

Egg Formation

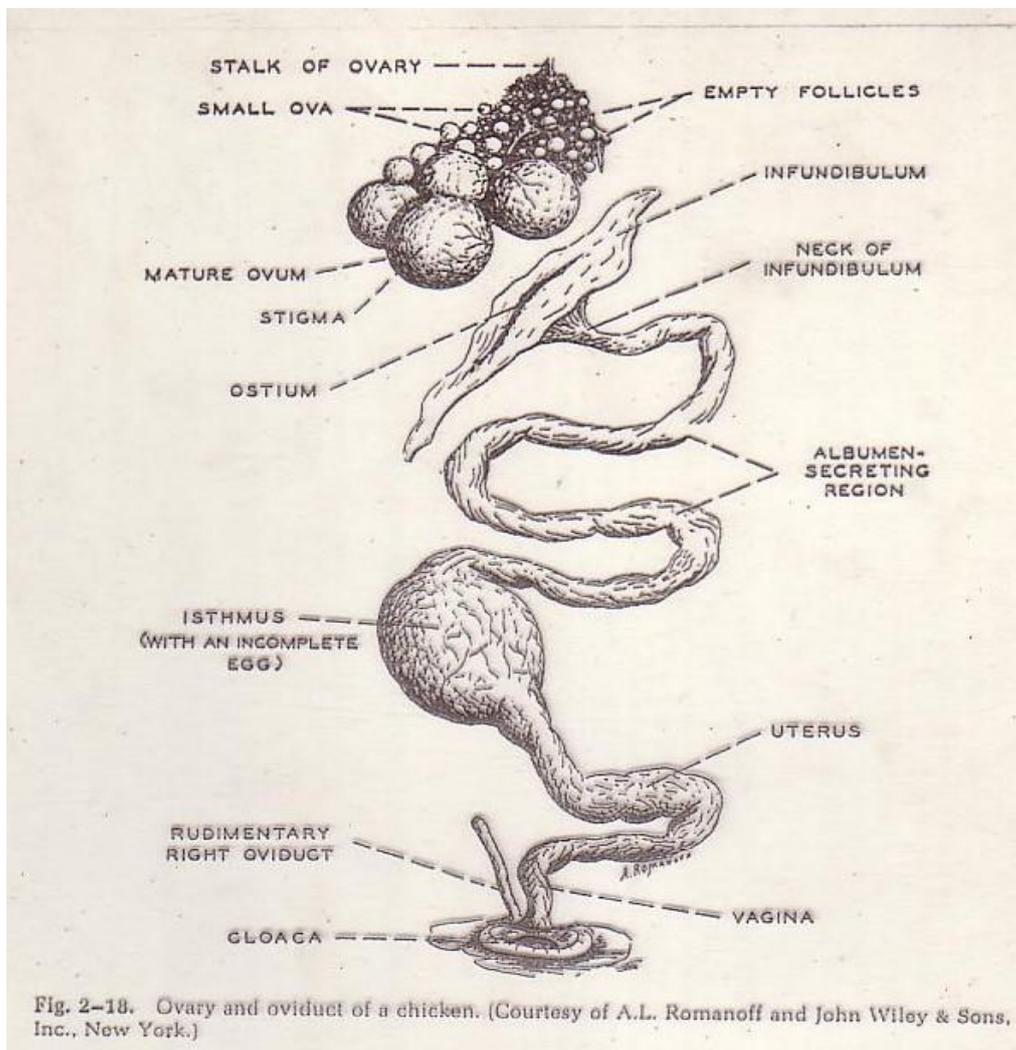
Egg structure includes yolk, albumen, shell membranes egg shell. Egg formation starts in the ovary and is completed in the different parts of oviduct. These parts are infundibulum or funnel, magnum, isthmus, uterus and vagina.

Yolk: It is formed in the *ovary*. Mature ovum from the ovary is called yolk.

Albumen: After ovulation the yolk drops into the funnel of the oviduct. The *magnum* region of the oviduct secretes the white albumen which around the yolk.

Shell membrane: The yolk with albumen then passes the magnum and enters to the *isthmus* of the oviduct which secretes the materials to form outer and inner shell membrane.

Egg Shell: Egg shell is added in the *uterus*. The uterus secretes calcium and carbonate ions which help to form the calcium carbonate, the egg shell. Egg stays here just prior to laying. Dryness of egg shell takes place here.



Oviduct of Hen or Reproductive System of Hen

Egg Formation in the Oviduct

Parts of oviduct	Length (cm)	Time	Function
Infundibulum or funnel	9	15 min.	It receives the mature ruptured yolk from the ovary. Fertilization occurs here if sperm is available.
Magnum	33	3 hrs.	Secretes albumen which is deposited here around the yolk.
Isthmus	10	1.25 hrs.	Shell membranes are added here.
Uterus	11	21 hrs.	Egg shell and its pigmentation are added here over the shell membrane. Egg stay here just prior to laying.
Vagina	12	30 min.	Expulsion of egg :Egg laying

Note: Egg Formation Time: 24 hrs. +

Ovulation. At maturity the ova are released from the ovary to enter the oviduct by a process known as ovulation. Most of the ovulations occur during the morning hours, as it is not natural for ovulations to occur in the mid to late afternoon.

Double ovulation. Normally, only one yolk is ovulated per day, but occasionally two may be released and on rare occasions there may be three. If two are ovulated at the same time normally only one enters the oviduct, but if both are picked up simultaneously by the oviduct, a double yolk egg will result. About two-thirds of the double-yolk eggs are the result of ovulations within 3 hours of each other. If there is a great difference in ovulation time, two eggs may be produced on the same day, but usually the second is soft-shelled.

Double-yolk eggs are more common during the first part of the egg production period because of an overactive ovary, and are more often associated with meat-type strains than with egg-type ones. The incidence is an inherited trait since some birds produce higher percentages of double-yolk eggs than others. Spring and summer-housed pullets also produce a greater number of double-yolk eggs than fall- and winter-housed pullets.

Yolk size affects egg size. The size of the completed egg is more closely associated with yolk size than with any other factor, although variations in albumen secretions in the oviduct have some influence. The yolk-albumen relationship changes throughout the laying cycle. Eggs produced at the beginning of the laying period have yolks that comprise about 25% of the total weight of the egg, while yolks make up about 30% of egg weight when hens are near the end of their laying period. In other words, as egg size increases, yolk weight increases more rapidly than the weight of albumen. In younger flocks when egg size is small, increasing the level of protein in the diet may increase the total weight up to 1.5 doz (3.5 g/ea).

Internal layers. Sometimes the infundibulum loses its ability to pick up a high proportion of the yolks, and they accumulate in the body cavity faster than they can be reabsorbed. Such hens are known as ‘**internal layer**’, although the term does not define the condition well. The abdomen in such layers becomes distended, and the hen stands in an upright position.