

PROFESSOR BRAMBELL'S ADDRESS TO THE SOCIETY FOR VETERINARY ETHOLOGY
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Mr. President, Ladies and Gentlemen,

May I tell you first how happy I am to be here today to thank you for the honour you have done me in electing me your first Honorary member and also for the opportunity of delivering this address on the occasion of your first annual meeting. I am all the more honoured by your kind invitation because, as you will know, I am not an expert in ethology and, indeed, as you will no doubt become aware in the course of this address, I am exceedingly ignorant of that subject.

I have no doubt that you invited me here because of the Report of the Technical Committee (1965) that has come to bear my name and the emphasis that it placed on the importance of behavioural studies for the welfare of animals kept under methods of intensive animal husbandry. My Committee stressed the importance of such studies for animals kept under intensive conditions, but I am well aware, of course, that they are also of great importance with traditional methods of husbandry. They are important, moreover, not only for the welfare of the animal but also, I do believe, for the welfare of animal husbandry. I have no doubt that happier and more contented animals are ones that are better doing, but well-doing in the true sense is something that is much more comprehensive than simple growth, or egg, or milk production, it relates to all aspects of the animal's well-being. Hence, I do not regard a single parameter, such as the growth rate, as an adequate measure of its well-doing in this wider sense, as it is often taken to be. It is frequently said that the growth rate of an animal for meat, or the egg production of a laying hen, or the milk production of a cow, are the only reliable objective measures of their welfare. It is argued that continued productivity should be taken as decisive evidence that the animal is not suffering; this is an over-simplified and incomplete view that should be rejected. It is an argument that would I suspect, carry little conviction with those who normally lead an active life but have been compelled to undergo a period of inactivity and restraint and have put on weight in consequence. They would hardly regard this weight increment as either a measure of their contentment or a reflection of their physical fitness. Any sufficient estimate of an animal's welfare must be based on a full and wide understanding of the ethology of the particular species in question. To make this point I want to consider first the very difficult question of what an animal feels, of its sensations, and then to go on to consider how their sufferings can be evaluated. These, as you will know, are two distinct questions of which the first is the much more answerable.

There are sound anatomical and physiological reasons for accepting that domestic animals and birds experience the same kinds of sensations as we do. The structure of the sensory organs of mammals and of their nervous systems is essentially similar to those of man and the functions of the ductless glands are known to be comparable. The sensations certainly differ in degree, for example the senses of hearing or smell may be better developed in some animals than in man or they may be capable of appreciating a greater range of stimuli. It is probable that imaginative anticipation is incomparably less well developed in most animals. They appear to live much more in the present and their feelings to be correspondingly more transitory, although many animals can both remember the past and fear the future to a recognisable extent. It is justifiable to assume that the feelings of animals are not identical with those of human beings. It is equally justifiable to assume that they feel in similar ways. The valid point where the line should be drawn between these two extremes is very difficult to determine and is, in the end, a matter of judgement. In this connection I would like to quote an opinion expressed by the late Lord Brain which we included as a footnote in our Report. He wrote 'I personally can see no reason for conceding mind to my fellow men and denying it to animals. Mental functions, rightly viewed, are

but servants of the impulses and emotions by which we live and these, the springs of life, are surely diencephalic in their neurological location. Since the diencephalon is well developed in animals and birds, I at least cannot doubt that the interests and activities of animals are correlated with awareness and feelings in the same way as my own and which may be, for all I know, just as vivid '.

Of course we need to know a good deal more about the threshold and range of each of the various sense organs with which domestic animals and birds are equipped but this is largely in the field of physiology and I don't propose to spend time on it today.

