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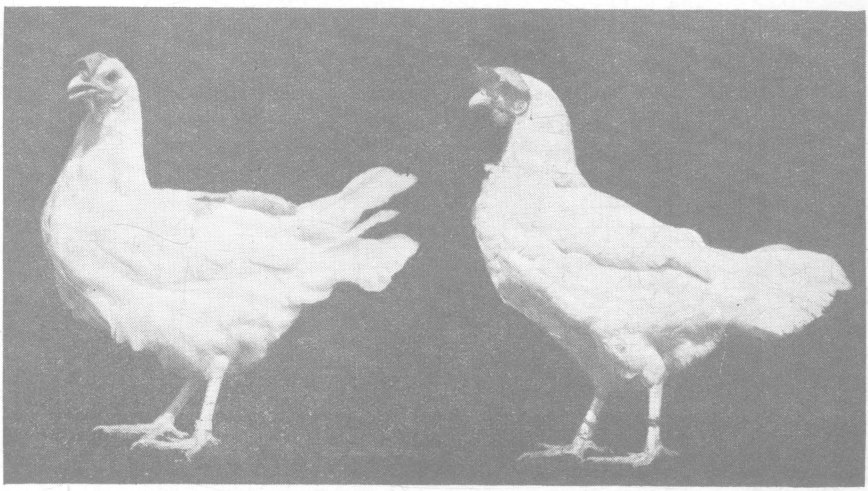
OHIO STATE UNIVERSITY AGRICULTURAL COLLEGE EXTENSION SERVICE
H. C. RAMSOWER, Director

Selecting Hens for Egg Production



The hen on the right is from the University flock and has a trapnest record of 300 eggs. Note the intelligent head, full comb, and good carriage. The hen on the left is a poor layer. Her record is 75 eggs. Note the full face, small comb, and poor carriage.

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THE OHIO STATE UNIVERSITY, COOPERATING WITH THE U. S. DEPARTMENT OF AGRICULTURE,
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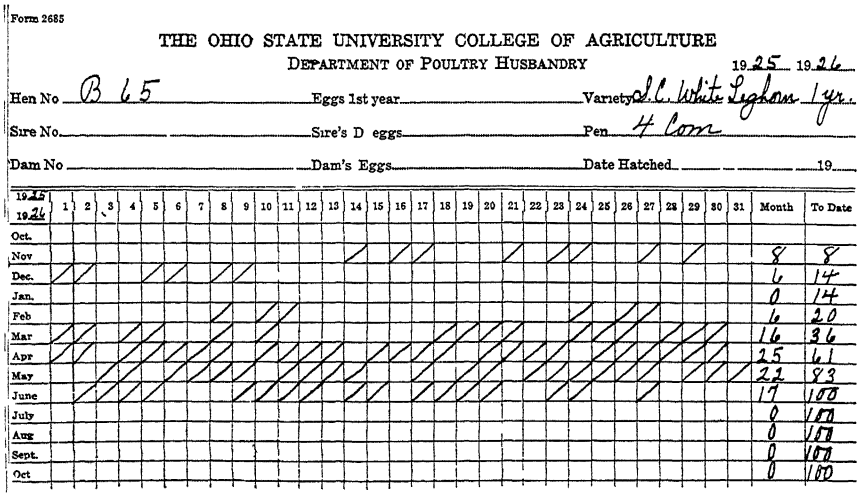
SELECTING HENS FOR EGG PRODUCTION

A high-grade producing hen must possess four qualities or factors in a marked degree. These four qualities are: (1) early maturity, (2) consistency, (3) high rate, and (4) non-broodiness. These characteristics or factors are inherited and may be bred into a flock by rigid selection. Since a portion of the flock is sold each year, it is practical to dispose of those hens that are the least valuable as egg producers.

This bulletin aims to tell briefly how to select for the right combination of characteristics in order to intensify those desirable factors that result in the ability of the hen to lay a profitable number of eggs.



Form 2685

THE OHIO STATE UNIVERSITY COLLEGE OF AGRICULTURE

DEPARTMENT OF POULTRY HUSBANDRY

19 25 19 26

Hen No B 65 Eggs 1st year Variety S.C. White Leghorn 1 yr.

Sire No. Sire's D eggs Pen 4 Com

Dam No Dam's Eggs Date Hatched 19

19 25 / 19 26	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Month	To Date
Oct.																																	
Nov																																8	8
Dec.																																6	14
Jan.																																0	14
Feb																																6	20
Mar																																16	36
Apr																																25	61
May																																22	83
June																																17	100
July																																0	100
Aug																																0	100
Sept.																																0	100
Oct																																0	100

Fig 1—The trapnest record of an inconsistent layer. The record is low because the hen laid at a high rate for only a few months and rested part of the year.

