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Martin F. Seabrook

University of Nottingham

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They will express their love of animals by choosing careers in animal protection and will find increasing moral and monetary support from the rest of society. As a result, institutions to support the social desire will be expanded. At present at least 12 universities offer animal rights courses, and Kansas State University is teaching a short course in humane and effective management of dog breeding farms. We think the day will come when most people will accept animal rights as part of the natural order.

The Psychological Relationship Between Dairy Cows and Dairy Cowmen and its Implications for Animal Welfare

Martin F. Seabrook

Dr. Seabrook teaches in the Department of Agriculture and Horticulture, University of Nottingham, Sutton Bonington, Loughborough, LE12 5RD, UK.

The great English novelist Thomas Hardy, as he wandered through the Dorset countryside, observed the animals and people who inhabited those lovely woods and valleys. He saw the shepherd with his sheep, the ploughman with his horses and the cowman milking his cows by hand in the dimly lit shippon. In a number of novels he makes mention of the little things the cowman and dairy maids did to keep their animals placid and happy. There is no doubt that these skills were handed on from generation to generation as the younger workers sat around the fireside with the 'old hands' on winter nights. These men recognized that the relationship between the milker and the cows was a vital part of the milk extraction process. As hand milking gave way to machine milking the need for this relationship was seen by many to have diminished, although no doubt some were still acutely aware of its importance.

While no one could ever say that the conditions for animals and people were ideal in the days of hand milking, the question of animal welfare was less pressing as man was at ease and in balance and harmony with nature. Only as units became larger, and machine milking took the place of the cowman's or dairy maid's hand, did we have to worry about whether man was exploiting this animal species.

The obvious way of dealing with animal welfare problems is to legislate on the space required per animal, the best temperature for animals and the best feed. Our thinking is very much dominated by this concept of fulfilling physical requirements. However, it is probably true to say that because this approach fails

to examine the important relationship between human and animal, it fails to deal effectively with the question of animal welfare.

If we are to reduce stress on the dairy cow, we must get the relationship between man and cow right. In other words, cows can be under stress in a well-designed system if they cannot develop a good relationship with their cowman. Their well-spaced cubicles may seem a vast, insecure jungle if they cannot relate to the person who tends them, but the close packed yard may be a place of real security and comfort if they see their cowman in this environment as a friend.

It is perhaps surprising when one considers the large amount of research on dairy cows that so little is known about the all important cowman and the way he relates to his cows. Perhaps the growing interest in animal welfare will make people more aware of the subject since there is little doubt that it is the most critical factor in this sector of animal welfare. Let's get our priorities right: less research on parlors and more on the people who tend cows!

The Behavior of the Cowman

Studies by Seabrook (1972, 1975, 1978) on homogenous herds as defined by similar feeding policy, feeding levels, breed and genetic potential, grazing management and climate demonstrate the effect of the cowman's behavior and personality. The highest performance cowmen, in terms of milk yield for a given level of input, have the following traits: *considerate; patient; independent; persevering; grumpy; difficult to get on with; forceful; confident; suspicious of change; not easygoing; unadaptable; not meek; not modest; not a worrier; not talkative; uncooperative; unsociable.*

In summary, they are confident introverts. Some of these traits may seem to be socially undesirable, but it is the cow's and not another human's reaction which is critical. The men with these traits were more stable and had an air of confidence, enabling them to develop a relationship with their cows which positively influenced the animals' performance.

Building on this work, Reid's study (1977) of high achievement herds both in America and England yielded some important results. Reid concluded that the high production cowman was able to minimize output of adrenalin by the cow; he thus obtains a higher percentage of the milk yield which her genetic capacity permits than others would obtain from the same cow under similar conditions. The high production herdsman achieves this by constant attention to the behavior patterns or performance of each individual cow in the herd. Other interests of Reid's "confident introverts" included vegetable growing, but the most startling fact was that they also grew either roses, gladiolus, or chrysanthemums, species that have different varieties requiring specific treatment at specific times of the year. The best herdsman were attuned to the individuality of their cows as well, and had a close identification with the herd. In many cases it was difficult to define whether the herd was regarded as an extension of the family or the reverse.

