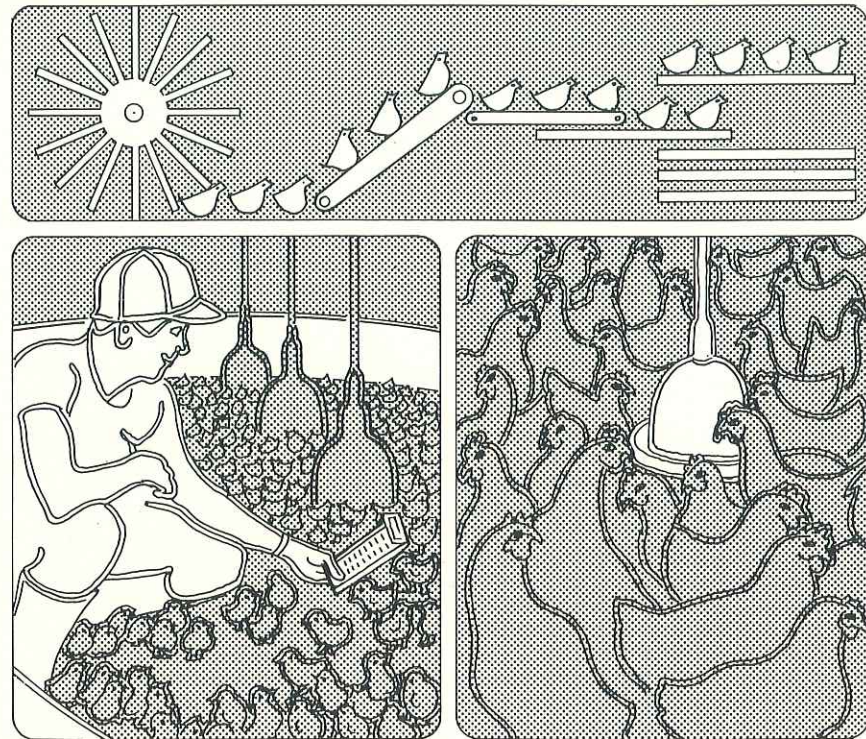


Broiler Industry In 25 Years



The broiler industry has come a long way from the small flocks which were fed from a young farmwife's apron. The magnitude of the changes which we have so far, boggle the mind, but what is in store for the future is just as exciting. There are several areas where changes must take place. We have made remarkable improvements in growth rate, conformation, liveability, yield, fertility, hatchability but the biggest stumbling block to the improvements in bottom-line will come in labour savings, housing and environmental control.

If we look at a profile of our modern day poultryman, he is approximately 55 years old and has been in the business for over 30 years. Average age of a broiler house is over 25 years. If they think that Chevy or Ford has something on durability, then they should look at incubators. We visit over 300 different hatcheries a year. There are incubators out in the field working fine which were built before my parents were born. I can remember remarking to a large integrator that they had an old Smith Incubator (precursor of Chickmaster) with the

serial number 0000026. You had to go in and turn the humidity on manually and wait to you felt it should be turned off. Chicks were still moved to the bottom for hatching and thinned constantly while they hatched. When I asked why they still had it, the answer was that it still worked and a replacement could only expect to give a few percent more hatch.

Americans are labelled throughout the world as a throwaway nation, but you can't say that about our hatcheries. I don't think they throw anything away, they sell it to someone else who has time to fix it or coddle it along and life goes on. So many of the integrators see an incubator as a point in time which produces a product or not, but in essence does not have much to do with the product which it produces. This is a grave misunderstanding of the process. The incubation system can add up to 0.25 lb of product at the end of the grow-out. It can alter the immunological competence of the birds and create a nightmare for production people. When integrators can accurately detect these differences there will be

much more attention to replacing old equipment with new. The new generation of equipment will be more labour saving. Eventually we will produce an incubation system which can take flats of eggs packed from an automatic collection device on the farm and not be reworked. These flats of eggs will be conveyed through the hatchery to the incubator and then to the hatcher area by computers which will read incoded bars on the flats which identify the source of the eggs and then the incubation parameters will be determined by a computer which will automatically move the same flats to the hatching area. At the hatching area some form of automated transfer will be enacted to get the eggs into the hatcher. Multiple monitoring points in the machinery will alter air movements through the egg pack to give optimum performance from the machinery.

