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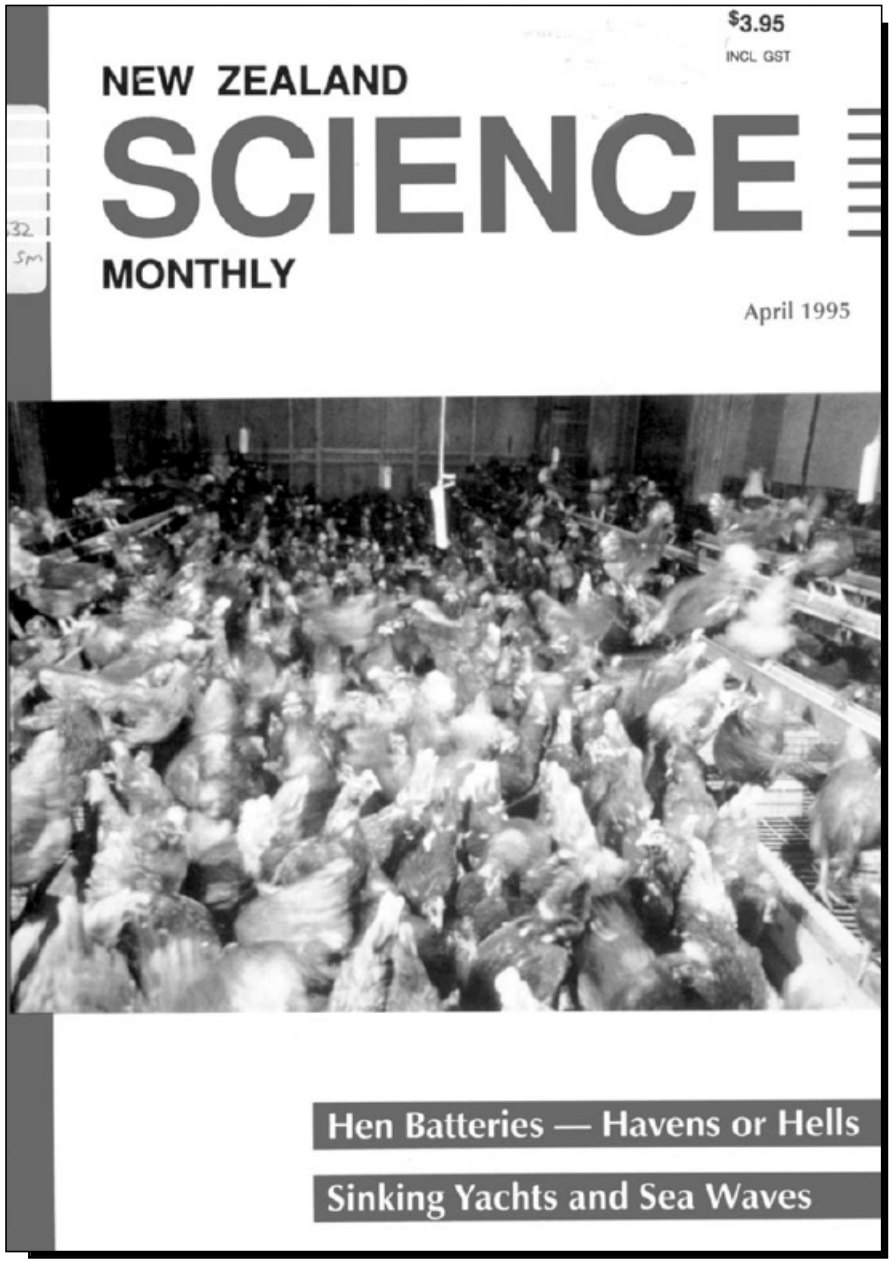

Hen Batteries — Havens or Hells?

*How much happier really **are** free-range hens?*

Professor Neville Gregory

Calls for a public referendum on the keeping of battery hens highlights the need for a better understanding of the alternative methods of hen management, their advantaged and disadvantages.

Traditionally hens have been kept in back yards or in mobile arks in paddocks. They could run around to scratch and forage for their food as well as receive feed from the farmer to boost their egg production. Indoor deep litter systems were also common at one time, but since 1950 virtually all these units have been replaced with cages. Battery egg production is less wasteful, more hygienic and more cost effective, and it has now become synonymous with cheap eggs.

In many countries there has been a call of conscience — if not a revulsion — about keeping hens in cages. This is based entirely on our perceptions of animal welfare. Some governments have introduced regulations which limit the stocking density and specify some of the design features of the cages. Switzerland has gone so far as to ban battery cages, and Sweden will be reviewing its situation within the next three years. Other countries, such as the UK, have responded to consumer demand by developing lucrative markets in free range and barn eggs, and these have been supported by national trading standards. New Zealand could be on the verge of holding a referendum on whether it should ban caged layer production.