EARLY MATURITY

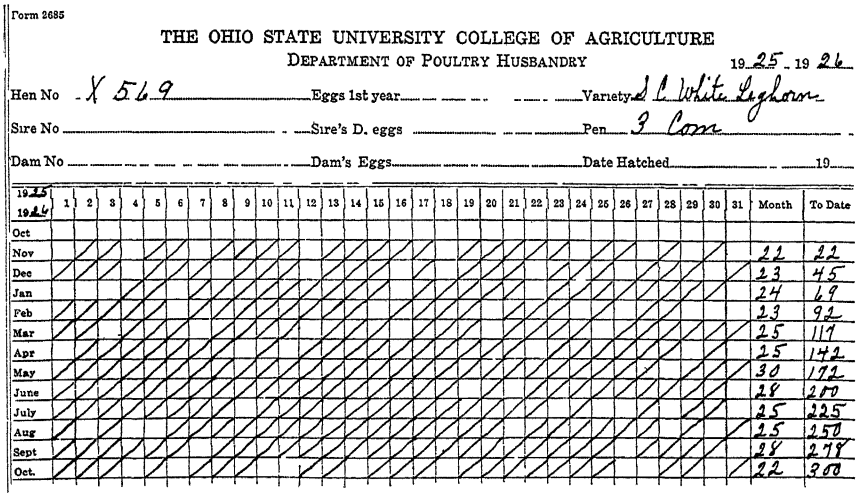
Data are available at experiment stations throughout the country which prove definitely that early maturing pullets lay more eggs than late maturing pullets. The University of Missouri and the Massachusetts Agricultural College each have technical bulletins giving data on this subject. However, it is not the purpose of this bulletin to present experimental data.

What is early maturity and what is late maturity?

The answer to this question is not the age of the pullet when she lays her first egg. There are many factors that affect and determine the age at which the first egg is produced. The feed, range, breed, strain, and possibly diseases, all have a relation to the age of pullets when they come into production.

Since each flock of pullets has had different care and management, and may have different breeding, each flock must be considered as setting its own standard for maturity. As a rule, the early maturing pullets are those that start to lay first, and the late maturing pullets are those that start to lay last. This does not mean that the first pullet in a flock to lay is the best one in the flock. Often the first pullet to lay is not the best. She may be undersized and may not have the rugged physical vitality necessary for a hard year's work. But, those pullets that lay first *after* they have reached the desired physical development are early maturing.

For a working plan, the first 50 per cent of the flock to lay are the early maturing ones and the last 50 per cent, the late maturing



Form 2685

THE OHIO STATE UNIVERSITY COLLEGE OF AGRICULTURE
DEPARTMENT OF POULTRY HUSBANDRY

19 25 - 19 26

Hen No X 569 Eggs 1st year Variety S C White Leghorn

Sire No Sire's D. eggs Pen 3 Com

Dam No Dam's Eggs Date Hatched 19

1925 1926	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Month	To Date
Oct																																	
Nov																																22	22
Dec																																23	45
Jan																																24	69
Feb																																23	92
Mar																																25	117
Apr																																25	142
May																																30	172
June																																28	200
July																																25	225
Aug																																25	250
Sept																																28	278
Oct.																																22	300

Fig. 2—The trapnest record of a high rate and consistent layer. The good producer must lay nearly every day in the month and every month in the year.

ones. The last 10 per cent might be called the culls. There are flocks which do not have 10 per cent cull pullets, but such flocks are the exception. Most farm flocks would be greatly improved by culling out 10 or even 25 per cent of the late maturing pullets.

CONSISTENCY

Consistency means the ability of a hen to keep laying throughout the entire year. The hen that lays only when the weather is nice is not a consistent layer (see Fig. 1). The hen that starts laying early in the fall and lays regularly every month for a year is the consistent hen (see Fig. 2).

There is only one thing the poultryman needs to know in order to tell the consistent layer. That is, is she laying?

COLOR CHANGES

When a hen is not laying she deposits fat on her body. This fat contains a yellow pigment (in yellow-skinned varieties) which gives the yellow color to the legs, beak, skin, ear lobes, eye rings and vent. As soon as a hen begins to produce eggs, this yellow pigment is diverted from the body and is used in coloring the egg yolk. As long as a hen produces eggs, the pigment is all used by the yolk and none of it finds its way to the body. When she stops laying, this pigment is again deposited with the body fat.

