence of events during parturition were very similar to those described for housed cows by Arthur (1961) and Selman et al. (1970 a, b) and for the housed and tethered heifers observed by Dufty (1972). We would also agree with Selman et al. (1970a) and Dufty (1971) that it is difficult to predict the onset of parturition by external signs.

The time intervals involved in parturition in our multiparous Hereford cows present a contrast with the observations of Dufty (1972) on primiparous heifers of the same breed. The birth process was completed more rapidly in adult cows (66 minutes) than in heifers (112 minutes). This difference may have been attributable to differences in age and in previous reproductive experience but could also have been associated with the effect of "the excessive amount of interference applied prior to and during the parturition" (Dufty 1972) in the heifers.

Dufty's (1973) findings support the commonly held belief that male calves are heavier at birth than females, although we found no such evidence in the present study. On the other hand the increase in mean birth duration associated with heavier calves is consistent with the finding of Dufty (1971–72) that foetuses involved in dystokia attributed to disproportion between foetus and pelvis were significantly heavier than foetuses delivered without assistance.

Arthur (1961), on the basis of seventeen years of observations on an unspecified number of housed cattle, reported that two-thirds of them calved between 1800 h and 0600 h. Dufty (1971) also observed that most cows calved...
overnight. The circadian pattern of parturition seen in the present study (Figure 1) and the observation of Ewbank (1963) that 16 out of 25 calves occurred during the day indicate that little is known of the factors influencing time of calving.

The time taken for the calf to stand after birth (66 ± 9 minutes) was longer than that recorded for 10 beef calves (35 ± 5 minutes) or 10 dairy calves (58 ± 6 minutes) by Selman et al. (1970b). The mean time taken for first suckling to occur (115 ± 11 minutes) was also longer than that for the beef calves (81 ± 19 minutes) but much shorter than that for dairy calves (261 ± 49 minutes).

Increased placental retention times for cows giving birth to male calves rather than female calves have not previously been reported and their biological significance is not known. The mean time taken to void the placenta (8.2 ± 1.6 hours, 34 observations) was greater than that reported by Dufty (1972) (3.8 hours, 19 observations) but was consistent with the observation of Selman et al. (1970a) that of 30 dams, all had voided the placenta within 10 hours post partum. Eating of the placenta occurred in 82% of the cows for which complete data were available, compared with 90% reported by Selman et al. (1970a). These authors also observed that most cows ate that part of the straw bedding that had been exposed to the birth fluids, as well as eating meconium passed by the calf. The observed licking of birth fluids from the ground in the present study is similar to behaviour that has been reported for sheep (Smith 1965). Arthur (1961) suggested that this behaviour resulted in the removal of all traces of the birth process and was of adaptive value in the avoidance of predators.

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VI. REFERENCES