Battery Cage Problems

Caged layers are usually stocked three to five hens per cage. They are provided with water from nipple drinkers and feed from a trough which is in front of them. Their manure passes through the floor of the cage and is either collected or stored there before removal from the shed.

In this system there are a number of deprivations imposed on the birds. They are unable to run, walk in a straight line for more than three paces, fly, flap their wings, roost, nest, or dust bathe and there is limited opportunity to stretch their wings or forage. All of these are normal behaviour patterns and in their absence there is likely to be some emotional loss. Since the battery cage is a relatively barren environment, it is difficult for the birds to replace these deprivations with other activities which are fulfilling.

The approved stocking density for caged layers in New Zealand is 450 square centimetres per bird. Research has shown that the space required to perform simple physical activities such as turning round, stretching a wing, wing flapping, preening and ground scratching is on average about three times greater than this recommended minimum, and so the birds are physically cramped. When very large cages are provided, birds will spend more time performing these normal activities and less time doing seemingly futile actions such as cage pecking. Some scientists view cage pecking as a sign of frustration.

Fighting between birds is not usually a problem in battery cage systems, but one study in the US has shown that the amount of fighting *increases* if more space is provided. If the space is increased further, aggression starts to decline. The likely reason for this rise and fall is that in crowded conditions the close proximity of the dominant bird helps to suppress fighting between the subordinate birds. As space allowance increases, the influence of the dominant bird is less and the subordinate birds are able to fight amongst themselves. In very large cages, however, the birds are able to escape from one another when a fight is about to start.

Area (cm^2 per hen)	Fighting activity (per hen per hour)
412	6.1
824	15.2
1442	11.6
2884	8.4

Moderately crowded hens fight more.

Owing to their sedentary lifestyle and to the high demands for calcium for eggshell production, battery hens tend to develop weak bones. This leads to a problem when the battery sheds are depopulated at the end of lay. The hens get damaged and, according to a recent assessment of 15 battery flocks in Europe, on average 16% of the birds have broken bones by the time they are about to be slaughtered. No doubt this is painful for those birds.

In some battery cage systems it is quite difficult to inspect the birds, to check that they are all right. At the moment this may not be such a problem in New Zealand because the cages here are not usually more than two tiers high. In other countries three or four tiers are usually used, and six to eight tiers with a gantry for the stockperson are quite common. Overseas the sheds are often kept at low lighting levels as this helps to calm the birds, but it could impose some emotional loss and it makes inspection more difficult. Again, this is not such a problem in New Zealand, and many sheds allow some daylight as well as supplementary lighting.

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Making a Decision

Clearly there are disadvantages with every system. Comparing one system at best with another one at worst is not going to produce wise decisions as to whether New Zealand should phase out battery cages, nor will it help egg producers to decide which alternative or modified cage they should adopt. Instead New Zealanders need to judge how the systems compare when operating optimally, and then do a separate comparison taking a more pessimistic outlook. We also need to ask whether the New Zealand public is at present sufficiently well-informed to make a wise decision.

Taken solely from the welfare point of view there can be little doubt that an alternative system which is free from disease, cannibalism, victimised birds and pain associated with broken bones is preferable to a cage system. However, general experience with alternative systems has shown that cannibalism can be common when beak trimming is not used — one perchery farmer mentioned that he had it in one out of every three flocks.

Should we be aspiring for the perfect situation, or should we recognise that these problems are likely to occur but admit that for the time being we don't know how frequent they will be? If New Zealanders are feeling brave they might like to support the ban and rely on the ingenuity of the farming community to solve these problems as and when they arise. However, before the solutions could be found there will probably be some suffering for the birds, and some financial hardship for egg producers. This is a decision that should not be taken lightly.

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Advantages and Disadvantages of Keeping Hens in Cages

Advantages	Disadvantages
• Less risk of birds being killed by predators	• Birds are unable to fly
• Fewer birds acquire broken bones from flight accidents	• Birds are unable to run
• Less dust in the air created by dust bathing	• Birds are unable to stretch or flap their wings
• Birds do not fight so much; less cannibalism	• Birds are unable to walk continuously
• Fewer victimised birds	• Birds are crowded
• Birds are not exposed to so much of their own manure; less risk of gut diseases	• Birds are unable to dust bathe
• Cleaner birds	• Birds are unable to nest
• Fewer cracked eggs	• Birds have limited ability to forage
• Usually requires less labour — egg collection is easier and quicker	• Barren environment
• More efficient use of feed; less wastage	• Birds have weaker bones due to lack of exercise
• Less land area needed	• Floor is less comfortable
• Eggs are cheaper to buy in the shops	• Farmers receive a lower price per egg than they would for free range eggs

Modified cages are only just coming into use. The aim is to provide an environment which fulfils more of the hens' behavioural needs, and the main modification so far has been the provision of a perch. Perches usually cause an increase in the proportion of cracked eggs, but some producers have limited this problem by getting the birds into the habit of laying on the floor and then introducing the perches. More elaborate systems which provide a nest box and a scratching box are being tested at the moment.

