

Brave New Farm?

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Egg factory farm

In our mind's eye the farm is a peaceful, pleasant place where calves nuzzle their mothers in a shady field, pigs loaf in the mudhole, and chickens scratch and scramble about the barnyard. We comfort ourselves with these bucolic images — images that are implanted by calendars, coloring books, and the countrified labelling and advertising of animal products.

The reality of modern animal production, however, is starkly different from these scenes. Now, virtually all of our poultry products and about half of our milk and red meat come from animals mass-produced in huge factory-like systems. In some of the more intensively managed 'confinement' operations, animals are crowded in pens and cages stacked up like so many shipping crates. On these factory farms there are no pastures, no streams, no seasons, not even day and night. Health and productivity come not from frolics in sunny meadows but from syringes and additive-laced feed.

The new factory systems allow operators (not all farmers operate them and not all who operate them are farmers) to maintain a larger number of animals in a given space, but they have created serious problems for consumers, farmers and the environment, and they raise disturbing questions about the degree of animal exploitation that our society should accept. The factory farm is one of the more inappropriate technologies of this century: it requires high inputs of capital and energy to carry out a simple, natural process; it causes a costly chain of problems and risks; and it does not in fact produce the results claimed by its proponents. Moreover, the animal factory pulls our society one long, dark step backward from the desirable goal of a sane, ethical relationship with other beings and the natural world.

Factories Come... Farms Go

Right under our noses agribusiness has wrought a sweeping revolution in the ways in which animals are kept to produce meat, milk and eggs. It began in the years before World War II, when farmers near large cities began to specialize in the production of chickens to meet the constant demand for eggs and meat. These first mass-producers were able to turn out large flocks all the year round once poultry experts discovered the role of vitamins A and D. When these were added to the feed, chickens could be raised indoors because they no longer needed sunlight and exercise for proper growth and bone development.

Large-scale indoor production caught on fast around the urban market centres, but the new methods created a host of problems. Nightmarish scenes began to occur in the crowded sheds. Birds pecked others to death and ate their remains. In the poorly ventilated poultry sheds contagious diseases were rampant, and losses multiplied throughout the budding commercial poultry industry. But during the war years demand for poultry was high, and the boom in the chicken business attracted the attention of the largest feed and pharmaceutical companies, which put their scientists to work on the problems of mass-production. Breakthroughs began to come thick and fast. Someone found that losses from pecking and cannibalism could be reduced by burning off the tips of chickens' beaks with a blowtorch. Within another year or two an automatic debeaking machine was patented, and its use became routine. The development of a new strain of hybrid corn made for richer feeds, faster-gaining birds and a greater number of 'crops' of chickens each year for farmers. Foremost of the developments, however, was the discovery that sulfa drugs and antibiotics could be added to feed to help hold down diseases in the crowded sheds.

The chicken itself was not entirely ready for mass-production, and the poultry industry set about looking for a better commercial bird. In 1946 the Great Atlantic and Pacific Tea Company (now A&P) launched the 'Chicken of Tomorrow' contest to find a strain of chicken that could produce a broad-breasted carcass at low feed cost. Within a few years poultry breeders had developed the prototype for today's fast-flesh broiler, a chicken that grows to market weight in about seven weeks. The pre-war ancestor of this bird took twice as long to grow to market weight.

News of the successes on the meat side of poultry production rapidly spread to egg producers. They too went to work on engineering their own specialized chicken, the 'layer' hen, which would turn out eggs and more eggs. Today's model lays about 25 per cent more eggs per year than did the all-purpose backyard chickens of the 1940s.

