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PHASES OF POULTRY WORK

(Selection of Eggs for Hatching, Natural Incubation - Setting the Hen, Artificial Incubation - The Incubator, Candling Eggs)

By

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1

INCUBATION

By incubation we mean the development of the young which takes place inside the shell of a fertile egg when heat is applied for a certain length of time. When the heat is furnished by a hen we call it natural incubation. When a machine heated by kerosene, hot water or electricity is used we call it artificial incubation.

TABLE OF INCUBATION: The following table may be of interest as the time for different birds varies so much from that of the chicken.

<table>
<thead>
<tr>
<th>Period of Incubation</th>
<th>Days of Incubation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kind of Poultry</td>
<td></td>
</tr>
<tr>
<td>Duck, Pekin, Rouen, Runner Etc.</td>
<td>28</td>
</tr>
<tr>
<td>Duck Muscovy</td>
<td>35-37</td>
</tr>
<tr>
<td>Goose</td>
<td>30-34</td>
</tr>
<tr>
<td>Turkey</td>
<td>28</td>
</tr>
<tr>
<td>Guinea</td>
<td>26-28</td>
</tr>
<tr>
<td>Pheasant</td>
<td>22-24</td>
</tr>
<tr>
<td>Peafowl</td>
<td>28</td>
</tr>
<tr>
<td>Ostrich</td>
<td>42</td>
</tr>
<tr>
<td>Swan</td>
<td>35-42</td>
</tr>
</tbody>
</table>

The time may vary according to conditions, but the above table is standard.

If the eggs are not taken out of the nest the hen will usually lay from 12 to 15 eggs before she becomes broody. Sometimes when they are taken away she will seek a new place for the nest, but if a plaster of Paris or wooden egg is put in place of the real one she will continue to lay. Sometimes she will lay two or three times as many before becoming broody as she does if the eggs are left where she can see them. This has been tried many times by people who were interested in keeping both the hatching and the market eggs in good condition. When they are left in the nest the hen warms them enough to spoil them for food and many times for hatching as well for the germ is likely to start development too soon. Eggs should be gathered daily in summer and twice each day in winter.
SELECTION OF EGGS FOR HATCHING

SIZE: In selecting eggs for hatching choose those of good size, even color, and of good shape for market as the pullets usually lay eggs of the same shape, size and color as those from which they were hatched.

COLOR: It is a question of only a short time before the eggs will be sold by weight and grade, so it is wise to begin now to produce eggs of even shape, size and color.

SHAPE: Never set an egg that has thin shell as evaporation is too rapid and it is too apt to be broken thus soiling the remainder of the eggs as well as the nest. Do not set an egg with an extra heavy shell as the evaporation is so slow that the chick is apt to drown, or else it is too weak to break the shell.

HEN'S EGGS: A large hatch and stronger chicks may be expected from hen's eggs than from the eggs of pullets, unless the pullets were early hatched and well matured.

SOILED EGGS: Do not set badly soiled or dirty eggs unless they are goose or duck eggs. Washing does not seem to hurt them but it does affect hen's eggs. If they are soiled wipe them off with a damp cloth being careful to not remove the "bloom" or coating of lime that keeps the pores closed until the proper time.

CARE AND STORAGE: In saving eggs for incubation either under hens or in an incubator one should remember that germ development begins at about 68°F. If eggs are kept too warm or too cool a place the germ may be so weakened that if it hatches the chick will lack vitality. The temperature should be from 50°F to 60°F.

TURNING: The eggs should not be kept more than 10-12 days if a good hatch is expected. If kept that long they should be turned once each day to keep the yolk from settling to one side.

EVAPORATION: If kept longer than 10-12 days the evaporation is so great that the white which produces the body of the chick is thin and watery. This is one cause of weak chicks. This is also true concerning the eggs of any other kind of poultry. Since the yolk of the egg furnishes the nourishment it should be in its natural position.
SHIPPED EGGS: If eggs are shipped or hauled they should be left to "settle" or regain the proper position for at least a night and day before being placed under a hen or in an incubator.

The cross section of an egg showing the various parts may help us to understand why the egg for hatching needs special care.

NATURAL INCUBATION

SETTING THE HEN: Even though one has taken proper care of the eggs, they may be ruined by having a poor nest or by not choosing a hen that is really broody or by failing to rid her of insect pests.

BREEDS: If Wyandotte, Plymouth Rock, Rhode Island, Orphington, Cochin or Brahma hens are kept one seldom finds it hard to get a broody hen at hatching time unless one has culled very closely or has only pullets. With these breeds natural incubation is preferable unless a large number of chicks are hatched. To produce the best results they should be hatched between March 1 and May 1. Leghorn, Monorca and Ancona hens do not usually become broody soon enough for early chicks but under ordinary conditions April 1 to May 15 is the proper time for hatching the egg breeds.