These additions can only be achieved at some financial cost which would have to be passed on through higher egg prices. It would be unrealistic to think that modified cages will allow flying, running, wing flapping and foraging behaviour, and so changing to modified cages is a compromise solution from the welfare point of view.

Alternative Systems

A variety of alternative systems have been tested and used commercially in the UK. They include systems known as percheries, tiered wire floor, litter and wire floor, and free range systems. They do not confine the birds to a small area, and so the physical and emotional deprivations of the battery system do not occur. The birds can roost, fly, run, scratch in the litter and nest in boxes, but it is unusual for nesting materials such as straw to be provided.

As there is greater opportunity for movement, there is also a greater risk of physical damage from flight accidents. Flight and landing accidents are quite common and, by the end of lay, 24% of all birds from perchery units have broken bones which have subsequently mended. The wishbone and the keel are most affected; since most of the fractures occur during the last half of the laying period, the pain associated with the breaks is more serious than in battery hens because it lasts longer.

Design and layout of furniture in the alternative system can be important in determining the prevalence of broken bones, but this may not be the only thing that needs to be considered. In one study it was found that when the flight distance between a perch and the landing stage of a nest box was as short as 75 centimetres, 10% of the flights ended in a crash landing. The reason for this is not known, but it might be that the hens' leg muscles are too weak when it gets older.

Another potentially serious problem in alternative systems is cannibalism. One study looked at four alternative systems and one battery cage system housed within the same shed; the birds were hatchmates and they were fed the same ration. The worst alternative system for cannibalism was the high level perchery, whereas in the battery cage, cannibalism was virtually absent. Where birds are kept in large groups, such as in percheries, tiered wire floor units and litter and wire floor systems, a small proportion of birds become victimised. These birds appear to be mentally disturbed, as they spend most of their time hiding from other birds, and they have a very deprived existence.

	Tiered wire floor	Low-level perchery	High-level perchery	Litter and wire	Battery
% cannibalism	4	4	16	10	1
% birds with old broken bones	20	20	27	17	1
% birds with broken claws	14	9	4	10	11

Different systems cause different problems for hens

An effective way of preventing cannibalism is to trim the beaks of the birds when they are chicks. Research has shown that partial amputation of the upper beak is a painful procedure and in a proportion of the birds, it results in a lasting pain — so it is not a very kind way of overcoming the problem. One of the leading egg companies in the UK has about 50 alternative system flocks and it has resorted to beak trimming all of them. Noticeable cannibalism now only occurs in one or two of their 50 flocks at any one time.

Claw damage can be a problem whenever there is wire, encountered in both alternative systems and battery cages. Bumblefoot is another foot problem which develops when perchery birds have to grasp the perch tightly in order to stay on it. It appears as a fluid-filled swelling on the knuckle and presumably is painful, but it can be avoided by choosing the appropriately shaped perch.

Since the birds can forage in their own litter, they are more prone to gut diseases including parasites and coccidiosis. Coccidiosis is a particularly unpleasant disease which no doubt causes suffering.

Perchery systems have not been very successful (especially when stocked at more than 22 birds per square metre) and they are now falling from favour amongst UK producers.

The most popular alternative is the free-range system, using a shed with A-frames plus nest boxes, stocked at about 17 birds per square metre indoors and with access to a paddock through popholes. Farmers are beginning to plant paddocks with shrubs and trees to provide some cover and shelter. Adequate fencing is needed to keep out predators, and electric fencing is widely used. This type of system attracts a "free-range" price premium, and without this, free-range systems would probably have difficulty in competing with battery cage systems for cost-effectiveness.

Some of the disadvantages are:

- dirty birds and eggs if the ground becomes pugged
- the apparent necessity to beak-trim all birds
- the high prevalence of floor/field eggs if the nest boxes are not sufficiently attractive
- wet birds if the grass is not kept short (and this can lead to dirty eggs)
- difficulty in shutting the birds in the shed at night if there are trees to roost in
- a tendency towards seasonal bulges in egg supply.