The second and much more difficult question is how the suffering of an animal is to be evaluated. In attempting to answer this question we must first consider how we judge suffering in another human being. We cannot measure the feeling of another person however well we know them. Suffering is a subjective experience and is no more measurable than loving, or hating or fearing. We judge the suffering of another person by analogy with our own, from what the person tells us and from our observations of their looks, behaviour and health. The evaluation of the suffering of an animal similarly must rest on analogy with our own and must be derived from observations of their cries, expressions, reactions, behaviour, health and productivity. Our understandings of their suffering is not different in kind but rather in degree from that which we form of the suffering of a fellow human being. Animals show unmistakable signs of suffering from pain, exhaustion, fright, frustration, rage and so forth and the better we are acquainted with them and with their behaviour, the more readily we can hope to detect these signs. We cannot determine their suffering objectively but must rely in the end on a subjective judgement. I have perhaps laboured this point because I hear so often from people who are interested in postponing action that nothing must be done to interfere with husbandry practice without scientific proof of suffering and that means, of course, objective demonstration of it. Frankly, this argument angers me because it sounds plausible but is absolute nonsense. If your child is suffering, do you want a measure of it or do you take action on your subjective judgement of its severity? The problem is, in essence, as simple as that. Nevertheless, much more extensive knowledge than we possess at present of the behaviour and ethology of the various species with which we are concerned under conditions of domestication, would enable us to judge much more sensitively and reliably the degree of suffering to which they are exposed at any time. It is in this connection that I hope the work of this Society will do much for animal welfare and for animal husbandry. Domestication of any kind necessarily involves some measure of restraint upon the animal; the kind of restraints that are imposed and their severity vary with the particular method of husbandry adopted and with the species to which this is applied but restraint undoubtedly reaches its most extreme form in modern methods of intensive husbandry, where the stress is upon limitation of space and economy of labour. In these circumstances, mechanisation can reduce the labour, provided the animals are kept under conditions of close confinement and regulated environment. Modern intensive methods may involve control of almost all the environmental conditions to which the animal is exposed from birth to slaughter. These conditions include space, diet, ventilation, illumination, bedding, companionship or isolation etc. Mutilation that handicaps the animal is claimed to be necessary in some instances to prevent vice. It is because of these various restraints that are imposed on the animal by the artificial environments of intensive husbandry that the whole question of welfare has become so crucial today. My Committee summed this up by stating "Above and beyond all these matters stands the fact that modern intensive animal production methods, most markedly increase the responsibility of those who use them towards the animals in their charge. If any creature is wholly and continuously under control, we believe that this total human responsibility must be acknowledged; changing patterns of husbandry may mean varying degrees of frustration and discomfort to animals whose normal patterns of behaviour are still imperfectly understood. We are certain that a beginning must be made to safeguard their welfare".

I would like now to consider some of the ways in which ethology can help with the welfare of animals. First of all, you, who are acquainted with animals on farms, will agree that it is quite astonishing how far the behaviour patterns of their remote wild ancestors are retained, even after thousands of years of domestication. It is this basic behaviour pattern of the species which is so important if we are to understand the behaviour of the modern animal. Studies, therefore, which throw light on the behaviour patterns of the wild ancestors of the modern breeds, should be given priority. Opportunities for these are increasingly limited with the disappearance of the wild descendants of the ancestors of so many domestic species but there may be some opportunity still of throwing light on such things; I am thinking, for instance, of the work of Kruijt (1962a and b, 1964) on the Red Jungle Fowl of Burma. Opportunities may offer, for instance, of studying the behaviour of feral sheep, such as the Soay sheep on St. Kilda, where Jewell (1966a and b; Boyd, Doney, Gunn and Jewell, 1964; Grubb and Jewell, 1966) has studied their reproduction and mortality, or again, the so-called wild White Cattle of Chillingham Park, Vaynol Park and other places, may provide some opportunities of learning more about the ancestral behaviour pattern of modern cattle. Comparative studies of related species, that are still available in the wild state, may help to throw light on the probable behaviour patterns of the actual ancestors of our present breeds, where these are not available. Such studies can help us greatly in determining the probable importance in the lives of domestic animals of, for example, companionship or illumination or noise or feeding and sleeping rhythms.

It is, of course, true that genetics plays a large part in the behaviour of the animal. Too little attention may have been paid, as yet, to breeding strains the reactions of which are adapted to the particular methods of husbandry for which they are intended; for example, there is, as we all know, a great difference in the pugnacity of various strains of poultry, yet, although cannibalism is a major factor in several methods of intensive poultry husbandry and the vile practice de-beaking has had to be resorted to to prevent it, there seems little evidence of any persistent effort to breed stocks that are both docile and good egg producers, much more emphasis having been placed apparently on egg production than on docility. Again, on this question of pugnacity in its relation to cannibalism, particularly in poultry, I wonder whether enough work has been done on various methods of reducing it through studies of behaviour. (For example, I have heard it stated that the presence of a cock reduces cannibalism amongst the hens and I should like very much to know if there is any evidence that this is so. If this is true, have such things as tape-recordings of crowing cocks been tried in batteries?) Would it not be possible, with the great diversity of plastics now available, to devise some simple attachment to the tip of the beak to discourage cannibalism without seriously incommoding or hurting the bird, as does de-beaking or the spectacles that are attached by a staple driven through the nasal septum? I think much more could be done by study of the factors which underlie cannibalism and of the methods which might be adopted to reduce it. We are all aware that whereas it is a major problem in some installations, in others it is not experienced to any serious extent. How far this is due, in fact, to difference in stockmanship and how far it is due to some, as yet unidentified, factors in the environment, is still a moot point on which there are diverse opinions.