Egg producers tried to follow broiler producers' factory ways, but they were faced with one major problem: confined layer hens produced tons of manure each week. Broiler producers had had the manure problem in their large flocks too, but their birds were in and out within twelve weeks, and accumulations could be cleaned out between 'crops'. Egg producers, however, kept their birds indoors for a year or more, and they needed a means of manure removal that would not disturb the hens or interfere with egg production. Unfortunately for the layer hen, they found it: producers discovered that they could confine their chickens in wire-mesh cages suspended over a trench to collect droppings. At first they placed their

hens one to each cage, but when they found that birds were cheaper than wire and buildings, crowded cages became the rule. Although crowding caused the deaths of more layer hens, this cost was slight against the increased total egg output. Evidently profits were being made, for ever-larger cage systems rapidly took over the egg industry. Articles in the May and July 1978 issues of *Poultry Management* report that between 1955 and 1975 flock size in a typical egg factory rose from 20,000 to 80,000 birds per house, and that in 1967 44 per cent of the nation's 300 million laying hens are caged in automated factory buildings. The typical cage in today's egg factory holds four or five hens on a 12- by 18-inch floor area.

Having proven that the chicken could be reduced to an animal machine, husbandry experts began looking about for ways to extend factory technology to the other farm animal species. In the 1960s they began developing systems for pigs, cattle and sheep that incorporated the principles of confinement, mass-production and automated feeding, watering, ventilation and waste removal. The wire cage, which made everything possible for the egg industry, would not work for these heavier, hoofed animals. But an innovation was found: it was the slatted floor — rails of metal or concrete spaced slightly apart and built over gutters or holding pits. Now large numbers of animals could be confined indoors and held to rigid production schedules, for the hard work of providing bedding and hauling manure had been eliminated.

The basics of factory husbandry had been established. Now the job of refining mass-production systems and methods fell to husbandry experts, and it opened up a great new field for them. It opened up, as well, great new markets for the agribusiness companies that could profit from the expanded sales of feed, equipment, drugs and the other products required by the new capital-intensive technology. Humanity and concern retreated further as animal scientists, funded by grants from these companies, worked out the 'bugs' in the new systems.

The Factory Formula

Factory methods and equipment vary from species to species, but the principles are the same: to keep costs down and to manipulate animals' productivity upward. These principles ensure that factory animals are crowded, restricted, stressed, frustrated, held in barren environments and maintained on additive-laced, unnatural diets. Although factories exist, or are in development, for each species of farm animal, pigs, chickens and veal calves suffer the most under the new husbandry and, for that reason, their plight should be examined in more detail.

The modern chicken is a business creation; it comes from the sterile laboratories of a handful of 'primary breeders'. These companies sell breeding animals to a few hundred 'multiplier' firms, which in turn produce the chicks that go to egg and broiler farms. At the multipliers birds have the run of the floors in the breeding houses, for freedom and exercise produce a higher percentage of fertile eggs. The eggs are usually hand-gathered and placed in giant incubators.

If the hatchery is turning out birds for egg factories, the first order of business is the destruction of half the 'crop' of chicks. Males don't lay eggs, and the flesh of these specialized layer breeds is of poor quality — 'not fit to feed', as one hatchery worker put it. At some hatcheries 'egg-type' males are thrown into plastic bags and allowed to suffocate. Females of the strain are debeaked, vaccinated and sent to 'grow-out' houses until, at about twenty weeks of age, they are ready to start laying eggs. At this point they are installed in the automated cage layer house. After a year or two in the cages their egg productivity wanes and it becomes unprofitable to feed and house them. The factory farmer may decide to use 'force moulting', a procedure which shocks the birds into renewed egg productivity for another few months by leaving them in the dark for several days without food or water. After a force moult or two the

hens are spent, and they are delivered to the processors to be turned into soup stock, frozen pies and other convenience foods.

With broiler strains males are kept and raised for markets, although they are separated from females on many farms. Debeaked and toe-clipped, day-old chicks are ganged up under heaters at one end of the long broiler shed. As they grow, the partition is moved down the building until the young birds take over the entire floor. On most farms the floor is covered with wood shavings or other absorbent litter material. Here the broilers have it a bit better than their cousins in the layer cages. Nor are they confined as long, for they reach market weight (about 3¹/₂lb) in approximately eight weeks. But their numbers are huge: over-four *billion* broiler birds go through these systems each year in the USA alone.