The pigment deposited in the body during the hen's rest period gradually fades or bleaches out during production, leaving the body color a bluish white or pink. This fading process follows a certain definite course. The order of fading is always the same and is as follows: first, the vent; second, the eye rings and ear lobes; third, the beak; and lastly, the shanks.

The yellow pigment is derived from the grain and from the green feed that the hen eats. Therefore, the kind of feed a hen has had affects the period necessary for the color to fade. Also, the more yellow pigment that is stored in the body, the longer is the time required for bleaching. The hen that has had yellow corn and plenty of green feed has a larger supply of yellow pigment stored in her body than a hen fed on white corn, with no green feed.

With these facts in mind, it is possible to select the hens that have been continuous, consistent layers and also those that have just begun to lay or have been very poor layers.

Vent, Eye Ring, and Ear Lobe Color—The vent is the first to lose the yellow color after egg production starts. This is due to the fact that those parts of the body where the blood circulation is greatest, fade first. *A white or pink vent of a yellow-skinned bird indicates she is laying.*

The eye rings, which are in the inner edge of the eyelids, bleach out a little more slowly than the vent and, therefore, *bleached or white eye rings indicate a longer period of production than a bleached vent.*

The ear lobes, on the white-lobed varieties, bleach next and on those varieties *white ear lobes indicate a longer period of production than a white vent and white eye rings.*

Beak Color—The beak loses its color before the shanks do, and *a white beak indicates that the hen has been producing eggs for a month or six weeks.* The color leaves the beak beginning at the base, and gradually disappears until it leaves the front part of the upper beak. The lower beak bleaches faster than the upper. The

lower beak should be used for observation when the upper is covered with black or horn, as in the Rocks and Rhode Island Reds.

Shank Color—The shanks are the last to lose the yellow color and for this reason are the surest indication of long, continuous production. *It takes from four to five months for the shanks to become white after the hen begins producing eggs.* The color leaves the front of the shank first and gradually fades from the scales on the back as the length of the laying period increases.

BODY CHANGES

Vent—The vent of a laying hen is large, open, moist, and soft, while the vent of a nonlaying hen is small, closed, dry and puckered.

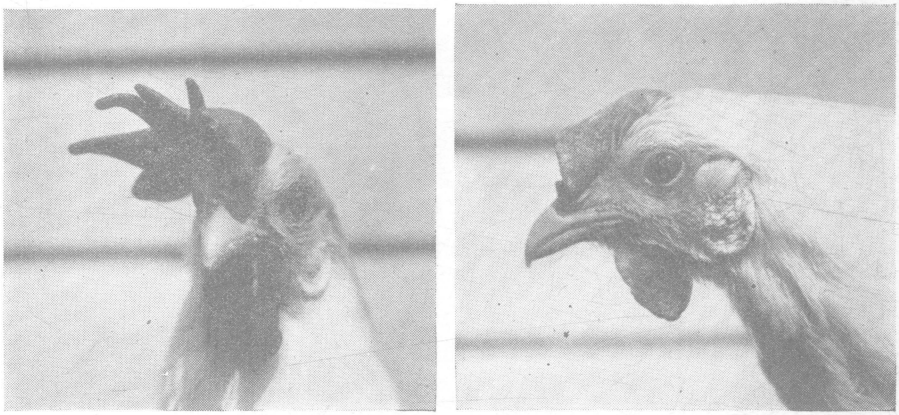


Fig 3—Hen shown on the left is in production. Her comb and wattles are full, and bright. The hen on the right is out of production. Her comb and wattles are small, hard, dried, and scale covered.

Comb—The comb of a laying hen is large, full, and bright in color, while the comb of a nonlaying hen is dry and hard, often covered with scale, and is pale (see Fig. 3).

Abdomen—The fat covering of the body cavity in a laying hen is soft and pliable. It feels very much like a cow's udder that has been partly milked. The skin is soft and velvety. The abdomen of the nonlaying hen is dry and hard.

