

CULLING AND BREEDER SELECTION

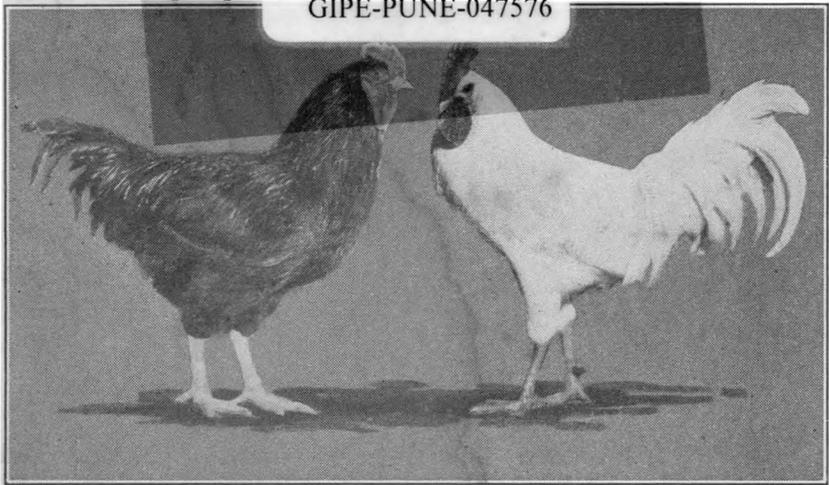
By

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Breeder Males—Showing Desirable Characteristics.

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NORTH DAKOTA AGRICULTURAL COLLEGE
Fargo, North Dakota



SELECTION is the basis of poultry flock improvement. The average number of eggs per hen and the cost of producing these eggs is of greater importance than the number of hens when profits are figured.

Maintain high average egg production and lower cost of production by continuous rigid culling.

The Standard bred bird with body type and plumage color characteristics of her breed and variety is the most economical bird in the long run.

Crossing breeds or varieties is not recommended. While the individuals of the first cross may have the good qualities of both parents, further crossing will result in a degenerated mongrel flock.

Mongrel birds are an economic loss and an eyesore to the farm.

Birds with Standard disqualifications should not be used as breeders.

For the average poultry raiser pullets can be culled only on the basis of breed type, color, vigor, vitality and other Standard qualifications.

Egg production ability is not readily apparent in external body characteristics until the bird has been laying for some time.

Culling on the basis of health should be a continuous "year-around" practice.

Egg production is primarily a matter of breeding and secondarily a matter of feeding, housing and management.

Vigor and vitality are the most important factors to be considered. Without these qualities, profitable egg production, longevity, resistance to disease and breeding ability are impossible.

More eggs from the same number of hens will result from careful selection of breeders. The same number of eggs from fewer hens should be the result of culling.

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Culling and Breeder Selection

By FRANK E. MOORE, Extension Poultryman

CULLING is the practice by which poor producing and undesirable hens are eliminated from the poultry flock, and the good producers and most desirable birds are selected for further use.

Culling is a sound management policy and an important factor in breeding success. It is the result of a desire to secure more profit and pleasure from efforts expended in the poultry enterprise. Culling should be a "year-around" practice. Undesirable individuals, from the standpoints of health, vigor, vitality or any other readily distinguishable condition, are no longer of value and should be eliminated as soon as detected.

From a purely breeding standpoint as well as for the selection of year old birds to be kept over as layers, the complete flock handling may be left until late summer or early fall. The marginal hens, those individuals between outstandingly high and extremely low producing ability, may be judged accurately at this time.

Culling applies not only to hens but also to hatching eggs, baby chicks, growing pullets and breeding males. This circular, however, calls attention to factors of culling as they apply to matured

