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MOTHER-YOUNG RELATIONSHIPS IN DOMESTIC ANIMALS

Development of Mother-infant Relationships in Ungulates. By J. Bareham, 39, Bedford Road, St. Albans, Herts.

This paper reviewed the mother's behaviour before and during parturition, the early teat-seeking and contact behaviour of the young, the development of hiding or following in different species, sensory mechanisms involved in recognition, and weaning behaviour.

Ungulate mothers are usually isolated from the social group at birth. Some species give birth mainly at night or early morning. A rise in foetal cortico-steroids or changes in the maternal oestrogen/progesterone balance are suggested triggers for parturition. It is speculated that the hormonal changes in late pregnancy may determine the mother's initial generalized response to all young. A licking response to birth fluids before delivery depends on an intact olfactory sense. This behaviour is normally directed to the young after birth and aids its survival and identification by the mother.

A number of variables affect the time taken by the young to stand and consequently to suck, and then survive. Poor feeding of the dam in late pregnancy, bad weather conditions, inexperience of the mother and a low offspring birth weight may all have deleterious effects. Teat-seeking is initially randomly directed, with some preference for the udder area once this is first found. Thereafter a rapidly learnt discrimination of the teat area occurs.

Ungulate young can be broadly, although not exclusively, classified as those which follow their mother or those which go into hiding soon after birth. Hiders are fed less frequently but for longer periods than followers. Both are equally precocial. The relationship of these two types of behaviour to the wide ranging or local feeding habits of the mother is discussed.

Mother-infant recognition initially depends on olfactory/gustatory information. In some species the mother identifies her young after only a few minutes with it. The hypothesis presented is that in time the mother can

recognize her young using any sensory modality alone, although normally no one is crucial.

In time, suckling frequency and duration decline. The mother ends nursing sessions more often, avoids some approaches by her young, and eventually may physically repel it. Although mother-infant bonds may persist over several generations, suckling, especially by male young, is rare after the birth of subsequent offspring.

Sensory Involvement in Ewe-lamb Recognition. By E. Shillito, ARC Institute of Animal Physiology, Babraham, Cambridge and G. Alexander, C.S.R.I.O., Prospect, Australia.

Sheep use sight, hearing and scent in ewe-lamb recognition, but the relative importance of these senses is a matter of debate.

In the experiments described lambs were able to find their ewes when they were out of sight, and this ability to do so improved with age.

Ewes seemed to rely much more on vision as the initial part of identifying their lambs, and when the appearance of the lambs was altered by colouring, the ewes showed various avoidance responses to them. Alteration to the face of the lamb only was enough to elicit avoidance from the ewe.

When the lambs were put out of sight and were also silenced by muting or total anaesthetic, the ewes had difficulty in locating the lambs to identify them. Either the voice of the lamb or the sight of it was necessary for the ewe to orient to the lamb before any process of recognition could start. Only a few ewes could find their lambs when they were behind a screen, even when they were placed very close to them.

The sense of smell has limited value in ewe-lamb recognition in that only when lamb and ewe are very close together can scent be a positive clue for identification. It is suggested that sheep use sight and hearing as the most important senses in ewe-lamb recognition and that scent only confirms identity.

Early Behavioural Development of the Dog. By P. R. Messent, Pedigree Petfoods, Melton Mowbray, Leics.

A review was given of a number of factors during the development of dogs which affect their adult behaviour. This is illustrated both from studies of the domestic dog itself and from the behaviour of their nearest wild canid relatives. The latter indicate the type of social structure given a 'normal' behavioural environment.

Studies of the domestic dog itself show how particular external factors during development affect subsequent behaviour, particularly with respect to dogs' interaction with humans. Critical factors include degree of environmental stimulation and the timing and way in which socialization occurs with their own species and with humans. It is concluded that the fourth to eighth weeks are the most critical ones. This is when attachment to the owner takes place and also where dominant subordinate sibling relationships are established. Thus this is also the critical time for a dominance relationship to be established by the owner who can be viewed as part of the social milieu of the dog.

The earlier phase of the dog's development is less important for socialization, but of interest in view of findings with several species on the importance of type of environment at this stage on subsequent behaviour.

A short film was shown of two confinements of a Chihuahua to illustrate mother-infant interaction at birth.

Factors influencing Body Temperatures in Newborn Dogs. By R. Pownall and G. W. Crighton, Small Animals Centre, The Animal Health Trust, Newmarket.

Newborn dogs have only a limited capacity to respond to cooling or warming in order to maintain deep body temperature with the degree of stability which is characteristic of the adult. The variations in core temperature which may often be observed in newborn dogs have been attributed to a state of poikilothermy (cold-bloodedness) which was thought to exist until three weeks of age. Studies which evaluated the temperature regulation of puppies in environments which did not immediately overwhelm thermoregulatory capacity has confirmed that the newborn dog is homeothermic (warm-blooded) from birth. Puppies were shown to possess metabolic and behavioural responses which are characteristic of the physiological regulation of deep body temperature (Crighton & Pownall, 1974).

