

PROCEEDINGS OF THE SOCIETY FOR VETERINARY  
ETHOLOGY

MEETING IN LIVERPOOL, JANUARY, 1972

*Öllberg*

**Some Observations on Ram Behaviour and Fertility under Conditions  
of Synchronized Oestrus in Ewe Flocks**

*By T. Tomkins and M. J. Bryant, University of Reading Department of Agriculture*

The experiment described was planned to investigate the limitations on ram mating ability in terms of behaviour and fertility when a high mating pressure is applied owing to flock synchronization of oestrus. It is an attempt to analyse some of the variables associated with fertilization.

Four ram/ewe ratios of 1:6, 1:12, 1:18 and 1:30 ewes were used to apply different mating pressures. The experiment was done in four batches using 16 rams. The oestrus cycles of the ewes were synchronized with Veramix vaginal sponges, impregnated with 60 mg of medroxy-progesterone acetate. Twenty-four hours after sponge removal the rams were introduced. Continuous observation was maintained for 72 hours for each batch, and all mounts and serves by the rams and the identities of the ewes involved recorded.

Semen samples were taken from each ram for the four days preceding mating, the four days after mating and four days one week later. Parameters measured were volume, motility, density, percentage of abnormal sperm and percentage of live sperm.

The behaviour observations showed that rams exposed to groups of 18 and 30 ewes were apparently failing to detect all oestrous ewes. As the ram/ewe ratio increased so the number of serves per ewe fell from a mean number of 8.5 on the 1:6 treatment to 3.7 on the 1:30 treatment. Rams were only serving ewes for approximately 1/5 of their oestrus on the 1:30 treatments but this increased to 2/5 on the 1:6 treatments.

The semen results showed clearly that depletion was occurring in proportion to the mating load. The 1:6 treatment rams were only partially depleted compared with the 1:30 rams which were completely depleted.

There were highly significant differences between the conception rates, from a mean of 75 per cent on the 1:6 treatment decreasing to 56 per cent on the 1:30 treatment.

**Preliminary Observations on the Apparent Lack of Dominance and  
Leadership Hierarchies in Fattening Sheep**

*By Roger Ewbank, The University of Liverpool, Faculty of Veterinary Science*

Fattening sheep are grazed together at pasture, are fed in competition with each other at troughs and are now being increasingly housed together, and yet little seems to be known of their social organization.

In a preliminary study of this aspect of their behaviour three separate groups, each made up of 8 to 10 store lambs (approximately 6 months of age) and each containing both castrated males and immature females of Clun Forest and Suffolk  $\times$  Clun Forest breeding, were observed for a number of dawn-to-dusk watches while being kept outside in grass paddocks of approximately 1 hectare in area.

Later they were brought into yards (approximately 4 sq metres per animal), fed at a trough (approximately 0.3 metres per animal) once a day on an oat/maize mixture (approximately 0.2 kg/lamb/day)—water and hay being provided *ad libitum*—and again observed. Records were kept, under both husbandry systems, of the occurrence of aggressive (agonistic) and imitative (allelomimetic) behaviour.

While at pasture the animals grazed in phase, in that at one time all the sheep would be grazing and later all would be lying down, but there was little evidence of consistent "leaders of grazing activity". When brought inside there was a certain amount of conflict over the trough at feeding time but no consistently dominant animals. Pairs of sheep were taken from the housed group, placed in a small yard, and tested for leadership/dominance by an observer walking between them a number of times and seeing if one of them regularly rejoined its fellow. It seemed that certain sheep were consistently more startled than others by this procedure but there was little evidence of leadership/followership.

The facts that all the animals were of the same general status (castrate males, immature females), had only been recently brought together, were housed inside at a relatively lavish amount of space per animal and fed from a longish trough may all go towards explaining this apparent lack of social organization both at pasture and in yards.

#### **The Role of Sensory Systems in Pig Group Organization: A preliminary report**

*By G. B. Meese, The University of Liverpool, Faculty of Veterinary Science*

The organization of groups of fattening pigs is now known to be mainly dependent upon a social hierarchy. If the social order is to function it demands recognition of other members of the group either as individuals or simply as animals of higher or lower rank. In many animals the sensory cues involved in recognition have been determined but this most crucial aspect of social behaviour has not so far been investigated in the pig. The work initially involves the eradication of one sense at a time and an examination of its role under three sets of conditions.