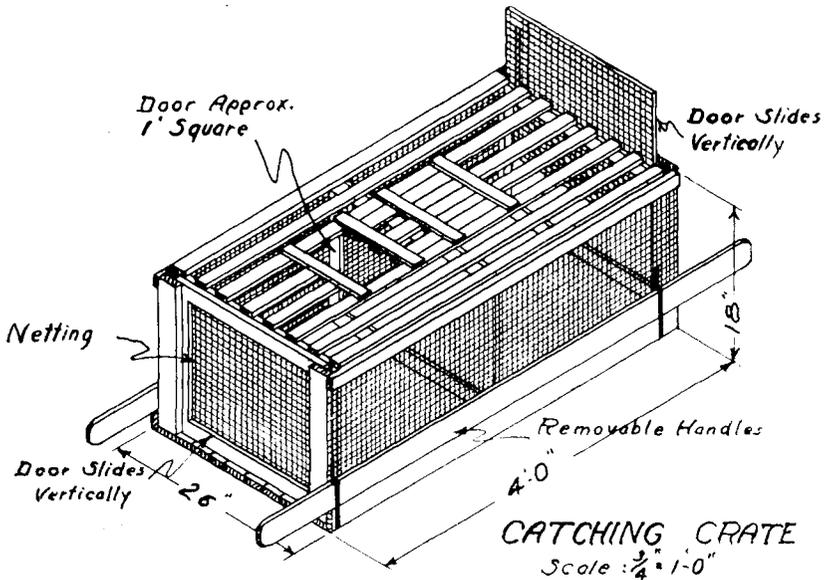


Figure 1. CATCHING CRATE

A catching crate such as is illustrated here, with wire sides, removable ends and a door in the top is a most useful device in handling birds at any time. Place it outside the house against the fowl door and drive the hens out of the house into the crate or use it at the end of an improvised funnel or V shaped pen inside the house.

hens and breeding males. See North Dakota Extension Circular 87, Incubation and Brooding, for culling practices applicable to hatching eggs.

It is not advisable to use pullets as breeders. The external factors indicating egg producing ability are not evident enough for general use in culling until the bird has completed one year of production. Unless one adopts the practice of breeding only from proven dams mated with males of high producing qualities, the resultant effects and tendencies to improve the flock are very slow and may even be discouraging.

Where avian tuberculosis is known to be present in a flock or on the premises, it is not advisable to hold birds longer than one year. Where avian tuberculosis does not exist and the poultryman is interested in flock improvement, especially from the standpoint of egg production, outstandingly good hens may be kept as long as they will stand the tests of rigid culling, regardless of age. Their ability as breeders should be the measure of their value. A hen usually lays more eggs during her first year of egg production than in any year thereafter. She will usually lay fewer eggs each succeeding year. The hen that was a high producer during her first year will usually be a correspondingly high producer during the years following. A poor producer during her first year will usually be a poor producer during the years following and should not be kept.

In culling and breeder selecting there are several characteristics or indicators which aid in measuring a bird's value. Sometimes these factors overlap and sometimes they are even contradictory, in which case the best judgment should be used in weighing all evidence before passing an opinion.

Before applying any of the following culling tests it should be known that the flock has been subjected to normal feeding and management for a considerable period previously. Many good individuals may be made to assume the appearance of culls thru faulty feeding or careless management.

Handling the Birds

Accurate culling necessitates a careful examination of each bird. To facilitate handling, the birds should be shut up the night before. A catching crate into which the birds may be driven quietly and from which they can be removed easily will be found a great convenience. Do not over crowd the hens in the catching crate or in a corner of the house. A catching hook made of stiff wire may be used to advantage in picking up the stray birds or in picking

out the exceptionally poor birds as they make their appearance from time to time. Handle them carefully and quietly, with as little excitement as possible.