SIZE: Choose a medium size quiet hen that has been on the nest for several days - one that does not fly as soon as you come near the nest. An extra large hen is usually clumsy and a small one cannot cover a good setting except in warm weather.

LICE: Treat the hen for both head and body lice so that she will not be disturbed during the 21 days that she is on the nest. If treated from six to ten days before setting or if care is used to not get the blue ointment on the feathers it may be used. Grease or oil of any kind on an egg will spoil it for hatching. Sodium Fluoride or any homemade louse powder may be used.
MITES: If there are mites in the poultry house, it is best to set the hen in some other place as mites often kill hens that are shut in the nest or the hen may refuse to go back when once let out to feed. The nest should be disinfected if there is any possibility of mites.

NEST: The nest should be at least 12 inches square and 12 inches deep if sod is used. If less than this the first chicks may fall out and by their cries coax the hen off the nest before the match is completed. If it is deeper than this she may break the eggs in jumping into the nest after feeding.

SOD: Cut a piece of sod the size of the box and from 3 to 4 inches thick. If it is frozen or wet it should be partly dried in the oven or by the furnace. Loose dirt may be used instead of sod but it is not quite so satisfactory. If it is left wet and cold it will lower the temperature of the hen that she will loose her broodiness.

Place the grass side down in the bottom of the nest box, Make a shallow rounded hollow in the soil, then put in short cut straw or hay to make a well rounded nest. Be sure that the corners are filled so the eggs cannot roll from under the hen. The first reason for using the sod or dirt is to help hold the temperature. The second is to help hold the moisture so the eggs do not become too dry. If the box is to be placed on the ground it is not necessary to have the sod or dirt.

WATER: If the eggs are losing moisture too rapidly pour a little warm water in the corners of the box but not enough to run into the nest.

PLACING THE HATCH: The hen should be left on the nest at least one night and day before the eggs are placed under her to make sure that she is ready to stay. If she is to be moved carry her carefully on your arm so she will not become nervous or excited. After dark is the best time to move her. Put the eggs under her at night rather than in daylight.

FEEDING: The hen should be allowed to leave the nest once each day if she cares to do so.
Feed whole grain (corn, wheat and oats are especially good) Charcoal, grit, green feed, (a large piece of sod will help) and plenty of fresh clean water.

BROKEN EGGS: If by any chance an egg is broken, remove the nest material, put in fresh straw or whatever is being used, wash the soiled egg in warm water and replace.

TESTING: At the end of the 5th and 12th day white shelled eggs or at the end of the 7th and 14th day the brown shelled eggs may be tested. Remove the infertile and the spoiled eggs. If many eggs are taken out those left may be placed under fewer hens and fresh placed under their remaining ones. This saves from one to two weeks time when one has more than one setting.
APPEARANCE:

By following the Government sheet closely you will soon learn to test the eggs. The infertile ones are perfectly clear and should be saved for chick feed. The dead germ will show a dark spot or ring. The live germ will show a dark spot with dark lines branching from it in all directions like a spider with many legs.

Just before the chick absorbs the remaining yolk before leaving the shell.

AIR CELL:

The air cell should show a gradual increase from day to day. Too much evaporation leaves the chick so dry that it sticks to the membrane, too little evaporation leaves so much moisture that the chick becomes very large, but usually drowns in the shell. The size and position of the air cell varies with the size and shape of the egg. The illustration is standard.

ARTIFICIAL INCUBATION

In artificial incubation the first consideration is the incubator. Never buy the cheapest kind, as it is cheaply made, is not durable or satisfactory. The eggs wasted by using a cheap one will pay the difference in price between the good and the poor incubator in one year. If your neighbor has had good success with a certain kind it is often wise to get the same make so that you may profit by his experience. For ordinary use the ones heated by a kerosene lamp are much cheaper than the ones heated by electricity, and with ordinary care are very satisfactory. Only mammoth incubators are heated by coal stoves.

OLD INCUBATORS:

If an old incubator is to be used it should be carefully cleaned, disinfected by using formaldehyde, carbolic acid, lysol, or use hot soap suds with plenty of sunshine for several days so that germs and molds will be destroyed.
LOCATION: Much of the success of having a good hatch depends upon the location of the incubator. If the temperature of the room is irregular the hatch will be poor, or there will be too many weak chicks. If a well ventilated cave or cellar cannot be used, be sure to get the incubator next to an inside wall where the sun and wind will have the least effect. In an unused room is best; also one with an even temperature if possible.

