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## Poultry Progress: How Long Should a Chicken Live?

F. E. Mussehl

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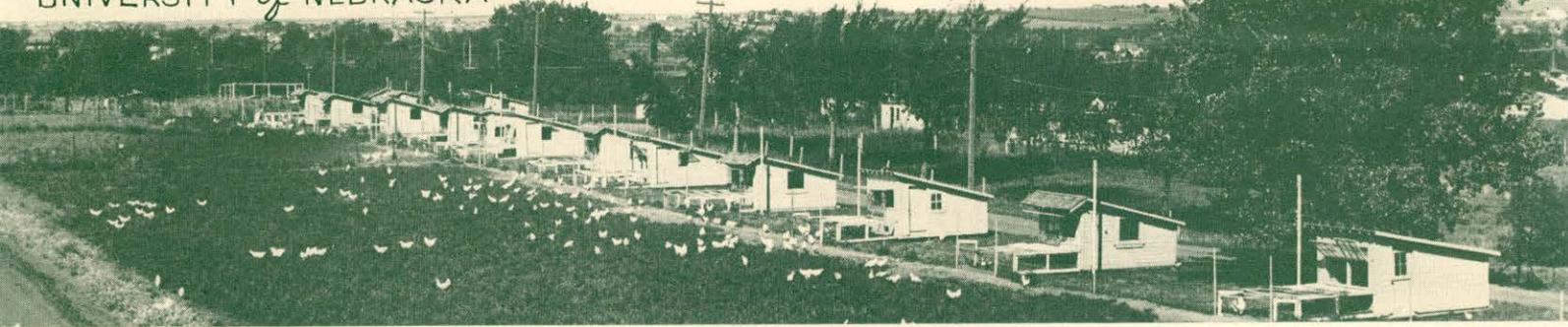
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# 30th Anniversary

DEPARTMENT OF POULTRY HUSBANDRY  
UNIVERSITY of NEBRASKA



C 77-1

COLLEGE OF AGRICULTURE  
October, 1944

## HOW LONG SHOULD A CHICKEN LIVE?\*

F. E. Mussehl

Increased laying flock mortality has disturbed thoughtful hatcherymen, producers, processors, and research workers for several years, and very properly so, because hens which die before their time serve no useful purpose, except to raise in our minds the question, "Why?"

Chicken life, like all life, is a complex of a good many forces. This poultry mortality program is not simple; otherwise it would long since have been solved. But real progress is being made. In studying chicken life, we enter the scientific fields of Genetics, Pathology, Nutrition, and Economics. It is a complicated reaction that we observe, and perhaps we have only arrived at the stage in the analysis suggested by the epitaph on the tombstone which Dean Alabaster insists he truly found in a quiet corner in New England. On a marble stone, overgrown with bluegrass, turf and brambles, was this inscription, "Here lie my twins dead as nits. One had fever, the other had fits." The fellow is entitled to *some* credit; he tried, at least, to give the answer to "Why?"

Even though we do not have all of the answers we need not apologize for thinking about this problem. We will all agree that laying hens, growing chicks, and growing turkeys are truly high speed animals. Two hundred egg hens are now so com-

mon, that we do not even salute them in passing in comparison with the 300 eggers which we hear about. *But even the 200 egg hen has produced and packed 25 pounds of a finished product in a year, though she herself may only weigh 4½ pounds!*

Small wonder then, that the machine occasionally breaks down prematurely, especially if some essential, needed in even relatively small amounts, is lacking, or if the genes for livability were lost somewhere in the breeding program. The consequences of a collision with natural forces are always greater when one speeds at 80 miles an hour than when one goes sauntering along at 40!

Chicken life from another perspective, is influenced by *genes* and *germs*, and *gumption*, which includes a sensible and reasonable control of the environment. Folks possessed of gumption have learned to apply the "health officer" principle of management, and in so doing, have made real progress in reducing poultry flock mortality. There is a parallel with human experience that may be helpful in providing the right perspective. Human beings live longer today than at any time in human history, because we have been putting increasingly more emphasis each year on the "health officer" approach to human health main-

\* Presented at the Poultry Short Course, North Dakota College of Agriculture, August 1944.

tenance. Just as many things can happen to a chicken worth, let us say, \$1.00, as can happen to a million dollar human being, and to get almost the last word on what caused Hen No. 421 to die before her time, will require as much professional skill, as is invested in studying variations from normal in a million dollar member of your family. Obviously, we do not have enough trained professional service even to handle competently, the health problem of human beings on an individual basis, so we can see that with poultry disease problems we are absolutely limited to the "health officer" approach. The health officer applies proved principles of sanitation and hygiene to prevent the spread of infectious troubles from one chicken to another and to build the best possible defense against their development in the first place.