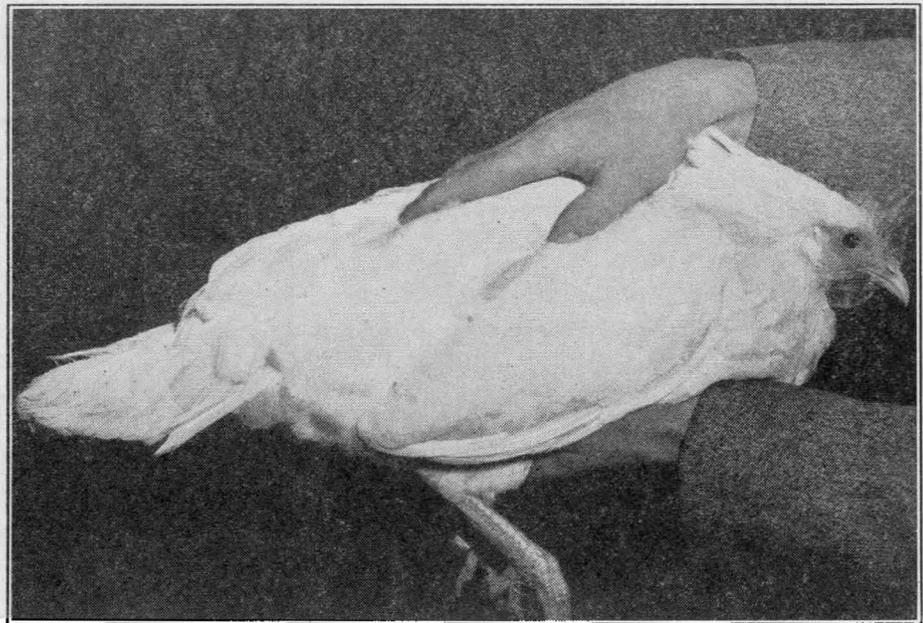


Figure 2. HOLDING HEN WHILE MAKING CULLING OBSERVATIONS

Head toward the holder. Thumb and forefinger of left hand grasping right thigh, one or two fingers between thighs with other fingers grasping left thigh and weight of bird comfortably held in palm of hand. The right hand is free to note back width, body conformation and to examine stage of molt and pigmentation. The bird is comfortable yet rigidly held. Care should be exercised in handling birds that are in full production. Rough handling may result in rupturing egg yolks or otherwise injury to the bird to the extent that death may result.

Vigor and Vitality

Vigor and vitality should be the first culling test to apply. These qualities indicate health and longevity, without which a hen can not be a good producer consistently nor be desirable as a breeder. All weak, undersized, diseased or unthrifty individuals should be eliminated from the flock as soon as their appearance is noticed.

High vigor and vitality are expressed in the bird's activity and alertness. A prominent bright eye, a broad, fairly short head with clean cut face and strong, well curved beak denote vigor and vitality as does also width between the legs and a broad, deep chest. "Crow-headed" individuals, the birds with narrow and long heads and the birds that stand "cow-hocked" and upon handling display a narrow body with shallow or sunken chest are undoubtedly lacking in vigor, vitality and productive ability.

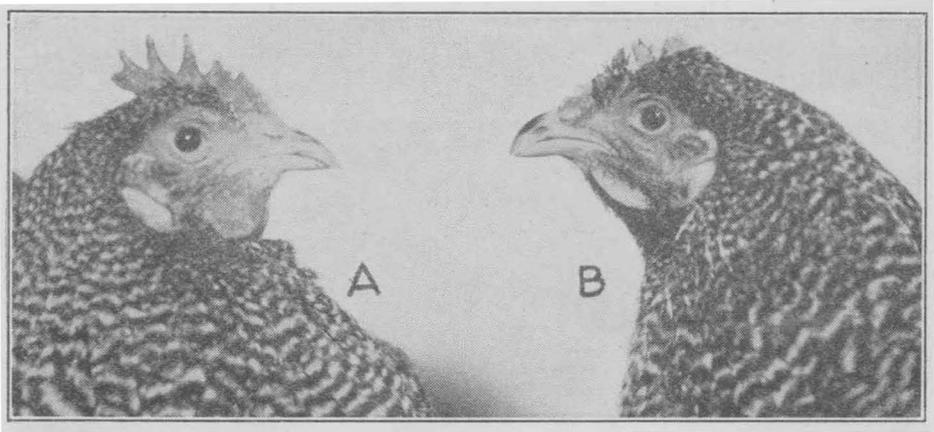


Figure 3. CONTRASTING HEADS

A—Good Head

B—Poor Head

A: An individual with an abundance of vigor, vitality and temperament. Note the clean cut face, the bright, protruding eye and a proportionately well balanced head from the standpoint of length and depth.

B: A dull, listless, beefy individual, entirely lacking in temperament. Note the wrinkled face and the dull, sunken eye.

Breed Characteristics

The type and breed characters as outlined in the Standard of Perfection for the various breeds and varieties are the results of years of efforts in breeding and standardization and are considered sound and basic necessities to securing the most profit from any particular breed or variety. To become thoroly acquainted with the particular type and breed characteristics of any particular breed or variety, poultrymen are urged to study standards for that breed and to attend poultry shows and observe the winning birds.