As the eggs are being transferred, they will be injected either by pressure/temp. method or actual penetration of the egg to protect the newly hatched chick from Marek's. Other vaccinations will be given as the computer moves the chicks through the processing area. Chick counting machines will read the encoded material with the birds and produce accurate data on the hatch of each group of chicks and put this into a data bank for the breeder and hatchery servicemen to use to both predict future hatches and correct problems which were found in the present ones. The data collected by this group of birds will produce a daily work sheet for maintenance people to keep the machinery at peak performance.

Beaktrimming will no longer be necessary since the nutritional and genetic potentials of the chick are enhanced producing a broiler in 30-32 days in the field. Chicks will be sexed by some sensors which may pick up colour differences or the birds will go through a sizing machine which will feather sex and then sort by weights the birds which are to be placed that day. Chicks will be moved to trucks which will go to brooding areas much the way an airport moves your luggage to the correct airplane.

Data from the plant sales department will dictate which areas will re-

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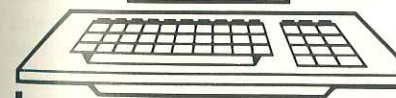
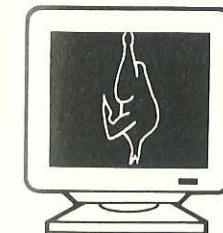
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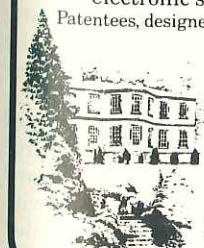


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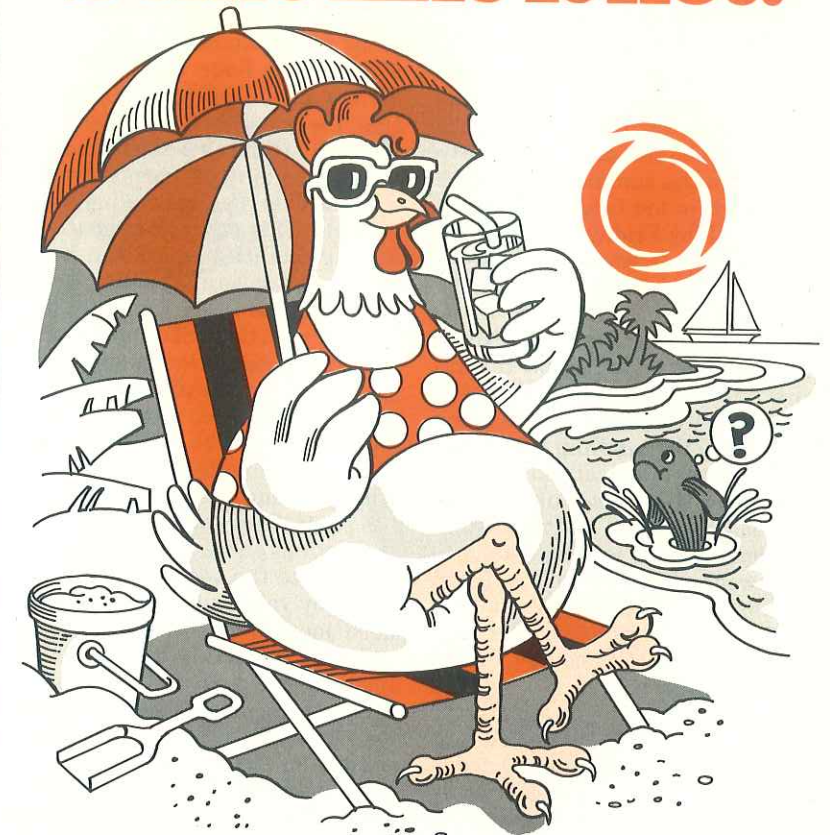
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ceive birds and the environmental constraints put on the birds to produce the correct-sized product when the orders need to be filled. The hatch days may not be the same as we have now, since in the summer we produce a bird which is too large on Monday and too small by Friday. Hatches will be either 6 days a week or there will be a change in timing of hatches due to the demand for uniformity. If the hatch is 6 days a week then three work areas will be set up for the different hatch days. Each machine would probably be set twice a week with three halls handling the different sets or an all in all out system which would still be set up in separate areas to control contamination in the hatchery. If we don't hatch 6 days a week then we will probably hatch Sunday, Monday, Wednesday and Thursday in the summer and change to Tuesday, Wednesday, Friday Saturday in the winter. This would be better than trying to hatch 6 days a week and would be more efficient than having 3 hatch areas for a 5 day a week hatch when one area would be used only once a week instead of twice a week.