Pigs are raised in a variety of systems, but there has been a trend towards larger farms with factory facilities. Some of these farms have 'total-confinement' systems in which the pigs never see the light of day until they go to market; they are conceived, born, weaned, and 'finished' (fattened) in specialized buildings similar to those used in the poultry industries. These farms typically keep a few boars and a few hundred breeding sows to turn out the pigs raised for market, but an increasing number of farms don't bother with boars, relying instead on artificial insemination.

Shortly after conception the factory sow's misery begins when she is moved to a 'gestation' building. On some farms she may share a small pen with other sows, but in the more intensive factories she is restricted to a narrow stall in which she can only stand or lie down. In either event, she remains in her pen or stall for about four months, during which she may be kept in darkness and fed only once every two or three days.

A week or so before her pigs are due, she is moved to a 'farrowing' building and restricted again to a narrow stall. This stall permits her to lie and stand, but she cannot walk or turn around; its purpose is to keep her in position only to eat, drink and keep her teats exposed to the baby pigs. Soon after birth the pigs receive a battery of injections; their 'needle' teeth are clipped; their tails are cut off; and their ears are notched for identification. Near weaning time, in a couple of weeks or so, the males are castrated without anaesthetic. At this point the sow goes back to the breeding area, and the pigs are moved to pens in the finishing buildings, where they spend about twenty weeks until they reach a market weight of about 220 lb.

Veal factories are perhaps the harshest of all the confinement systems. Newly born calves are taken from their mothers and turned into anaemic, neurotic animals to provide the luxury-grade 'milk-fed' veal preferred by gourmet cooks and fancy restaurants. The young calves, stressed by separation from their mothers, are placed in narrow wooden stalls, lined up row on row in the confinement building. For between fourteen and sixteen weeks each calf is confined to a space scarcely larger than its own body and is often tied at the neck to restrict movement further.

The calf is fed only 'milk replacer', a liquid mixture of dried milk products, starch, fats, sugar, antibiotics and other additives. The milk replacer is deficient in iron to induce anaemia — a necessary condition if the producer's calves are to have flesh white enough to fetch the market price for 'prime' veal. No hay or other roughage is permitted, for that too might darken the flesh. Even the wooden stalls and neck chains are part of the plan, as these restrictions keep the calf from licking its own urine and faeces to satisfy its craving for iron.

Other species are now being exposed to factory methods. Sheep experts are perfecting confinement systems in the USA, Europe and Australia. Domestic rabbits are being raised in cage systems similar to those used by the egg industry, and the budding rabbit industry is working hard to increase public demand

for rabbit meat. In beef cattle feedlots stress from crowding and an unnatural diet adversely affect the animals' health. Liver abscesses are common in these animals because their digestive tracts are geared more to roughage than to the steady diet of high-energy grain and growth promotants that they receive.



Pig factory farm

Factory Problems, Factory Solutions

The industrialization of farm animals has provided farmers with tighter controls over their herds and flocks and it has eliminated much of the labour of feeding, waste removal and other chores, but it has also created a whole new set of problems for producers. These problems are seen as challenges by an ever-growing army of experts who churn out increasingly elaborate management schemes to keep the system working. Constant manipulations of animals' anatomy, physiology, heredity and environment are required to keep health problems in check so that mass commodity production can be maintained at a profitable level. Chief among these factory-related health problems are stress and disease.

In confinement animals are subjected to a variety of stresses. When birds are debeaked or when calves or pigs are weaned prematurely or castrated, some die from the shock. These causes of stress are occasional, however, and after a few days of adjustment most of the animals return to 'normal'. But other causes of stress in the factory farm are continuous. The animals have no relief from crowding and monotony. In a less restrictive environment they would relieve boredom by moving; confined animals cannot. Nor have they relief from social disturbances caused by factory conditions. When animals are crowded and annoyed, the likelihood and frequency of aggressive encounters increases. When growing pigs are moved to larger pens, outbreaks of fighting can occur, leaving pigs dead or injured. In the restricted space of confinement pens less aggressive animals cannot get away to make the show of submission dictated by

instinct. Some animals may become so fearful that they dare not move, even to eat or drink, and they become runts and die. Others remain in constant, panicky motion, a neurotic perversion of their instinct to escape.