Head and Adjuncts

The general appearance of the bird's head denotes her productive ability. Besides being broad and fairly short the head of a good producer should show flatness at the top of the skull. The eye should be set well up toward the top of the skull and be protruding, prominent and alert. The skull width should carry well forward toward the nostrils. There should also be a certain amount of balance or proportion in the head of the good producer. This specifically refers to the distance from the base of the comb to the top of the wattles as compared to the distance from the front of the ear lobe to the tip of the beak. The more uniform these distances the better the head balance. The head of the poor producer is often narrow, long, lacks "carry forward" of skull width and is also lacking in balance one way or another. The eye is often dull, listless and sunken, being overhung with a heavy eyelid. The face

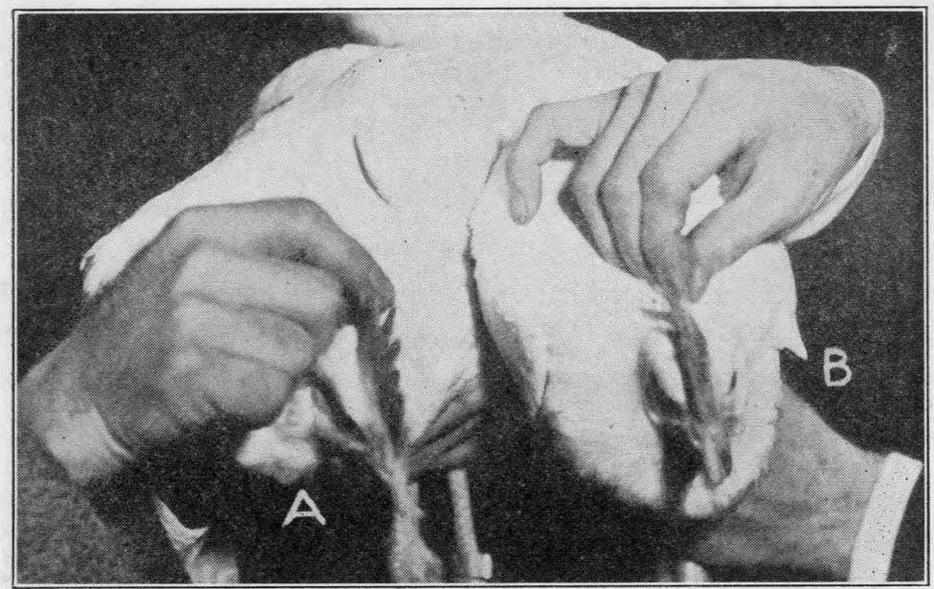


Figure 4. SKULL WIDTH

A—Good Width

B—Poor Width

Note distance from base of comb to edge of skull

A: A good hen—wide skull, wide comb base, width carries well forward. Beak is short and stocky.

B: A poor hen—narrow skull, lacks carry forward of skull width. Beak is long and slender.

may show a decided sunkennes in front of the eyes. A general beefy, or heavy, coarse head is also indicative of low productivity. "The head is the source of nervous energy, intelligence, tempera-

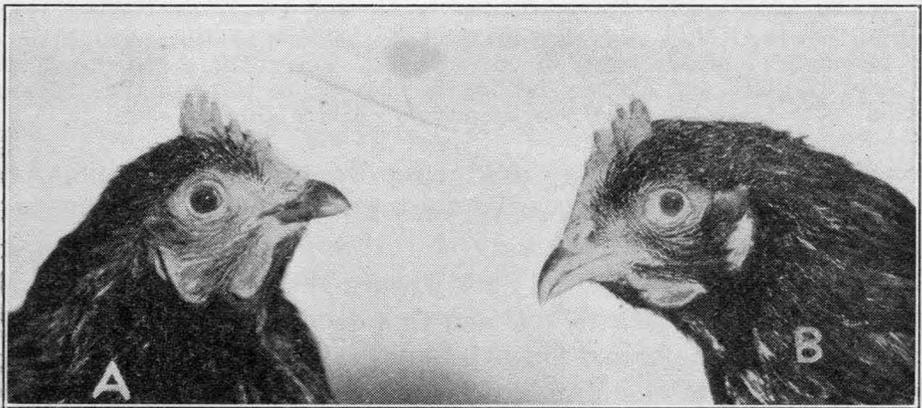


Figure 5. CONTRASTING HEADS

A—Good Head

B—Poor Head

A: Well balanced, eye located high up and in the rear part of skull. Width of skull carried well forward. Short, strong beak.