One field in which much research is needed is that of food preference. Much is known about nutritional requirements of farm animals, about the availability of food components to the animal and about digestion, but comparable attention has not been paid to the problem of preference and their effect on intake. This is a field of study which could, in my opinion, contribute greatly to the welfare of domestic animals, and I am convinced, quite as much to the welfare of farmers. The increasing use of balanced diets and relatively uniform food, raises the whole problem of how far variety in the food may contribute to appetite, and what are the qualities in the food which render it most acceptable to the

animal. Even the most perfectly balanced and digestible diet cannot achieve growth rate, so important in modern intensive methods of husbandry, unless the animal chooses to eat the optimum quantity. It may well be that maximum acceptability is as important as maximum nutritional value both for the welfare and for the well-doing of the animal.

More knowledge is needed about the importance of companionship for the welfare of animals. One might expect that this would be more important in animals that came from herd-living ancestors than in those which did not and we might, therefore, imagine that this would play a larger part in the lives of cattle, for example, than say of cats. Moreover, it is likely to be more important for the young than for the adult animal, yet under methods of intensive husbandry for the production of quality white veal, it is the calf that is so notably restricted and confined and isolated in a box throughout its life. Moreover play is obviously important to animals, especially young ones, as can be seen when they are on free range. It is frequently acknowledged to be so for pigs kept intensively and we are familiar with the hanging chains and other toys sometimes provided for their amusement. Could more be done with advantage in this direction?

What are the needs of illumination of the various species of animals, the best wave-lengths, the duration of illumination and the intensity? It may be, for example, that pigs which are partly nocturnal or at least crepuscular in their natural condition, require less light than cattle, which are entirely diurnal animals. The same may be true of ducks as compared to hens, since in the wild state the mallard is active at night as well as in the day time, whereas the hen spends all the hours of darkness in roosting. It is well known that lengthening daily periods of illumination can induce laying in poultry or oestrus in ferrets and hence can have a pronounced effect on the behaviour of these animals, which suggests that conditions of illumination may well be significant for welfare.

We are even more ignorant as to the significance of the sense of smell for animals, although it is evident that this sense is much better developed in many species than in ourselves. The recent work of Bruce and Parkes (Bruce, 1959, 1960, 1961; Bruce & Parkes, 1961, 1962; Bruce & Parrott, 1960) on mice provides a striking example of the part it can play. These authors have shown that exposure of a recently mated female mouse to the smell of an alien male mouse, of a strain other than that to which its mate belonged, can block pregnancy by preventing implantation. This is a remarkable example not only of olfactory acuity but also of olfactory memory and is a clear warning that attention to the part which smells may play in the behaviour of domestic animals should not be neglected.

It is, however, the limitation of space which appears to restrict the normal behaviour pattern of the animal most seriously. This is the context in which ethology can be most rewarding. Close confinement may prevent the performance of a particular pattern of behaviour either a) by depriving the animal of the opportunity of experiencing the necessary stimulus, so that the pattern is not initiated, or b) the stimulus may be experienced but the performance wholly or partly frustrated. The consequence for the welfare of the animal could be very different according to which of these two alternatives was operative. It is easy to think of examples. An example of the first is provided by laying hens in batteries where the removal of the eggs prevents the urge to brood. An example of the second is provided by a cockerel in a cage in which it cannot stand upright and crow properly. The first of these two conditions might be expected to cause much less stress than the second. This points to the need to anticipate conditions that are likely to induce stress and to recognise stress when it results. I am, of course, aware that severe and prolonged stress is said to have an effect upon the adrenals, producing enlargement of these organs and derangements of the metabolisms of adrenal steroids but I am not so much concerned with recognising, after the event, that prolonged and severe stress has been experienced by the animal,

as recognising the condition when it first appears and the causes of it. How can discomfort or unease or stress be recognised, that is a major problem for the ethologist? Can it be done for poultry for example, as Professor Thorpe has suggested, by careful analysis of the recorded sounds in a battery house? Can it be done by observation of the animal's posture or movements? We hold ourselves well and walk well when our morale is high and we tend to slouch with shoulders rounded when our morale is low. Can, by analogy, the stance and movements of poultry be used as a guide to their state of mind? Most of us can recognise a really happy and contented domestic animal and distinguish it from one that is very unhappy and discontented but we do so by a general and uninformed impression of its appearance and behaviour rather than by any precise characteristics. How far can the qualities on which we base our impression be used as more precise guides to the condition of the animal? We look for bright eyes, good coat, lively behaviour, lack of fear and so forth but these are not readily measurable at present and it is to find means of evaluating such features of the behaviour of an animal that attention should be directed. This is the most important problem of all for animal welfare, to recognise stress, discomfort or unease before they have become acute. It is to the solution of this problem that I believe studies on animal behaviour can contribute to welfare so much in the future.

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