Under socially stressful conditions cannibalism can occur, especially among poultry and swine. Cannibalism in poultry results from a distortion of the birds' instinct to establish a social hierarchy or 'pecking order'. Birds that have evolved over millions of years, socializing in flocks of about a hundred members, cannot establish a pecking order among the thousands on the floor of a modern broiler or turkey house. In these super flocks of birds would peck each other relentlessly if controls were not used. Caged birds have the opposite problem: each cage contains a small 'flock', and one member has to fall at the bottom of the social ladder. This unfortunate bird cannot escape its tormentors. In pigs cannibalism takes the form of tail biting, described by one expert, in an article published in the March 1976 issue of *Hog Farm Management*, as follows:

Acute tail biting is often called cannibalism and frequently results in crippling, mutilation and death . . . Many times the tail is bitten first and then the attacking pig or pigs continue to eat further into the back. If the situation is not attended to, the pig will die and be eaten.

For the factory farmer management of these stress-related problems calls for manipulation of both animal and environment but not relief of crowded conditions — the primary underlying cause. Stress and related health problems can be reduced by keeping animals in darkness or under very low-intensity lights. Many total-confinement veal and pig operations keep their animals in total darkness around the clock except for brief inspection and feeding periods. For the factory farmer, on the other hand, cannibalism calls for direct animal engineering: if the factory cannot be modified to suit the animal, the animal is modified to suit the factory. To ensure that stressed pigs cannot tail-bite, farmers routinely cut off ('dock') the tails of young pigs a few days after birth. Cannibalism among poultry is controlled by debeaking, an operation that removes the front one-third of the bird's beak. Broiler chicks require only one debeaking because they are sent to market before their beaks grow back. Most egg producers debeak their birds twice, once at about one week of age and again during the growing period when the birds are between twelve and twenty weeks of age.

In large flocks labor costs are high, and the debeaking procedure is carried out as quickly as possible; experts recommend a speed of about fifteen birds a minute. Patience and precision tend to give way in monotonous work, and the beaks of many birds are sloppily cut. According to F. D. Thornberry, W. O. Crawley and W. F. Krueger, whose article on debeaking appeared in *Poultry Digest* in May 1975:

An excessively hot blade causes blisters in the mouth. A cold and or dull blade may cause the development of a fleshy, bulb-like growth on the end of the mandible. Such growths are very sensitive and will cause below-average performance . . . Incomplete severance causes torn tissue in the roof of the mouth. The bird's tongue must be held away from the blade. Burned or severed tongues result in cull (worthless) hens.

Even if debeaking is properly done, it is painful and can affect birds' health later. Some debeaked birds do poorly during the production cycle and do not grow to full size because 'beak tenderness' makes it difficult for them to eat and drink.

On some farms at the same time as birds are debeaked their toes are clipped just behind the claw by the same hot-knife machine. This operation is said to keep the birds quieter, as it prevents 'back ripping' and fighting. To hold down pecking and fighting among males on breeding farms producers usually cut off their wattles and combs.

Heightened levels of aggression and activity take their toll of stressed animals in a more direct way. Like any over-worked machine, they simply wear out. Pigs in particular are prone to a reaction that we would probably call 'shock' if it occurred in humans; the pork industry calls it porcine stress syndrome (PSS). Pigs may literally drop dead from stress when they are weaned, moved to a new pen, mixed with strange pigs or shipped to market. A condition common in layer operations is termed caged layer fatigue (CLF). The fatigued birds have brittle or broken bones and a pale, washed-out appearance in their eyes, combs, beaks and feet. It is thought that they somehow withdraw minerals from their bones and muscles, and eventually these birds are unable to stand. In broiler operations, some birds suddenly jump into the air, give off a loud squawk and fall over dead. This 'flipover syndrome' is usually seen in the larger, faster-growing birds, yet poultry experts say its cause is not known. One southern broiler farmer told me that he had been losing several birds a day from this condition, which he called 'heart attack'. He told me that the problem is 'in the birds — they grow too fast these days'.