There will be environmentally controlled brooding areas which will have tempered air which would be pulled from the outside and go through the ground via a tapered passage to remove disease particles and temper the humidity and temperature for more economic brooding. Large complexes with multiple age housing will be the rule instead of the exception. The brooding facility will be on the outer end of the facility and after 7-10 days the birds will be moved by computer-aided conveyors to the growing areas in the next houses. Each brooding area will handle two growing facilities. All brooding and growing will be done in cages with bottoms which have belting underneath which during the birds' stay will remove manure. When it is time for the birds to be moved, then the dividers between the cages move up or down and the wire bottom will release the birds to go on the same conveyor to the end of the house where cross-conveyors will be used, much like we have in commercial eggs, to another conveyor which will fill the cages in the growing facilities.

The processing plant will be on the same growing facility and at the end of the growing period, the birds will be conveyed to the plant for processing. The plant will probably run 2 shifts, 6 days a week with fewer birds per shift rather than making a large

plant which would accommodate lots of birds per hour but run only one shift a day. Due to the mechanization, there will be little labour in the plant. By running 2 shifts and 6 days then the plant overheads would be divided over the maximum number of birds. This will allow smaller processing facilities which can be operated out of several satellite facilities. More inhouse inspections will be carried out with the USDA inspector overseeing the operation much the way that the egg processing is done now.

When the birds are hung on the shackles, it will be the first time that they are individually handled. This will save much money on labour for the plant. There will be more intense restrictions on weights and body parts sizes since the market will be dominated by value-added products which need more uniformity. Data will be collected frequently during the growing and analyzed in relation to the product size and body part percentages to make prediction for changes needed on the next flocks to produce more accurate portions for the sales department. Hopper type feeding systems will weigh required feed into each cell (cage area) to produce the correct size product for processing much the same way that dairy units feed different cows different quantities of feed now.

There will be more reclaimed water and energy from processing than at present. Processing plants will run more during the evenings and early morning when the birds can be moved more calmly through the conveyor system. Excess heat generated from cooling the birds will be used for brooding. More attention will be paid to water quality and quantity than currently. Water will be considered a nutrient and alterations in the makeup will allow the plants to fine-tune growth even more closely.

The manure produced by the birds will be used to generate part of the energy needed to run the processing plant and the dryer for the reclamation of the offal from the processing plant. Vacuum systems will move manure and offal to the different areas rather than trucking systems. Feed will be made on the farm and vacuumed to the different buildings. Large underground networks will provide the circulation systems for air going to the houses and for products moving in the different directions. The farm unit will have a computer much like a computerized feed which will tell the managers where all the products are at any particular time.

The growing facility will include brooding area, growing area, manure energy recovery, processing plant, feed mill and rendering plant. Carcasses will be bulk moved then aged in a separate further-processing plant away from the growing facility to keep traffic into the area to a minimum. The breeders and hatchery will be separate from both. Major grains will be contracted at the point of poultry much the way that we contract poultry facilities now in the US. More and more broilers will be grown in the MIDWEST where grain is more available. Since the growing facilities will be filtered-air systems vaccinations will be fewer and those which need to be done will be performed via either spray or drinking water routes.

