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**Effects of Inbreeding on Fecundity  
In Rhode Island Reds**

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**Inbreeding has been used extensively for establishing uniformity in herds and flocks. This report covers the results of inbreeding poultry for high fecundity characters when rigid selection of female breeding stock was practiced.**

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## EFFECTS OF INBREEDING ON FECUNDITY IN RHODE ISLAND REDS

By F. A. Hays, Research Professor of Poultry Husbandry

### INTRODUCTION

Two experiments previously reported by Hays (1924 and 1929) have shown that inbreeding reduces egg production. The birds in these experiments failed to exhibit many of the characters that make high production possible. In view of these results it is conceivable that the standards for selecting the foundation stock as well as for the selection of breeders each year were not so rigid but that many undesirable characters became intensified through inbreeding. In order to overcome these possible defects, a new experiment was started in the spring of 1929 using very rigid standards of selection.

The new project was made up of three lines of essentially unrelated birds. Line A breeding pen consisted of three groups of three full sisters each. These three groups of sisters had the same sire, but their dams were essentially unrelated. A check group was made up of three females selected at random from the high fecundity flock but not related to the inbred birds. All females were pullets, and the entire group was mated to the sire of the inbred pullets. Line B and line C breeding pens were made up in the same general way as line A, but the birds used in each line were not related to the birds in either of the other lines.

The 1930 matings consisted of pullets from the three lines mated to a cockerel of their own line and three check pullets selected from the general flock. There was one full-brother x sister mating each in lines A and B and two in line C. The other inbred matings were half-brother x sister matings. Daughters were retained from one inbred mating (half-brother x sister) and from one check mating in each of the three lines.

The 1931 matings consisted in line A of one half-brother x sister mating and five full-brother x sister matings with three check matings. For line B there were four full-brother x sister matings and three check matings. Line C had three full-brother x sister matings and two check matings.

Matings for 1932 in line A consisted of four full-brother x sister matings, two matings with line C and two check matings. Line B was discontinued with the 1931 generation because none of the females in this generation qualified for breeding in 1932. In line C there were two full-brother x sister matings, three matings with line A birds and two check matings.

The matings of 1933 to produce the last generation were as follows: An inbred line A male was mated to one of his full sisters, to two A and C line cross females, to four check females from line C, to five check daughters from the 1932 check matings in line A, and to one female selected from the general flock. In line C a male from a cross of lines A and C was mated to four of his full sisters, to one inbred line C female, to four line C 1932 check females, and to one female from the general flock.

### Standard for Selecting Female Breeders

A careful study was made of the flock as a whole to discover those families