Stress leads to a string of reproductive problems as well. Reproductive functions are not essential to survival at the moment of stress, and so the animal's system puts them 'on the back burner' until the stress is gone. Under constant stress reproductive functions are *always* on the back burner. Hence male pigs lose their sex drive, females fail to conceive and the offspring of these animals may have incompletely developed reproductive organs and may be slower to reach puberty.

In attempts to compensate for these problems, factory operators resort to manipulation of animals' reproductive systems. In some of the more intensively managed factory pig and cattle operations, females are dosed with hormones to synchronize their oestral cycles or to tune in their labour contractions and delivery times to the factory schedule. Although these procedures can cause shock or death, artificial control of oestrus, ovulation, gestation and birth provides greater control over the entire factory operation. Oestrus control decreases time between pregnancies, aids assembly-line artificial inseminations, increases the chance of conception and makes planning and record keeping easier. Use of prostaglandins to induce labour contractions makes calving and farrowing more convenient and predictable for the farmer. Injections of progestins or steroids bring on twin calves, larger litters of pigs and bigger lamb crops.

Even without the use of drugs, farmers speed up reproductive cycles by separating calves, lambs and pigs from their mothers much earlier than nature would. In nature a calf might nurse and run with its mother for about a year; on a dairy farm it is lucky to spend more than a day with its mother. Although most factory pig farmers leave their sows and pigs together for about three weeks before separation and weaning, a few are trying to wean only a few days after birth in order to rebreed the sow sooner.

In addition to the manipulation of sex and reproduction, factory experts control growth rates to increase production. The poultry industry has known for some time that birds' rates of growth and egg laying depend on the daily change in the ratio of light to dark. In the spring, when days grow longer and nights become shorter, birds' body cycles pick up and their rates of egg laying increase. It didn't take poultry producers long to figure out that control over light meant control over production. They began to experiment with various light schedules. Some broiler producers have total control over light in their windowless houses; others take advantage of sunlight during the day and use artificial lights after dark. Egg producers try to create the illusion of eternal spring by keeping the lights on a little longer each day. After about a year of this the flock's productivity drops, and many producers use 'force moulting' to revive it. A few birds die in the process, but most come through and begin producing all over again on a renewed pseudo-spring light schedule.

Under the stresses of factory life an animal's defences are down, and it is more prone to the infectious diseases that easily spread throughout crowded buildings, since the controlled environment of an animal factory can be a hothouse of air pollution and airborne germs. Even with powerful ventilators working

properly, the air of pig and poultry factories contains dust raised by mechanical feeders and excited animals, and it is often laden with ammonia and other irritating gases from the manure pits. Because factory buildings are usually in use all the year round and are isolated from the cleansing effects of sunlight and rain, many develop what producers call 'bacteria build-up'. A producer may have relatively few health problems in a new factory building during the first year or two, but eventually the interior can become infested with a variety of disease-causing organisms. Farming magazines indicate that both pig and dairy factories are plagued with diseases, many of which are brought on by factory conditions.

This battle against bacteria calls for strict measures throughout the factory. Everyone — animals, managers and visitors — must follow a one-way route from building to building to avoid bringing germs back to younger animals. Between 'crops' of animals farmers sterilize practically everything inside with an arsenal of hot water, high-pressure hoses, acids, cleansers and disinfectant chemicals. Animal disease experts recommend 'health programs' — routine doses of sulfa, antibiotics, vitamins and other medications at regular intervals throughout the production cycle — to help hold down disease losses. Producers must also use pesticides to get rid of the mites, ticks, fleas and other insects that tend to build up around concentrations of animals.