- (1) A group of 8 previously unacquainted weaners (40–50 lb) are assembled after the temporary elimination of one sense.
- (2) A sense is temporarily eliminated in a complete group of pigs with a known hierarchy.

(3) A sense is temporarily eliminated in a single pig within a group having a known hierarchy.

Sight has been investigated using both opaque contact lenses and hoods covering the pigs' face from its mouth to the neck. Pigs have been deafened by blocking the external auditory canal and touch will be isolated by sectioning the sensory nerve innervating the snout. Pigs will also be made anosmic by ablation of the olfactory bulbs and later, sound production, physical appearance, taste and possible specific areas of scent production will be examined.

Results so far with contact lenses have shown that sight is not necessary for the establishment of a dominance hierarchy and a social order was formed amongst previously unacquainted pigs in a normal manner (i.e., after about 48 hours). Removal of the lenses does not affect the order established whilst the pigs were blinded. The effect of the hoods however was very different. Unacquainted pigs were unable to form a social order in spite of being together as long as 25 days. Removal of the hoods resulted in vigorous aggression and the appearance of a dominance order within 48 h, i.e. they acted as though not previously acquainted. The hoods and lack of a social order did not impair their ability to recognize a strange pig introduced to the group. Hooding single pigs or complete group of pigs with a known social order had no discernible effect on behaviour.

The elimination of the sense of hearing had no effect on behaviour except that aggression was more vigorous than usual during the establishment of the order. Recognition of a stranger to the group was not impaired. The effect of anosmia has not yet been investigated.

Results so far suggest that the covering of the face by the hood (as distinct from blinding) has been the only method to prevent hierarchy formation, and possibly specific areas of scent on the face are involved. It also seems likely that three different types of recognition are found in the pig and different cues may be involved in each one: (1) recognition during the initial period of hierarchy formation; (2) maintenance of the hierarchy; (3) recognition of an animal strange to the group, i.e. the existence of a group identity.

Elucidation of the mechanics of recognition would probably be of benefit of pig husbandry and welfare generally.

### **Some Environmental Factors Influencing Feather Pecking in Growing Birds**

*By I. J. H. Duncan and B. O. Hughes, A.R.C. Poultry Research Centre, Edinburgh*

The relationship between strain, seven environmental factors and pecking damage was investigated. Strain of bird, housing system, light intensity and position in battery house had major influence, diet and group size had a minor influence, while density and brooding temperature had no effect.

The strain difference suggested that feather pecking has a genetical basis and so should respond to a selective breeding programme. Much more feather

pecking occurred in battery cages than in deep-litter pens and this was attributed to the absence of litter. More feather pecking also occurred in groups of birds which were (a) brightly lit compared to dimly lit, (b) near the door of entry to the battery house compared to far from it, (c) fed a diet very low compared to fairly low in methionine and (d) large compared to small.

It was suggested that although the causation of pecking vice is multifactorial, all these factors act by increasing the fowls' general tendency to peck, and that the object to which the pecking is directed is governed by the nature of the environment.

### Manifestation and Detection of Oestrus in a Large Dairy Herd

By R. J. Esslemont and M. J. Bryant, University of Reading

Although infectious causes of infertility in dairy cattle can normally be controlled, in many herds a level of "residual infertility" remains. The aim of work at Reading University is to determine whether "residual infertility" is due to a non-occurrence of oestrus, a failure to detect oestrus, or a combination of the two.

Continuous observations over a 24-day period were made on 60 cows under a housed winter routine. The group was part of a 300-cow herd and consisted of non-pregnant cows no more than 50 or less than 14 days *post partum* at the beginning of the trial.

Mounting activity of the entire group was recorded, and 18 of the 60 were also observed for gross components of behaviour at 15-minute intervals. The 18 cows were examined externally for signs of oestrus each day. Heat Mount Detectors were used on 20 of the cows.

Discrepancies in the level of successful detection of oestrus were found between the farm staff and the continuous observation team. A diurnal pattern of oestrus behaviour was observed, a distinct peak occurring between 2000 hours and 0400 hours. Heat Mount Detectors were judged to confuse rather than aid oestrus detection.

Further studies will indicate whether the diurnal pattern was a function of the extra lighting or of the management routine of withdrawing A.I. cows from the group from 0600 hours until 1700 hours.