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Developing Rapid-Feathering Chickens

I. L. Williams and H. L. Wiegers

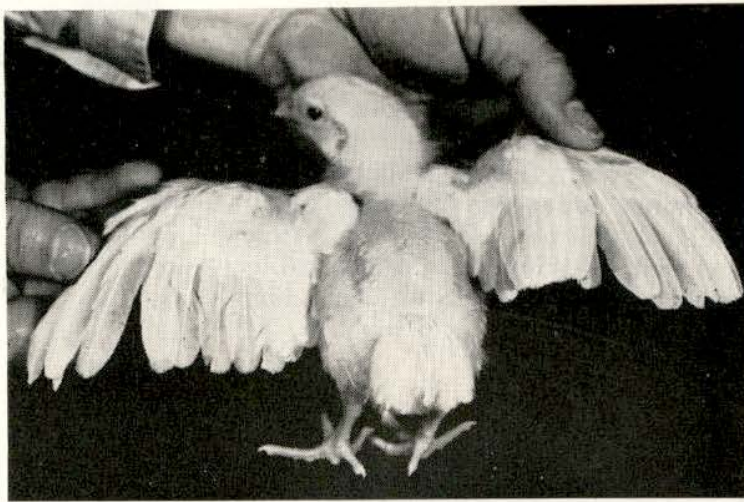


FIGURE 1. Rapid feathering at ten days of age. Note tail feathers at least one-half inch long, well developed primary and secondary wing feathers, and wing fronts fairly well covered.

FIGURE 2. Slow feathering at ten days of age. Note absence of tail feathers, partially developed secondary wing feathers, and absence of feathering along wing fronts.



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THE OBJECT of this circular is to acquaint the poultry producer, hatchery operator, or any other person endeavoring to develop improved strains of chickens with a satisfactory method for eliminating slow-feathering individuals from his flock.

Slow-feathering birds are those that develop feathers at a slow rate during the first three months of growth, and exhibit numerous partially developed (pin) feathers which are difficult and, in many cases, impossible to remove in the dressing operation. Such birds present a poor appearance to the consumer, and are always placed in the lower grades for dressed poultry. The incidence of slow feathering (barebacks) is much greater in the general-purpose breeds, but the egg-producing breeds also produce occasional slow-feathering offspring.

Rate of development of wing and tail feathers is controlled by a sex-linked gene, the one for slow-feather development being dominant. Some investigators believe that fast-feathering birds can be identified at hatching time by noting the development of wing feathers. Those birds with primary wing feathers about twice the length of the covert wing feathers, or those birds with at least seven well developed secondary wing feathers are designated as fast feathering. Considerable variation in feather development at hatching time has



FIGURE 3.
dominant sex-linked gene
autosomal gene
the absence of
on the right
purposes.

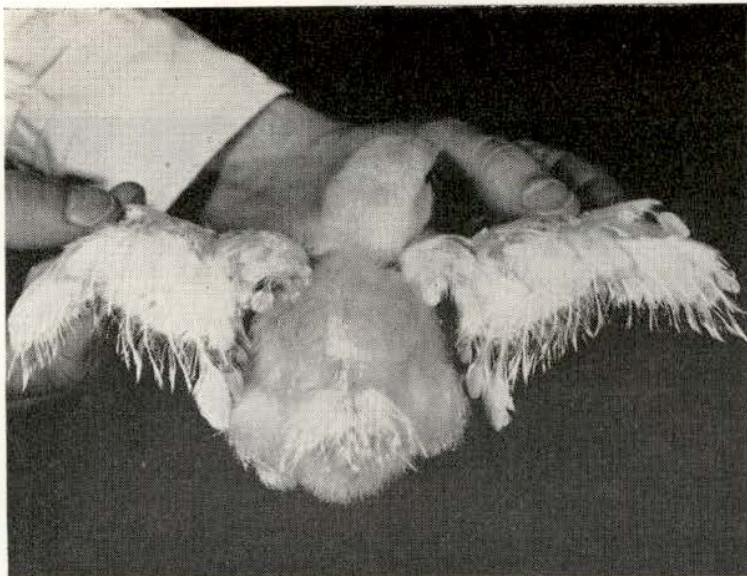
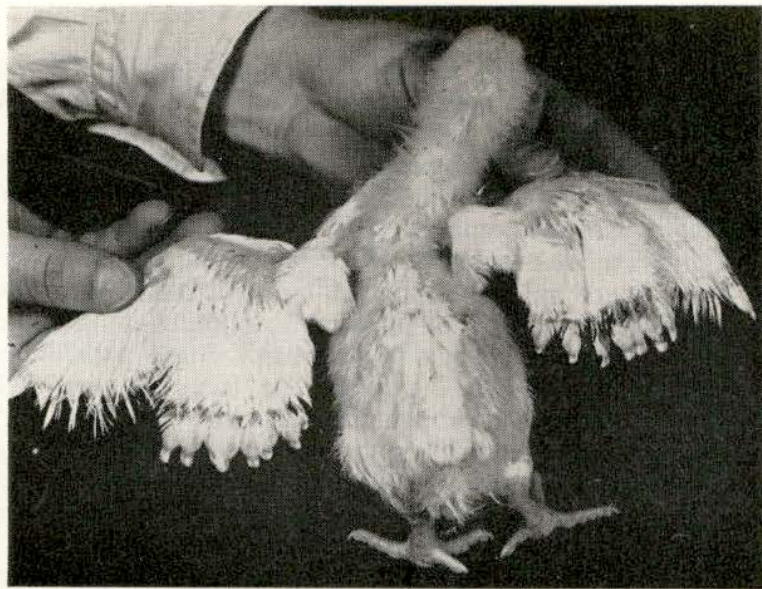