The factory operator, if he or she is a good manager, tries to control temperature, humidity, light, ventilation, drafts, dust, odors, noise, fighting, disease, waste removal, the supply of food and water and everything else that makes up an animal's environment. But when hundreds or thousands of animals are confined in a single room, it is not likely that every element of the environment will be satisfactory to every individual animal. Thus the health of some animals fails, and the causes are so diffuse that they are difficult to trace. Because of this, and because the mass-production schedule does not allow for precise, individualized treatment of animals, many producers use a shotgun approach to disease: they reach for a syringe full of broad-spectrum antibiotics when any symptoms appear.

Throughout the factory, then, constant manipulation of animals is necessary to maintain a profitable flow of meat, milk and eggs. The factory process provides a prime example of the disparity in the way we view technology (our own works) and the way we view animals and natural processes: we worship technology; we despise animals and nature. Animals have been reduced to mere things for our use, and all of their complex and wonderful life processes — growth, mating, birth, death — have been subjected to human design and control. We are simply unable to accept animals — especially food animals — as beings in their own right. Until we do, we will not be able to achieve sane and ethical relations with the rest of the natural world.

Drug Dependence in the Factory

It's hardly an overstatement to claim that today's factory animals are drug-dependent. The US Office of Technology Assessment reported in *Drugs in Livestock Feed* that nearly all poultry, most pigs and veal calves and 60 per cent of cattle get antibiotic additives in their feed, and according to the US Department of Agriculture's *Northeast Regional Newsletter* of June 1978, 75 per cent of pigs eat feed laced with sulfa drugs.

Although farmers receive instructions to withdraw additives from the feed before shipping their animals, sometimes slip-ups occur, and residues can show up in the products. A few years ago the General Accounting Office monitored the US Department of Agriculture's meat and poultry inspection programme and published its findings in a 1979 report entitled *Problems in Preventing the Marketing of Raw Meat and Poultry Containing Potentially Harmful Residues*. According to the report, 14 per cent of meat and poultry products sampled by the Department between 1974 and 1976 contained illegally high levels of drugs and pesticides. The report stated: 'Of the 143 drugs and pesticides identified as likely to

leave residues in raw meat and poultry, forty-two are known to cause or are suspected of causing cancer; twenty of causing birth defects and six of causing mutations.’ More recently the US Food and Drug Administration has expressed concern that as many as 500 or 600 toxic chemicals may be present in the country’s meat supply, yet no adequate testing and monitoring programme exists to check for them. In an article published in the *New York Times* on 15 March 1983, Marian Burros noted that at present the Department of Agriculture monitors residues of only sixty chemicals. Despite calls by the General Accounting Office in its 1979 report and by the Carter Administration in 1980 for expanded residue testing, the Department of Agriculture continues to take random samples at the rate of only one per 220,000 animals slaughtered. Many scientists and government officials believe this residue monitoring programme is inadequate considering the extent to which the livestock and poultry industries rely on drugs and chemicals today. ‘There is a good chance that the American public consumes meat with violative levels of carcinogenic and teratogenic chemical residues with some regularity,’ according to Carol Tucker Foreman, Assistant Secretary of Agriculture from 1977 to 1980, whom Marian Burros cites in her article. Because of the rising concern over consumer health and safety, Representative James J. Howard of New Jersey has introduced the Farm Animal Practices bill (HR 3170) before Congress. If enacted, it would establish a special commission to investigate the ramifications of the use of drugs and chemicals in modern farm production.

More subtle but potentially more dangerous, perhaps, is a shocking new kind of pollution created by drug-dependent husbandry methods. Animal agriculture’s extensive use of antibiotics since World War II has unloaded these substances into the environment and has exposed them to a wide range of microorganisms. As a result, a number of common disease-causing germs — for example, the bacteria that cause diarrhoea, septicaemia, psittacosis, salmonella, gonorrhoea, pneumonia, typhoid and childhood meningitis — have now had long-standing exposure to antibiotics and have developed drug-resistant strains. This means that if you come down with a disease from one of these strains, a shot of antibiotics will not help as it might have a decade or so ago.

