



“HOW EGGS ARE MADE”

This article should be used in conjunction with the APA-ABA Youth Program poster
 (“The Poultry Reproductive System”.)

Poster is available on our website: www.apa-abayouthprograms.org

Perhaps you have often wondered about many of the queer things you have seen in connection with new laid eggs, such as peculiar shapes, different kinds of shell textures, and strange formations with the eggs themselves.

A glance at the reproductive organs of the hen as shown in colors on the poster will show the various steps the egg goes through in the process of formation and will explain why some of the odd things occur in eggs. The yolks, or ova, are formed in the ovary, shown at the top of the picture. The smallest of these ova are no bigger than the point of a pin. There are as many of these small ova in a hen's body at hatching time as she will ever have; the trick is to feed her so well that she will lay as many as possible.

Various stages in the development of these ova are shown in the ovary, up to the stage when the fully matured ovum, or yolk, is ready to be released from the ovary and to drop into the oviduct. The membrane surrounding the yolk ruptures, thereby allowing the yolk to drop into the oviduct or into the pocket surrounding the ovary from which it is picked up by the oviduct. It is just as it enters the oviduct through the opening called infundibulum, or funnel, that fertilization takes place. Sometimes the funnel fails to pick up the yolk and it remains in the body cavity.

There are several sections of the oviduct where the different additions take place as the yolk passes along. In the first section, most of the white is added. The dense white is prolonged toward the ends of the egg in two whitish strands called chalazae. They are twisted in opposite directions and serve to keep the yolk in a central position. Many people do not know that these white things are, and think they are unfit for food. This is a normal structure and is perfectly good to eat.

The shell membranes are added next and the outside watery white passes through the membranes thus plumping the egg. In the later stages of egg formation the egg white next to the yolk also becomes thin, making a pocket around the yolk. The outside watery white runs to the edge of the dish when the egg is broken. The inside thin albumen may be seen by slitting the surrounding thick white with a knife. The shell is the last part of the egg to be formed.

It is interesting to note that the interior of the oviduct is made up of ridged surfaces. These surfaces are shown in the colored picture. There are two sections that were cut to show the interior; one of them shows a fully formed egg, shell and all, ready to be laid, and the other shows the ridged surfaces or glands just referred to. Whenever anything rubs against or irritates these glands, they are made to secrete their particular kind of fluid. One kind of gland, for example, will secrete the heavy layer of albumen, another kind will secrete the thin albumen, another the shell membrane, and another the shell.

It is due to the way in which these glands work, that is by being irritated by some object rubbing against them, that we sometimes get freak eggs. Perhaps a small piece of tissue may be into the oviduct at the place the yolks enter; it may get in and start down the oviduct all by itself. As it passes through the different sections, the various additions are put on it as though it were an egg yolk. The result is a fully formed egg containing no yolk, but a piece of tissue instead. Naturally, the egg may be much smaller in size than a normal egg.

When the yolk is fully formed, it passes out the cloaca, which is the small opening shown at the foot of the oviduct. The hen has little or no control over egg formation until it is time for the egg to be laid. She can control these muscles. This fact helps to explain certain abnormal eggs.

For example, through fright, a hen may delay laying a fully formed egg that is ready to be laid. If the egg is a fertile one, the body heat of the hen may cause a slight development of the germ. Such an egg, even though newly laid, is unfit for food. Such instances are not frequent, however. In the same way, an egg may be retained and even forced back up the oviduct a little way to the section where the last layer of albumen is added. The difficulty causing the reverse muscular action may then have cleared up, and the egg proceeds on down the oviduct and is encased in another shell. The result is an egg within an egg.

It sometimes happens, either through improper functioning of the ovary causing two yolks to enter the oviduct together or very close together, or because some muscular action causes a yolk to be held up near the upper end of the oviduct, that two yolks go down the oviduct together, forming a double yolk egg, as shown in figure 1 on our poster (an egg longer than the normal size the hen normally lays). From 22 to 30 hours, varying in individual hens is required for the complete formation and laying of the egg from the time the yolk entered the oviduct.

If hens are too fat, the proper functioning of the oviduct is interfered with. Misshaped eggs, as the one shown in figure 4 on our poster, are accounted for by an abnormal condition of the lower part of the oviduct preventing the necessary expansion and as the shell is soft; it is compressed into a peculiar shape.

Shells of various texture and soft shell eggs are caused by abnormal conditions of the shell forming glands or because of poor feeding. The egg shown in figure 5 of our poster, for example, has a very thin shell over a large part of the egg, while that in figure 6 shows ridges due to crowding of the egg while the shell was forming; figure 3 is a soft shell egg. If shell and minerals are being supplied, it may be that certain hens are unable to make use of them. The use of cod liver oil or the ultra-violet rays of the sun will undoubtedly help this condition.

Extremely small eggs, as shown in figure 7 of our poster, may occur at the beginning or end of a laying period. This is due to the fact that at these periods the oviduct is smaller than when a hen is in full lay. There is, therefore, a lessened secreting power in the glands.