LEVEL: See that the incubator is perfectly level or the temperature inside will be uneven. If no carpenter's level is at hand, fill a flat bottle, leaving only a small air space. Lay the bottle in the position of a level and proceed to raise the lowest legs until the air space remains in the center of the bottle when placed anywhere on the top of the incubator.

TEST: Test the incubator by lighting the lamp and running it for at least 48 hours before putting in the eggs. Adjust the regulator until an even temperature - about 102° F. is assured. When the eggs are first put in, the temperature will fall, but do not change the regulator until you have given plenty of time for the eggs to warm through.

REGULATOR: Directions should come with the incubator, but if it is an old one this is a safe rule to follow until you can get the proper instruction. Disconnect the regulator, light the lamp and run the temperature to 102° F. Connect the regulator and adjust the damper to about 1/8 inch above the flue with the temperature at 102° to 102 1/2°. Do not change after this but regulate by turning the wick higher or lower.

TEMPERATURE:

The temperature at which it is to be kept depends upon the kind of thermometer used. The standing thermometer should register 101° to 102° F. throughout the hatch if it stands level with, but not touching the eggs, the hanging thermometer should register about two degrees higher for the first two weeks and the same as the standing one for the last week.

TOO HIGH OR TOO LOW: Running too high will bring the hatch off too soon and running low will delay it. In either case the hatch and chicks will be unsatisfactory.

TURNING: The eggs should be turned morning and evening after the 2nd day but not after the 18th day.

SPIDER: When a dark spot with many wiggly lines, looking like a large spider with many legs, is seen it shows that the germ is alive.
LARGE & DARK: When an egg looks very dark or black, with a large fixed air cell at the large end of the egg, it shows that the chick is nearly ready to hatch.

BUT If the egg looks dark when tested, with a large air cell whose lower line moves around like liquid, you had better handle that egg with care, for it is a sure case of "rotten egg", which no farm boy or girl, at least, cares to handle roughly.

INFERTILE EGGS: Save the infertile eggs (those that look like fresh ones) to hard cock for chick feed, but destroy the "rotten ones". From experience I know that an old oak tree makes a fine target for them.

Do not become discouraged if you cannot tell these different stages the first time you candle them, for many older people find it hard at first. With a little practice you will find it very simple.
Candling Eggs

Many people waste both time and money because they do not candle the eggs incubated under hens. In the first place the hens are left with fertile eggs, those that are infertile, those that have dead germs. Those that have dead germs often produce cases that injure the live germ in other eggs. If the infertile eggs are removed at the end of the 5th or 7th day they make good chick feed. If you have never tested eggs and are not sure whether the germ is alive or dead, mark the shell with a pencil and leave the until you are absolutely sure that they will not hatch.

TESTER: If you have an incubator there is a chimney to fit the incubator lamp that may be used for candling.

1. It is not necessary to buy one for a very satisfactory one can be made from a "Dakota Farmer", "Farmer" and "Breeder", "The Breeder's Gazette" or any other paper of that size. Roll the paper lengthwise and tie each end with a string. The hole should be just large enough to cover the large end of an egg. This may be used in the sunshine or with a lamp.

2. An excellent tester may be made by cutting a hole in the top and one side of a box. (See illustration)

3. Cut a small hole in one side of a stove pipe just opposite the flame when the pipe is set over a lamp.

4. A heavy cardboard or pasteboard may be rolled, tied at each end, and set over a lamp. Cut the hole in the side just large enough to cover the large end of an egg. When many hens are sitting at the same time enough eggs are usually tested out so that the good ones may be placed under fewer hens and fresh eggs put under the hens that are left without, or else they may be "broken up" so that they will soon begin to lay.

FRESH EGGS:

A perfectly fresh egg will show clear and full, with only a tiny air cell at the large end. Test one that you know is fresh.
BLOOD CLOT: Very small dark spots may sometimes be seen. These are the blood clots or "meat spots" which are sometimes found when one breaks a fresh egg.

LARGE DARK SPOT: When large dark spots, rings or shadows are seen they show that the germ began to grow, then for some reason it died. These spots or rings show rot or decay.

CANDLING: Same as in natural incubation.

COOLING: If the incubator is well ventiated and the air cells show the right proportion the eggs need not be cooled.

WHEN HATCHING BEGINS: When the 19th day arrives the last inspection should be made so the floor need not be opened again until all of the good chicks are out of the shell. If the door is opened too much of the necessary moisture escapes.

NORMAL HATCH: A normal hatch will cause a rapid rise in temperature. Do not let it get above 104° F. Lower it by turning down the wick.

GLASS FRONT: If there is a glass front it is wise to darken it to keep the first chicks quiet until you are ready to move them. If there is a nursery below the tray it should not be opened until the dry chicks begin to crowd the ones that are not yet out of the shell.