Farmers (and the Rest of Us) Are Victims Too

Ironically, the trend toward complex, expensive husbandry systems is hurting farmers and rural communities. Those huge buildings full of specialized floors and feeding equipment don’t come cheap. A modern, family-sized pig factory can cost from a quarter to a half a million dollars and a modest dairy facility about the same — not counting the cost of the land and animals. These financial burdens are so great the factory farmers must keep their buildings at capacity twelve months of the year, working longer and harder than ever just to meet their loan payments. So much for the ‘labor efficiency’ of the modern factory farm!

Moreover, the high capital investments required are a lure for agribusiness companies, urban investors and other non-farm interests looking for tax relief. US tax laws allow them to deduct from taxes due up to 10 per cent of money invested in factory buildings, and many obtain other tax advantages through transactions involving breeding animals. Some of these investors (and some of the largest farmers) may be more interested in the tax breaks than in profits, and they tend to keep producing even when prices are down. This tendency to operate at capacity in order to cover capital costs has created chronic overproduction in the poultry, pork and dairy industries. Constant overproduction keeps markets depressed, and small non-factory producers have a hard time breaking even on their small herds and flocks. When this happens the small farmers tend to quit raising animals altogether, and more and more production falls into the hands of the largest, most intensive operations.

The poultry industry, the originator of factory systems, offers a clear example of how the trend towards capital intensification affects farmers. Chickens and eggs, along with hogs, used to be the mainstay of the

small, independent family farm before the poultry scientists and agribusiness companies got involved. As Harrison Wellford has pointed out in *Sowing the Wind*, as late as 1959 nearly 60 per cent of broilers and most turkeys were grown by independent farmers and sold on the open market. Today some fifty agribusiness corporations produce over 90 per cent of poultry meat. The farm family has been reduced to the status of 'poultry peons' who turn out company birds on company feed according to company schedules and specifications.

Despite these problems associated with the trend towards factory methods, agribusiness experts keep looking for solutions, keep tinkering with animals to get gains in productivity. Too much, they feel, has been invested to think of turning back. Yet animals' efficiency as commodity producers has biological limits, and not even factory methods can continue to squeeze greater and greater productivity from them. 'Sounding the Alarm for Ag Research', an article by R. L. Kohls in the June 1977 issue of *Confinement*, notes, for example, that increases in milk production per cow have levelled off since 1972; egg production per hen has levelled off at about 230 eggs per year; and pigs saved per sow have actually decreased since 1969. Now that data like these are coming in, factory methods are beginning to look less and less attractive. Farming magazines report that high energy costs and production problems are causing a few farmers to go back to less intensive methods. Because of his unpleasant experiences with factory systems, one farmer complained to *Hog Farm Management* in March 1979 that 'ten years of confinement raises more questions than answers'.

There are many, many costs in the new factory methods and systems for raising animals, although agribusiness experts would have us hear only their talk of benefits. They are fond of using cost-benefit analyses to justify the use of antibiotics in feed, chemical growth promotants or nitrites to cure meats. They assert that the benefits to consumers from these uses outweigh the risks involved. But if this sort of test is to have any validity in agricultural affairs, it must take into account all the costs of factory methods, which include threats to:

- the health of consumers, who dine on fatty, chemically dosed, antibiotic-fed animals;
- the environment, as a result of the accumulation of huge quantities of noxious animal wastes;
- our limited stores of fossil fuels;
- starving people, whose lives might be saved by the food and agricultural resources we are wasting;
- the land, which is forced to produce more and more grain to be turned into meat;
- wildlife, whose habitat is destroyed to grow grain;
- farm families and rural communities, whose livelihood and economic vitality have been undermined by the headlong rush toward high-tech factory systems;
- the animals themselves, who are restricted, mutilated, manipulated and reduced to mechanized production units;
- human dignity and self-respect, as a result of carrying on all of the above on such a massive scale.