Pelvic Bones—The pelvic or pin bones of a laying hen are straight and flexible, with very little or no fat around them. They are spread apart far enough to permit the passage of the egg. The spread varies with the individual and the breed, and no definite measurement can be given. In general, however, a laying hen will show a spread between the pin bones of at least three fingers. Practice is

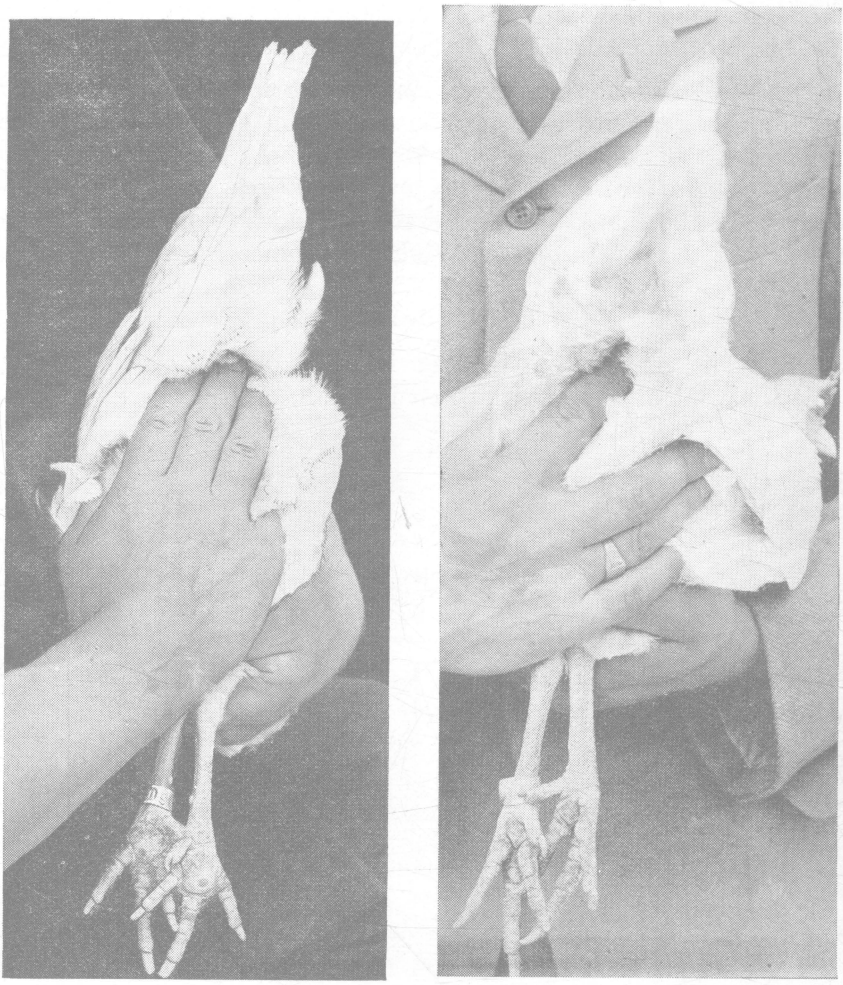


Fig. 4—Measuring the distance between the pelvic bones. The "three-finger" fowl on the left should prove to be an excellent layer if she responds equally well to other tests. The best layers usually show widespread pelvic bones. The "one-finger" hen on the right shows the contracted space usually found in a hen that is not laying.

necessary to determine just what spread indicates that the hen is laying. Keep in mind the fact that a hen that is laying will show a greater spread of pelvic bones than one not laying, and that the bones of a nonlaying hen are thick, stiff, and blunt, with the ends bent in (see Fig. 4).

Distance From Pelvic Bones to Keel Bones—A laying hen consumes more feed than one that is not laying. A high egg producer consumes more feed than a poor egg producer. In order to consume and digest this feed the intestines of a laying hen are