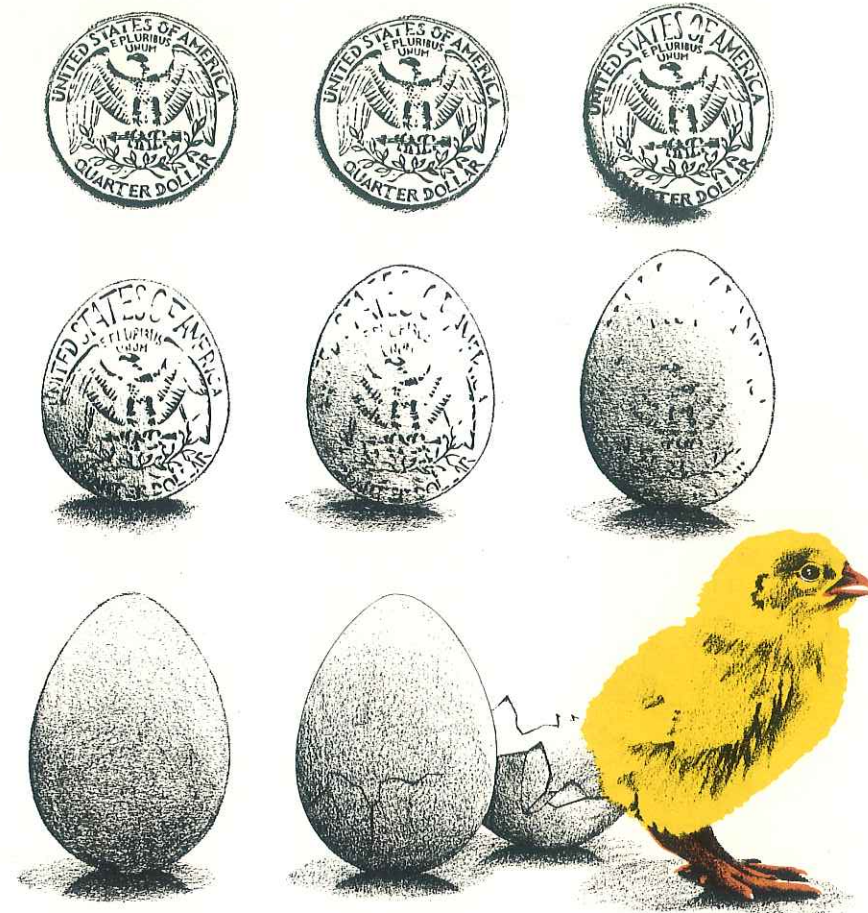
Breeder facilities will be environmentally-controlled. Dark-out facilities, and a better knowledge of nutrition will produce more reliable performance. Birds will be housed on some kind of plastic product which can be suspended over a pit. There may be more than one tier of birds to a house though not in cages but in suspended layers with fine-tuned ventilation producing minimum differences between the layers of birds. All birds in the same house will be the same age, but there will be different ages of breeders on the farms. Eggs will travel on a belt and be automatically sorted by size and trayed for the hatchery. Tags will be electronically placed on the flats to tell the computer controller the status of the breeders' eggs (size and date-of-lay). This data will be entered into a computer which will match sales needs with egg size and projected hatches.

Eggs will be automatically conveyed to the hatchery much the way that commercial eggs are processed on line. Hatches will be routinely monitored for contamination, nutrition, egg handling and hatchery machinery problems. This data will be used to produce a better product for the growing facility.

Egg size will be controlled more closely by water administration of the amino acids for better balance. Feed will be made in a small feed mill on site and will be changed frequently to reflect changes in the needs of the breeder. This will keep traffic to breeders at a minimum.

Hatch debris will be augered through a system much like the citrus folks have which produces smaller and smaller turns removing the water with minimal energy usage. The product will then be further dried with energy from manure recovery. The prepared

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product will be used as a feed ingredient for the breeders keeping the growing units and breeder units separate as much as possible.

Environmental control, similar to the broiler facility, where pipes go under the ground and temper air to the birds will be the order of the day so changes due to weather will be minimal. Heat generated from the older birds and the manure produced will generate the energy needed to run the

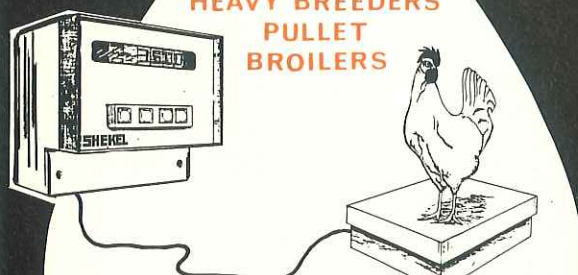
feed mill, reclaim hatchery wastes and brood replacement birds.

With the population explosion and the reduction of real working farmers, we will have to learn to be better neighbours. Reclaiming manure will protect the environment while producing a by-product which can be used as feed ingredient. The use of filtered air systems will not only temper the air but will produce more desirable air leaving the house.

There is a great deal of change which will occur in the next 10 years associated with the retirement of the current poultrymen. Companies are increasing in size and complexity as mergers and buyouts occur. In some ways these buyouts produce a cheaper product but in other ways it ensures continuation of ancient methods. I firmly believe that the above scenario will occur but it will be done by new companies not by the existing giants.

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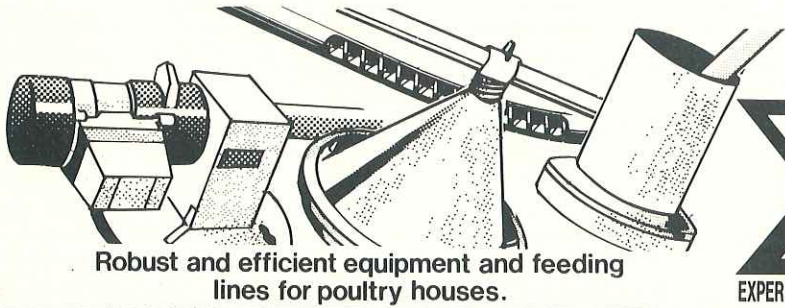
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