Factory methods of animal production are not, as some agriculture experts claim, the inevitable result of a 'natural tide of history'. They are the product of decades of government policy and corporate profiteering. Although the trend is reversible, the forces behind it are well entrenched. Therefore there can be no *immediate* end to factory methods; it will take patient struggle to bring sanity and humanity back to farming.

The New Movement Against Factory Farming

In Europe during the past two decades there has been rising concern about animal welfare, food quality and the other problems associated with factory farming. As a result, government is beginning to be

involved in action against the worst abuses of animals in livestock systems. In Britain the publication of Ruth Harrison's book *Animal Machines* in 1964 stirred up a controversy that led to the appointment of a parliamentary committee to investigate the new husbandry methods. The Brambell Committee — nine scientists, agricultural experts and others — reported in 1965 to the Ministry of Agriculture, Fisheries and Food (MAFF). Among other things, it recommended the passage of a new law to safeguard animals that would set maximum stocking densities for various systems, prohibit the debeaking of poultry and the docking of pigs' tails, prohibit the close tethering of veal calves and gestating sows and require the provision of iron supplements and roughage for veal calves.

No such law was ever passed, but in 1971 the MAFF established voluntary codes for various species that largely ignored the substance of the Brambell recommendations. The few recommendations made were couched in terms such as 'may be necessary' and 'should preferably have', and some of these recommendations have been ignored in practice.

In 1981 the House of Commons Agriculture Committee published a report on the welfare of animals in poultry, pig and veal calf systems which made recommendations similar to those of the Brambell Committee, though more cautious in tone. Again, the report was critical of the MAFF and the Government's enforcement of farm animal protection provisions. Among other things, the Agriculture Committee recommended more research into animal behaviour under intensive conditions, a change in taxation policy to discourage undesirable methods and to encourage alternative systems, an 'early end' to veal calf crates, the phasing out of close confinement of gestating sows and tighter controls on tail docking and debeaking. In response, the MAFF has indicated that these recommendations will be ignored once again.

On the Continent a West German appellate court has ruled that the battery caging of chickens amounts to cruelty under that country's animal protection laws because the birds are permanently unable to act out their inherited behavior patterns. Enforcement of the decision is being stayed until the German Agriculture Ministry can study the economic impacts. The Council of Europe Convention for the Protection of Animals Kept for Farming Purposes underwrites the principle that farm animals must be housed, fed, watered and cared for in ways appropriate to their physiological and ethological needs. Most EEC countries have ratified this Convention, as has the European Commission itself. More recently, the Convention published a draft proposal that would establish minimum standards with respect to cage size, floor space, lighting, beak trimming and other factors to safeguard the welfare of laying hens.

Progress against intensive systems has moved beyond the study/ recommendation stage in Switzerland, where a 1978 law and subsequent regulations have outlawed many factory farming practices. These provisions will, in effect, make battery cages for laying hens illegal by 1991. Switzerland's veal calves must receive iron in their feed and roughage in some form. Pigs must be allowed rooting time with straw, roughage or other suitable material, and restricted sows must be allowed exercise time periodically. Other provisions establish standards for lighting, flooring materials, space and other environmental factors.

In the United States efforts to stop intensive practices lag behind Europe's because until quite recently public awareness was low. Now major broadcast and print media are reporting the issues, and a number of animal protection organizations are campaigning more actively against factory methods. The Animal Welfare Institute, the Food Animal Concerns Trust and the Humane Society of the United States all have staff specialists in intensive farming, who regularly publish up-to-date information about farm animal welfare issues. The Farm Animal Reform Movement also publishes valuable material, although this grassroots group's main concern is picketing, demonstrations and other forms of activism to increase public awareness of farm animal welfare issues.