FIGURE 4. Four-week-old birds that will probably transmit the recessive gene for slow feathering. Both were judged as fast feathering at the ten-day examination of tail feather development. Less than one per cent of 1,800 birds judged as fast feathering at ten days failed to develop feathers rapidly over the back, which indicates that less than one per cent of the birds in the Station flock are transmitting the dominant gene for back feathering.



feathering birds at four weeks of age. These birds have inherited the gene for tail and wing-feather development, as well as the recessive, or back feathering. Note variation in the development of back feathering, and feathers; feathers along the wing fronts are also characteristic. The bird examined until eight weeks, might erroneously be retained for breeding



gene for back
of wing and
feathering at
most of the
to their off-

been noted. It is doubtful that 100 per cent efficiency can be attained by selection at this age. Approximately ten per cent of 2,000 White Plymouth Rocks, judged as fast-feathering at time of hatching, were later observed to develop feathers at a slow rate.

Ten days of age is the most satisfactory time for accurate results in selecting for the wing and tail characters. Those birds with tail feathers at least one-half inch long are sure to transmit the recessive sex-linked gene for wing and tail feather development. Individuals such as that in Figure 1 should be retained for breeding stock, while birds like that in Figure 2 should be sold as soon as they reach marketable age.

In addition to the sex-linked gene for wing and tail-feather development, there is a dominant, autosomal gene for completion of back feathering. Variation in the development of back feathers becomes apparent at four to six weeks of age. In order to eliminate all birds that do not feather rapidly over the back, examination is necessary at four weeks of age for those birds retained as potential breeders after the tenth-day examination.

Selection Procedure

The procedure in developing rapid-feathering chickens is as follows:

1. Retain those birds which have tail feathers at least one-half inch long at ten days of age.

2. Retained birds should be examined at four weeks of age for development of back feathers. Only birds with back feathering, as shown in Figure 5, should compose the breeding flock the following year.

It may be necessary to repeat the selection procedure for several successive years in order to reduce to a minimum those birds in the flock that transmit genes for undesirable feathering characters, especially the recessive gene for back feathering. Such a selection procedure was followed at this Station during the two seasons 1946-1947. The Station flock of White Plymouth Rocks had not been previously selected for feathering qualities other than at eight weeks of age. During this time, the incidence of slow-feathering individuals has been reduced from 62.5 per cent in 1946 to 15 per cent in 1947. (Two thousand birds were hatched in 1946 and 2,700 in 1947.)

It should be remembered that factors such as overcrowding, dry atmosphere, and high brooding temperatures also cause slow feather development. If inherited characters are to be expressed, optimum conditions for rapid feather development must be maintained.



FIGURE 5. This four-week-old bird has inherited the recessive, sex-linked gene for wing and tail feather development as well as the dominant, autosomal gene for completion of back feathering. For breeding purposes, select and retain individuals with this type of feathering.