A puppy segregated within the Zone of

Thermal Neutrality (30°C) generally relaxed completely and fell asleep in lateral recumbency. A stable body temperature of the order of 37°C was maintained for long periods. Segregation in only slightly higher environmental temperatures (31°C) was accompanied by severe signs of distress and a marked elevation of body temperature. Segregation at lower environmental temperatures (27.5°C) was associated with the development of a characteristic syndrome of alertness, restlessness, hypernoea and vocalization which, in common with the metabolic response, became increasingly more evident with the severity of cooling stress. The environmental temperature which denoted the limit of effective resistance to impending hypothermia fell with age. Development of any resistance to heat stress was not seen in the period studied (birth to Day 10).

Reference

CRIGHTON, G. W. & POWNALL, R. (1974). *Nature, Lond.* 251, 142.

Maternal Behaviour in Semi-feral Fowl. By D. G. M. Wood-Gush and I. J. H. Duncan, ARC Poultry Research Centre, West Mains Road, Edinburgh.

Attempts to form a feral population of domestic fowl with artificially reared birds on an island Nature Reserve were described. The birds were subjected to predation by mink, but some hens produced broods and successfully reared their young, a few of which were six months old at the end of the study period. Observations were made on the nest sites chosen by the hens. Descriptions were also given of their foraging and roosting behaviour with chicks. One hen showed distraction behaviour when journeying back to her nest. Some birds, adult and young, showed fairly good flight when frightened. Factors leading to survival of the population in the face of certain selection pressures were described.

Differences in Aggressiveness between Brooded and Non-brooded groups of Domestic Chicks. By B. Fält, Department of Zoology, University of Stockholm, Sweden.

Eleven chick groups (*Gallus gallus domesticus*), seven with and four without a mother hen, were observed from hatching to four to seven weeks of age. The strain used was the Old Swedish Bantam, which in many respects resembles the Red Junglefowl. The ontogeny of behaviour was studied and special interest was paid to the development of

aggressive behaviour and to the possibility that the presence of the hen might affect it.

It was found that the frequency of aggressive behaviour during the period was higher in the non-brooded groups than in the brooded ones. The difference was significant for age groups from 15 to 45 days of age. A test on the correlation between the frequency of aggressive behaviour and the behaviour patterns most often preceding encounters gave no correlation in eight out of ten groups (one group was not possible to test because of its small value for aggression), though also the 'pre-encounter' activities were found to be more frequent in the non-brooded groups. This result indicates that it is not only higher general activity in the non-brooded groups that gives more aggressiveness, but that the hen specifically influences aggressive motivation in her chicks. This might depend on a hypothetical super-dominance of the hen *vis à vis* the chicks. The duration of the encounters and the behaviour components involved also differed between the two categories with the non-brooded groups having longer durations and more components.

Neo-natal Behaviour in Calves and its Importance for Survival. By I. E. Selman, Veterinary Hospital, Bearsden Road, Glasgow.

(No abstract forwarded),

Mother-young Interactions in Dairy Cattle. By D. M. Broom, Department of Zoology, University of Reading and J. D. Leaver, National Institute for Research in Dairying, Shinfield, Reading.

The behaviour of calves and their mothers was studied in detail during the first two days after parturition. During the two to three hours after birth most cows spent 90% of their time within 2 m of their calves and sniffed and licked the calf frequently. Feeding was infrequent although the afterbirth was usually eaten after it appeared. After this period, the calf's activity level increased and suckling was more likely to occur. The mother responded to the calf's activity by turning or walking towards it, licking it occasionally and mooing. On the second day the median distance between cow and calf was greater and the cow fed more than in the first few hours. Heifers which had been reared in spatial isolation for the first eight months of their lives sniffed and licked their first calves in the same way as group-reared heifers but were less responsive to changes in the activity of the calf and, after the first three

hours, were as likely to turn away from their calves as to turn towards them. These inadequacies in the maternal behaviour of the heifers reared in isolation were not unexpected since observations had shown peculiarities in their social behaviour when in a herd with group-reared animals of the same age.

The Behaviour of Sucking Foals. By S. A. Glendinning, Priory Farm, Thornborough, Bucks. (Paper presented at S.V.E. Summer Symposium, Bristol, 9 July, 1975).

The normally-reared foal

The new born foal from birth uses its muzzle as a tactile probe and this persists to some degree until the horse is mature. The unique nickering which is only made by a mare with foal at foot was described and discussed. The fact that new born foals can be very hypersensitive to various stimuli for the first two or three days and their response to noise and touch was described. New born foals have a spontaneous kick reflex which disappears after about ten days; they also squeal with fright for the first week or so of life when restrained or handled. Normal behaviour such as snapping and signs of well-being were described. The stages of development of a foal's temperament were described as were areas of particular sensitivity. Methods of restraint were discussed.

Orphan foals

The method of persuading orphan foals to suck from a machine was followed by a detailed description of the suck reflex of foals. The foals developed best with some competition and ideally two or three foals in a box. They quickly developed a hierarchy and usually sucked from the machine in order. Although the orphan foals were turned out daily almost from arrival they did not learn to graze without the presence of an older and, therefore, dominant pony from which they also learned some social behaviour. The first foal to arrive each year usually remained nervous and highly strung through lack of company in the first few weeks of life. The orphan foals fed by machine were more casual in their relationship with humans than foals which were reared from a bucket, and were much more normal in their later development than bucket-reared foals. Their only common characteristic was a tendency to be much quieter both to handle and when turned out in a field than normally reared weanlings; this disappears at about one year of age.