B: A low vitality individual. Shallow, long and narrow head. Small, listless eye. Long, slender beak.

ment, expression, disposition, location of the senses, and actions.”

The comb and wattles of the hen are secondary sexual characteristics and are considered indicative of the activity of the ovaries or egg producing organs. Combs and wattles should be well developed and of a fine texture. When the hen is laying they are bright red in color, full and velvety to the touch while in the non-producer they are pale, shrunken and scaly.

Body Conformation

The efficient producing hen consumes and converts large quantities of feed into eggs. This demands ample body room for large,

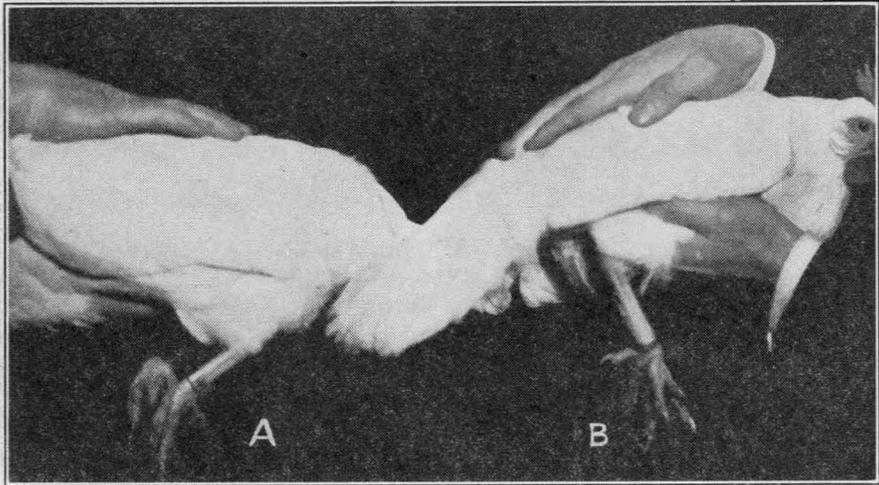


Figure 6. BODY DEPTH AND CONFORMATION

A—Good

B—Poor

A: A good hen—Long, flat back. Deep, full breast with depth carried well to the rear. Note the relationship of the holder's hands to each other.

B: A poor hen—Sloping or curved back. Very little depth through the front of the bird and entirely lacking in body depth through the abdominal region. These are the same hens as are shown in Figure 7.

capacious digestive and egg producing organs. The desirable body is one that is broad and flat of back **its entire length**. The ribs should be well sprung, showing width and depth over the heart. This width should carry well back toward the tail. There should be ample depth from back to keel and this depth should extend well to the rear also. The breast is full and deep. In addition the individual should conform to the standard breed type.

The poor producer is narrow backed, lacking in heart girth, shallow bodied and is generally lacking in body capacity.

The spread of the pubic bones can be used only as an indication of present production. The distance between the pubic bones

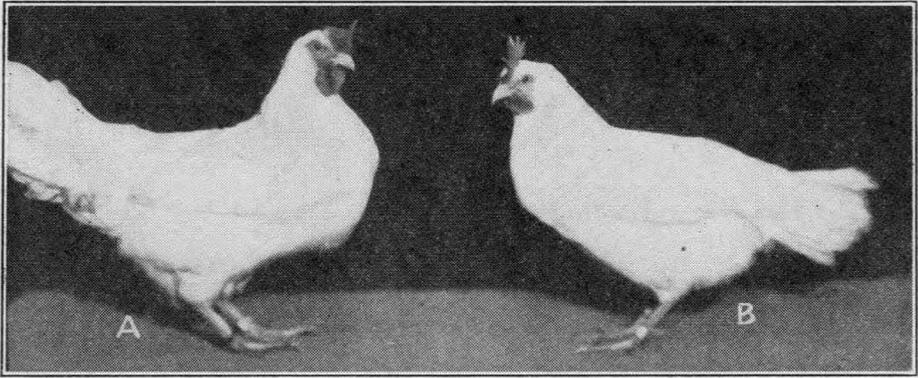


Figure 7. A GOOD AND A POOR PRODUCER

A—Good

B—Poor

A: A long, deep, well proportioned body. Deep, full chest. The depth is carried well to the rear. A clean cut, well balanced head with comb and wattles well developed.