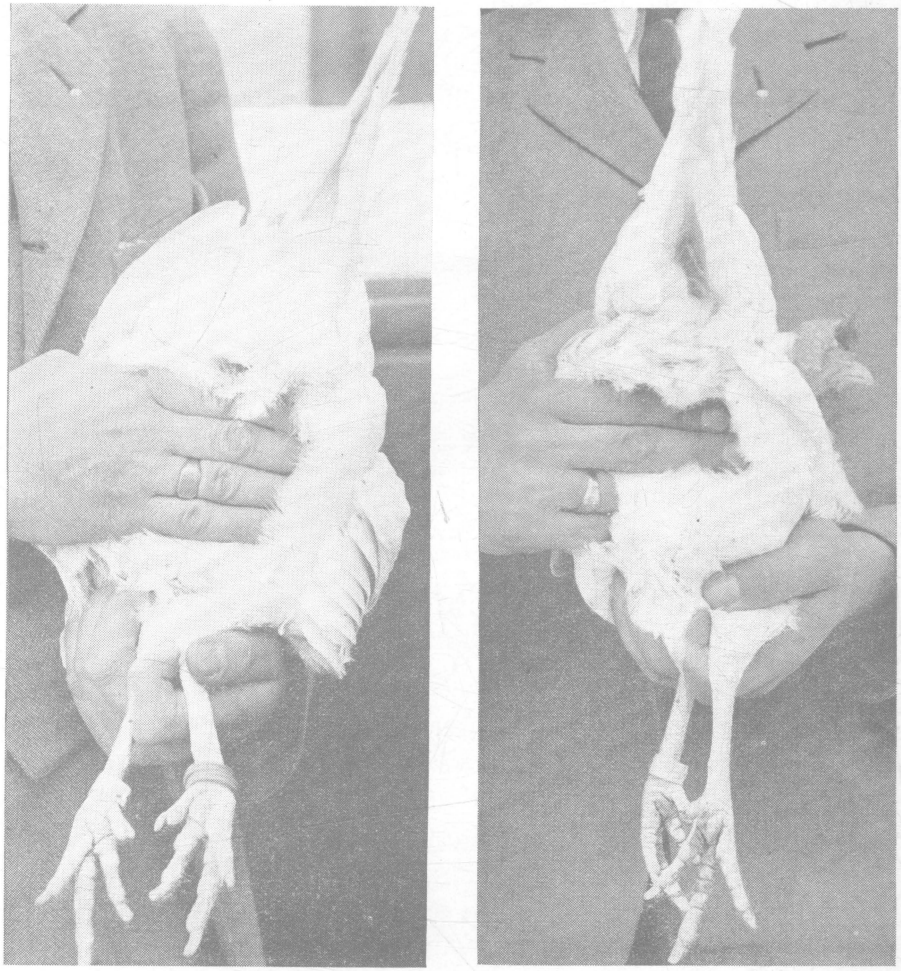


Fig 5—Measuring the span between pelvic bones and keel. The span or distance between pelvic bones and keel is one way of determining abdominal capacity which is closely associated with productiveness. The "four-finger" hen on the left may be counted as a good producer. The "two-finger" hen on the right is pretty sure to be a poor layer.

larger than a hen not laying. When laying, the ovary and oviduct are greatly enlarged and require more room. To provide this extra room the body increases in depth. This is noticeable by the increase in the distance from the pelvic bones to the end of the keel bone.

The increase in size of the body cavity is secured by the dropping down of the keel bone. An idea can be formed as to whether the hen is in a laying condition or not by measuring the distance from the pelvic bones to the keel bone. No definite measurement can be

given that will fit all individual hens. As a general rule, a hen that measures less than three fingers is not laying, or is a poor layer, because such a hen lacks the capacity for handling a large amount of feed. The hen that shows the greater body depth is to be chosen as a good layer if she shows the other marks of egg production (see Fig 5).

The Molt—Most hens stop laying when they begin to molt. It is a fact no longer disputed that a hen, in order to make a high yearly record, must be a consistent layer. The early molting hen is not a consistent layer. She takes all the fall months as a vacation for changing her plumage. The consistent layer molts late and grows her new plumage rapidly.

The hen that under normal conditions molts early, will not lay as many winter eggs as the hen that molts late. Neither will she begin egg production earlier in the spring. No definite date can be set as to early molting. As a general rule, however, *the first hens in the flock to molt should be sold, and the last to molt should be kept for breeding purposes.*

Hens may be thrown into an early molt by starving while laying heavily; by irregular feeding; by roosting in a house that is poorly ventilated; or in any way that tends suddenly to check egg production. Molt from any of these causes should be avoided, as it is likely to result in a lower total egg production. If the pullets are hatched early, they will be laying in the fall and thus the egg production kept up at all seasons.

RATE

By rate is meant frequency with which a hen lays. Some hens lay fifteen eggs per month, while others lay thirty eggs. There are no definite rules for selecting the high rate hen or of identifying the low rate hen. The appearance of the hen gives us no clew to this factor. The only definite, workable means of selection for this most important characteristic of laying hens is by use of the trapnest. When hens are trapnested the exact number of eggs laid is known. Any method of judging rate not based on trapnest records is simply guess work and cannot be recommended as practical.

BROODINESS

The broody hen loses too much time in the broody coop to lay a large number of eggs. Broodiness, like consistency, maturity, and rate, is an inherited characteristic. It can be bred out of a flock by selling the hens that go broody. A hen may start laying early, may lay at a very high rate, and may be an ideal type of hen, but if she is an excessively broody hen, she is a cull so far as breeding is concerned.