

## REPRODUCTION OF PIGEONS LIMITED IN MOTION

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The problem of the effect of the muscular system, in particular of the influence of movement (exercise) by the animal on reproduction, has not been investigated sufficiently as yet. However, it has not only a theoretical, but also a practical, significance, since the role of a factor on which the productivity of agricultural animals depends is clarified. In the area of aviculture the significance of this factor has grown recently in connection with the development of concentrated, or cage, maintenance of the birds. The bird is placed, sometimes from the moment it is hatched, in cages where it produces, always under conditions of very limited movement [5].

We set ourselves the problem of studying the effect of cage maintenance, limited movement on the reproduction of birds. The investigation was carried out with pigeons, for which data are available regarding the influence of other factors on reproduction [1-3].

### EXPERIMENTAL METHODS

The experiment extended over 3 months— from January to March, inclusive. Two identical groups of adult carrier pigeons, 60 pairs in each group, were placed in two rooms of the same building with central heat, which allowed the temperature to be kept at 10°. One group was maintained in aviaries 2.2 m high with a floor area of 0.5 m<sup>2</sup> per pair, the other group, in pairs in individual cages with the same floor area, but 0.3 m high.

Thus, the birds in the first group could fly freely, the birds in the second group were deprived of this possibility.

The feeding, temperature regulation and illumination were the same for both groups. Basing ourselves on the results of preceding work [1, 2], we employed a 14-hour light day (natural light plus supplementary electric light), counting on assuring the full-value reproduction of the experimental birds by this means—egg-laying and hatching.

### EXPERIMENTAL RESULTS

The results which were obtained are shown in the table.

TABLE 1

Reproduction of Pigeons Under Different Maintenance Conditions

Group	Maintenance	Eggs laid	Chicks hatched	% hatched
1	Aviary	246	196	79.2
2	Cage	220	89	40.5

The figures presented in the table show a certain difference between the aviary and cage pigeons with respect to egg-laying. The pigeons in cages laid 26 eggs less than the ones in the aviaries. The difference is comparatively small; it can be said that limited movements does not prevent, but only slightly limits egg-laying.

The comparison of data on the hatching of chicks leads to different results. Out of approximately equal numbers of eggs, 195 chicks were hatched in the aviaries, 89 in cages. In the first case, the percentage hatched was close to 80, in the second it was almost half this amount (40.5%).

Thus, limited motion, decreased function of the muscular system, decreases egg-laying only insignificantly, but affects hatching sharply.

Such a sharp difference in the results of reproduction between aviary and cage pigeons is explained by the fact that pigeons are the only species of agricultural birds which have kept the ability to fly to a full extent (especially carrier pigeons).

The data obtained permit the statement to be made that the cage method of maintaining pigeons is not expedient.

From the point of view of general biology, the fact that limiting movement, like limiting light, affects hatching first is most interesting [1, 2]. Consequently, at the same stage of reproduction pigeons react to the action of outside factors in the same way, while at different stages of reproduction they react differently, to the action of the same factor. This confirms the fact that when appraising the effect of external conditions on the biological processes, the peculiarities of the internal (physiological) mechanism of these processes should be taken into full consideration.

In the case we investigated, while studying the changes in the process of reproduction caused by the lowered activity of the animal, two basic possibilities should be taken into consideration: the changes can depend either directly on the lowered function of the muscular system, or on the subsequent changes in the bird's system. At this stage of investigation, this question cannot be solved. One can only suppose that the crux of the matter is in the general (secondary) changes. In favor of this hypothesis is the lowered appetite typical of cage pigeons, intestinal atony, and other phenomena, which indicate deep general systemic disturbances. More detailed study of these should be the subject of further investigations.

#### LITERATURE CITED

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\* In Russian.