B: A shallow body, sunken chest, sloping back. A listless head with comb and wattles shrunk and dried.

and the keel is an indication of abdominal capacity. Good distance and a soft, pliable skin in the abdomen are associated with good production. Lack of distance, a lump of hard fat or a thick, leathery skin are usually found in poor producers. This spread, distance and texture of skin will vary, however, with the laying condition of the bird. With a bird out of production little emphasis should be placed on the abdominal condition.

Molt

It is natural for a hen to shed her old feathers and grow a new coat annually. This change of plumage is called the molt. Usually when a hen stops laying she starts to molt. Very often constitutional "upsets" caused by abrupt changes in feeding practices, severe climatic changes or other unusual changes will cause partial molts. The annual molt, however, occurs during the late summer or fall. The later a hen molts, other factors being equal, the better the hen's egg record has been, while the early molter is just the opposite. Under normal conditions the molt may then be used as one of the means of selecting long time producers for breeders.

The story told by the molt is best read in the primary section of the wing. This is the outer section of the wing when unfolded and consists of 10 feathers usually altho occasions where there were 9 or 11 have been observed. In general molts the primary wing feathers are usually dropped one at a time, beginning with the first or inside primary, at intervals of two weeks according to

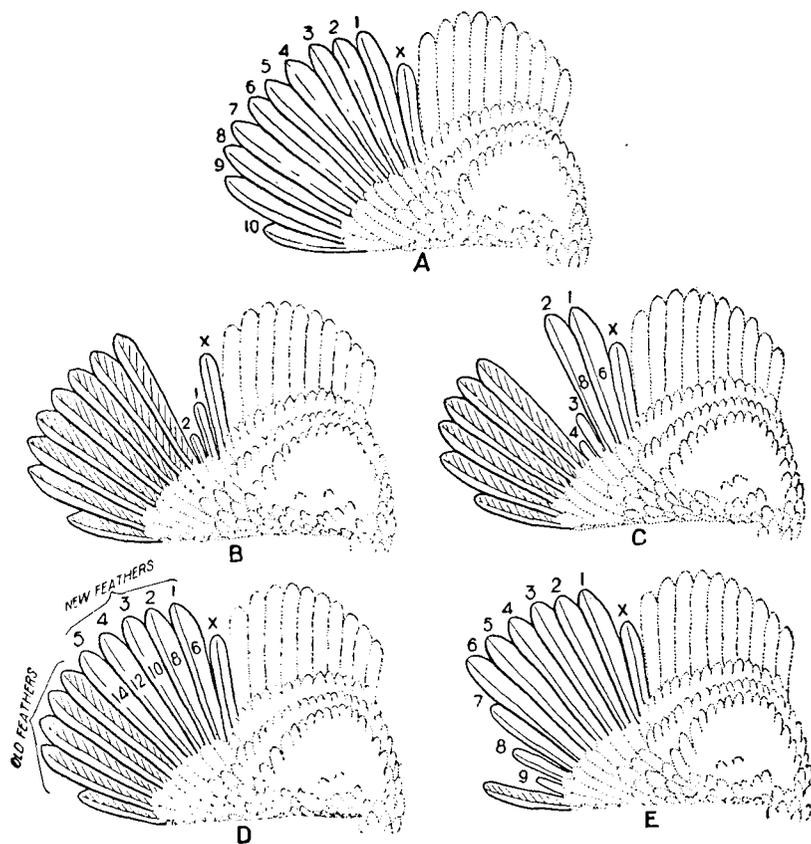


Figure 8. THE WING MOLT

A: A normal wing showing the primary feathers, Nos. 1 to 10. They are separated from the secondary feathers (in dotted outline) by a short axial feather, X.

B: The beginning of a wing molt. Nos. 1 and 2 are new feathers growing in.

C: An eight-week molt. Nos. 3 and 4 are not counted until fully grown.