The Behavior of the Cow

Albright (1978) and Seabrook (1978) have shown that animal behavior differs among similar dairy herds. One factor which varies both within and between

groups of cows is flight distance (basically, how close one can approach an individual animal without it moving away). In some dairy herds, this distance may be almost zero, while in others it may be as high as 20 ft (6 meters). For individual animals in these herds there will be ranges of values, but they may well all be lower for one herd than the lowest for another herd. Why do these differences exist, and how do they arise? Some variation could be attributed to conditioned learning, e.g., the 'memory' of being struck by a handler, but there is little evidence to account for all of the differences.

Observations of identical one-person units show behavior differences in terms of how long it takes cows to enter the parlor. In some herds the cows are keen to enter, in others they are reluctant to do so. Studies showed parlors and their identically sized and shaped collecting yards to be in excellent condition. It is the relationship between the men and the cows which seems to explain the difference in entry time. It is fallacious to talk about the behavior of dairy cows in isolation; the actual pattern is a reflection of the relationship between human and cow. This connection was realized in the 1940's by Rex Paterson, the pioneer of large scale dairy farming in England, when he publicly stated that the biggest effect on herd yield and cow behavior on his one-person dairy units was exerted by the cowman.

Establishing the Relationship

In higher performance herds, where cowman and cow enjoy a good relationship, the animals have a short flight distance, tend to move quickly into the milking parlor and are comfortable in the cowman's presence. The cowmen establish and maintain the relationship by frequently touching and communicating with the animals, treating them with special care at critical points such as calving and first milking after calving, and assuming the roles of both boss animal and caring mother substitute. This close relationship enables the cowman to spot changes in the cows' behavior quickly and thus to prevent situations from developing which could adversely affect performance. In addition, the atmosphere created by this kind of psychological environment seems to be more conducive to rest, which means that the cows may be able to reserve more energy for milk production.

The Implications for Animal Welfare

The animals in the herd where there is a good relationship between cowman and cow produce more milk, as they release less adrenalin to block milk let-down. The cows are less jumpy, more settled and stable in an environment created by a confident cowman. The pertinent point, from an animal welfare point of view, is that these are *not* necessarily the best equipped herds technically, e.g., in parlor design. In other words, cows can be under stress in a well-designed system if they cannot develop a good relationship with their cowman. Similarly, they may be in a poor system technically, but may be content and under little stress if they have confidence in and a good relationship with the person who tends them.

Efficient dairy management and animal welfare would both be served by selecting cowmen who have the correct traits and then further training them to de-

velop a relationship with their animals and so ensure that the animals are able to live in an environment where stress is reduced to a minimum. Design of a system from a welfare perspective is only part of the solution. The most important factor in determining stress is the behavior and attitude of the cowman.

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- See also: Hart, B.L. (1980) Behavior and milk production, *Bovine Practice* 1(2): 8-10 [Ed].

Clarification

In the *Comment* section of the fourth issue of *Int J Stud Anim Prob* 1: 229, 1980, we stated that J. Russell Lindsey is the Chairman of the University of Alabama's Department of Comparative Medicine. The Department of Comparative Medicine automatically rotates chairmanships among its faculty, and Dr. Henry J. Baker currently holds the position formerly held by Dr. Lindsey.

U.S. World List of Endangered and Threatened Animals and Plants as of May 1, 1980[†]

Category	Number of Endangered Species			Number of Threatened Species		
	U.S.	Foreign	Total	U.S.	Foreign	Total
Mammals	35	251	286	3	21	24
Birds	67	145	212	3		3
Reptiles	12	55	67	10		10
Amphibians	5	9	14	2		2
Fishes	31	11	42	12		12
Snails	2	1	3	5		5
Clams	23	2	25			
Crustaceans	1		1			
Insects	6		6	3		3
Plants	49		49	7	2	9
Total	231	474	705	45	23	68

[†]From the Department of Interior, June 22, 1980.