We are favorably impressed with the professional approach to this problem, as given in your short course program. We have yet to work out a satisfactory way for rewarding professional veterinarians for the help which they can give us. Perhaps the final solution of this problem will be something like the Chinese system, which rewards the doctor for keeping a person in health, and not for treatment of a disorder after it occurs.

### **In Defense of Life**

In building for greater livability, we want to use those natural defense factors which help in the maintenance of life. These are so obvious, that we sometimes overlook their significance. The skin, for instance, is a natural defense mechanism against bacterial invasion, and as long as we keep it intact, we have considerable protection. Likewise, the mucous membranes which line the digestive tract are a barrier to infections as long as they are normal. Good rations and clean feeding practices help to maintain normal skin tissue protective quality, and aid in the control of intestinal parasites.

The blood tissue provides much protection against disease producing factors. A typical four pound hen has 4,500,000,000 leucocytes, or white

blood cells, and 380,000,000,000 erythrocytes, or red blood cells. Good nutrition and good management will provide the normal number of units of these soldiers of health defense.

Genetics is a relatively new science, and, admittedly, a very complicated one. Its principles are, however, being used very effectively in the improvement programs of our most successful breeders. Sometime ago we visited an engineering laboratory where we saw numerous ingenious devices for measuring the strength of concrete, steel, and other structural materials. We do not have such devices for measuring the strength of chickens, but we have something that is just as useful. Chickens that have lived in a particular environment, which is never quite perfect, for two, three, four, or five years, must have something which those birds which died earlier did not have. Their capacity to live has been demonstrated far beyond the theoretical stage, and this capacity should be used in our improvement programs.

I wonder if we yet fully appreciate the value of a suggestion made by the late Raymond Pearl of Johns Hopkins University, one of the most highly respected biologists of our time. Dr. Pearl, you will remember, started his research work with some very useful poultry genetics research at the University of Maine. After a considerable period of research and reflection, he answered a question on poultry health maintenance and production improvement with this recommendation.

"If I were in a position to do so, I should like to try for a period of years, the experiment of breeding each year from the oldest hens which could be had, and from which it was possible to get any chicks at all. To insure a reasonable degree of fertility, I should use younger male birds. Such offspring as were obtained would be kept as a wholly separate flock, and line bred, working in as much high longevity blood as possible.

"I feel confident, from what little I know of the biology of poultry, on the one hand, and of duration of life, on the other, that after about five years, I should have a flock of poultry of astonishingly strong constitution, extremely low chick mortality, and, I think, high productiveness."

## Aids to the Health Officer

There are other aids to the health officer which can be suggested:

1. The use of roosting racks, which promote sanitation, reduce the concentration of life in the environment somewhat during the time that the birds are on the roost, which is normally just about one-half the time. Roosting racks also help to keep the feed and the water supply clean, and from the standpoint of economy, they provide better conditions at a lower labor cost.

2. Persistent culling will be used by the health officer. Cull for production, cull for uniformity, but *above all things, cull for the capacity to live.*

3. Early recognition of birds which are out of condition, and prompt segregation is another principle which the health officer will use with high intelligence.

4. Certain biologics are helpful, and some of these you know about and have used. Everybody recognizes the great value of pullorum antigen for the control of pullorum infection. Chicken pox vaccine and laryngotracheitis vaccine are sometimes helpful, but they had best be used under the direction of a professional veterinarian. The number of biological products which will be used by the poultry flock health officer, however, can almost be counted on the fingers of one hand.

5. Disinfectants will be helpful, but we must remember that physical cleanliness is the basis of most effective disinfection. Common lye solution made by dissolving one 12 ounce can of household lye in 10 gallons of water, is one of the best chemical aids that we have, and we should not form a prejudice against it, because we can get "*three cans for a quarter*" at most grocery stores in the Middle West.

6. Legislation can help the health officer. Pullorum and bronchitis infected chicks are a hazard to all poultry flocks, and we have a right to insist that these be prevented from moving into our communities. We CAN improve the rules for playing the game with respect to the rights of others. Your own state has taken a very progressive step in this respect.

We still live under conditions of great freedom in the greatest country on earth. We can raise chicks or not, as we choose. We can produce chicks or not, as we choose. With the great freedom which we have, we should very naturally develop a sense of responsibility toward those who buy our products. *Freedom and responsibility go together.*