D: An instance (abnormal) in which five feathers only were molted.

E: A wing completing a normal molt.

(Courtesy Kansas State Agricultural College.)

the duration of the molt. Approximately 6 weeks are required to completely regrow a new primary wing feather. This section of the wing may be used as an index to the duration of the molt or the time that has elapsed since the bird stopped laying. Six weeks should be allotted to the first fully grown feather and two weeks for each additional fully grown feather.

Rapid molters often drop more than one primary wing feather at a time and the new ones will grow back in groups also. This is an indication of a high producing hen, especially if she is also a late molter and is undergoing a normal molt.

The low producer usually molts very slowly, requiring several months to renew her coat of feathers. Observation has disproved the assumption that a hen that molts all summer is a good winter layer.

Pigmentation

When pullets of the yellow skinned varieties reach maturity they usually carry a reserve of fat with yellow color or pigment (Xanthophyll). This is evident in the eye ring, ear lobe, beak, skin and shanks. The same pigment makes the yolk color and comes from such feeds as yellow corn and green feeds. The intensity of the color is affected by the availability of these feeds and by the individuality of the bird.

When the pullets start laying, this yellow fat is removed from the places of reserve and used in the production of egg yolks. The color disappears first from regions of thin skin and profuse blood circulation, production of only a few eggs being required to bleach the vent. With a few more eggs the eye ring or inner edge of the eyelid becomes quite devoid of yellow color. Bleaching or fading next occurs in the ear lobes of white ear-lobed varieties followed by the color from the beak. Bleaching of the beak takes place first at the corners of the mouth or the base of the beak and gradually works to the tips, disappearing from the arch of the upper mandible last. From 4 to 6 weeks of intense egg production, or with less intense layers the production of from 25 to 50 eggs, will eliminate all color from the beak. The shanks are the last to lose their color, fading first from the front and last from the scales just below the plumage line at the rear of the hock joint. From 3 to 6 months of egg production are normally required to completely bleach the shanks.

When a hen stops laying the color reappears in these regions in the same order that it disappeared; that is vent, eyering, ear lobes (if white), beak and shanks. This pigment or yellow color usually reappears much more rapidly than it disappeared, especially when birds are being fed liberally of yellow corn and green feed. These color changes may be used as an index to the length of time a hen has been laying or has been out of production. The observations of pigment changes, however, should be closely correlated with conditions of the molt and vitality of the individual as well as feeding practices.

Pigmentation changes are probably observable more readily and dependably in Leghorns than in Plymouth Rocks and Reds, due possibly to the skin thickness. In white skinned varieties such as Orpingtons and in dark shanked varieties such as Black Langshans no emphasis can be placed on pigmentation.

Broodiness

Many individuals of the so-called general purpose and meat breeds tend to spend considerable time during the spring and summer being broody. Usually from 14 to 16 days of egg production are lost each time a hen is broody even tho she is immediately "broken up." Broodiness is not necessarily an indication of a cull unless the fault becomes persistent. An excellent practice and one way of knowing whether or not a hen is a persistent "setter" is to place a celluloid spiral legband on her each broody period. Those having more than 2 or 3 bands should be eliminated.

Broodiness is a factor in causing heavy, overhanging eyebrows and a lack of luster about the head, especially in the comb and wattles.

Temperament

The high producer has a friendly disposition. She is alive, alert and always busy, and does not object to being handled. She is the first bird off the roost in the morning and the last one to return at night. Her appetite is good, as indicated by a full crop at night. The low producer is listless and shy, she squawks considerably upon being handled, is the first to take to the roost at night and the last to leave in the morning. She does not have very much appetite because she does not lay or work, hence doesn't need it. Her crop is usually empty and she spends considerable time in keeping her feathers in the best order.

The Breeding Male

Vigor and vitality must be first considerations in the selection of the males used to mate with a pen of selected females. The same factors indicating vigor and vitality in the hen and elsewhere discussed are applicable to the male and need not be repeated.

Standard breed type and color specifications for the breed and variety are next in importance and should be closely adhered to. Such assets indicate purity of breeding to a considerable extent.

Ancestry with the qualities that are expected to be intensified or propagated in the stock should be a prerequisite. In trying to increase egg production, use males from dams of high egg records.