

A PEDUNCULATE, DOUBLE-YOLKED HEN'S EGG  
CONTAINING AN INTRAFOLLICULAR OVUM

BY F. B. HUTT

*Plate 7*

DOUBLE-YOLKED eggs are familiar objects, but, so far as the writer can determine, the voluminous literature on abnormal eggs contains only two records of specimens like the one illustrated in Plate 7 (upper figure).

*Description.* The egg was left at this department without any record of its history, and by the time it was brought to the writer's attention, the donor could not be traced. The egg weighed 71.6 grams, which is almost 20 per cent less than the 86.26 grams given by Pearl (1910) as the average weight of 18 double-yolked eggs in his collection. It resembled other double-yolked eggs in shape, but differed in being apparently truncated at the large end and showing there a dark peduncle, not unlike the stem of a pear, which protruded through the shell membranes. The latter were covered with a thin encrustation of shell. There was no air cell and no shell at the larger end other than this slight deposit on the membranes. The latter were sunken so that, when the egg was held vertically with large end upward, the surface of the membranes was slightly concave.

At first glance, it seemed as if the shell at the large end had been removed, leaving only the inner shell membrane, which would have formed the base of the air cell in any normal egg. Closer examination showed that it was more likely that the large end had never had any covering of shell other than the very thin layer over the membranes. This seemed probable because (1) the normal thick shell flared slightly outward where it terminated at the periphery of the membranous area, and (2) on dissection of that part, both inner and outer shell membranes were found. If the egg had ever been completely covered and some shell then removed from the large end, the outer shell membrane would have been lost with it.

When a window was cut in the shell, the nature of the abnormality was evident. In addition to a normal yolk, the egg contained another that was still enclosed in its follicle (Plate 7). It was the twisted stalk of the latter that protruded through the membranes. The larger blood vessels in the follicle were quite distinct, as was the stigma, the crescentic area free of blood vessels which normally ruptures to release the ovum from the ovary. The abnormal follicle with stalk and contents weighed only 7.4 grams. It was spherical in shape, with diameters varying from 23 to 25 mm. These figures indicate that it was

only about half the size of a mature follicle in the ovary of a hen that would lay a standard-sized egg of 57 grams. However, since the normal yolk of the two in the egg weighed only 9.56 grams, it cannot be assumed that the one in the follicle was far from maturity. The stalk was 11 mm. long.

The intrafollicular ovum and the other yolk were encapsulated by a layer of thick albumen common to both. This is evidence that they had passed together through the albumen-secreting portion of the oviduct. It will be noted in the illustration that the intrafollicular ovum lay in the larger end of the shell. Since most eggs are formed with the small end caudad, this indicates that the normal yolk preceded the other one down the oviduct. It follows therefore, that the infundibulum probably engulfed the normal one first and the follicle second.

*Origin.* It is not known why a follicle should thus become separated from the ovary. Warren and Scott (1935), who observed the ovulation of twelve ova, concluded that the process was not caused by any pressure of the infundibulum. It seems even less likely that the infundibulum should pull an entire follicle from the ovary, and one might expect, therefore, to find the cause of the abnormal occurrence in the follicle itself. In this case, a dark purple area, 17 mm. in diameter, near the stigma was found to result from extravasated blood, which was spread thinly between the yolk and the follicle. This may have been either the cause or the effect of the separation, but the former interpretation seems more probable because the blood was remote from the stalk. In the very unusual specimen described by Parker and Kempster (1940), a large blood clot found in an egg was attached to a fragment of the ovary containing about 25 immature ova. In that case, however, it seemed possible that detachment of the fragment resulted from traction as the blood clot was forced down the oviduct.

In another intrafollicular ovum laid by a fowl (Hutt, 1939), no such clot was present. In that follicle, the blood vessels were congested with blood and the general appearance was healthy like that of mature follicles still attached to the ovary. Its stalk was thin, lacking in blood, and tapered almost to a thread. In the present case, the follicle was dark in color and appeared to have been dead for some time. The twisted stalk was thinnest near the follicle and thickest at its extremity.

*Other Similar Eggs.* A double-yolked egg similar to this one was described by Laboulbène (1859) and illustrated by Davaine (1860). It differed chiefly in that each enclosure seemed to have its own

envelopes of albumen and the intrafollicular ovum was loosely covered with a "false membrane" lacking blood vessels. As in the present specimen, the peduncle projected through the shell membranes at the large end, which was truncated, and these membranes lacked shell. In both cases no shell was deposited on the extruding stalk of the follicle. It is not clear why the shell membranes at the large end should fail to receive a normal deposit of shell, but, since both eggs were alike in this respect, even though separated in time by 86 years, it seems probable that the stalk projecting from them interfered in some way with the normal process of shell deposition.

Davaine (*op. cit.*) reproduced an illustration used by André Cleyer in 1682 to support his account of an egg laid in 1664 and given to the magistrate of Nuremberg. It contained a normal yolk and a body "like the fruit of the arbutus tree" from which a stalk protruded through the large end of the egg. Professor W. C. Muenscher informs the writer that this fruit is characterized by a rather rough coat. Since a shrunken follicle in an egg none too fresh could also have a somewhat rough surface, Cleyer's description seems quite fitting. His illustration, taken from Davaine, is shown in Plate 7 (lower figure). It suggests that the shell was lacking on the large end.

Although Davaine was commendably reluctant to give too much credence to this report because "we know that in Cleyer's time the figures attached to observations were generally no more than approximate likenesses, or even only schematic representations, that is to say such as the imagination conceived the objects represented," the resemblance of Cleyer's egg to the writer's and to that of Laboulbène is so great as to suggest that, if modern techniques had been available in 1682, Cleyer's illustration would have been little different from the other in Plate 7.

#### SUMMARY

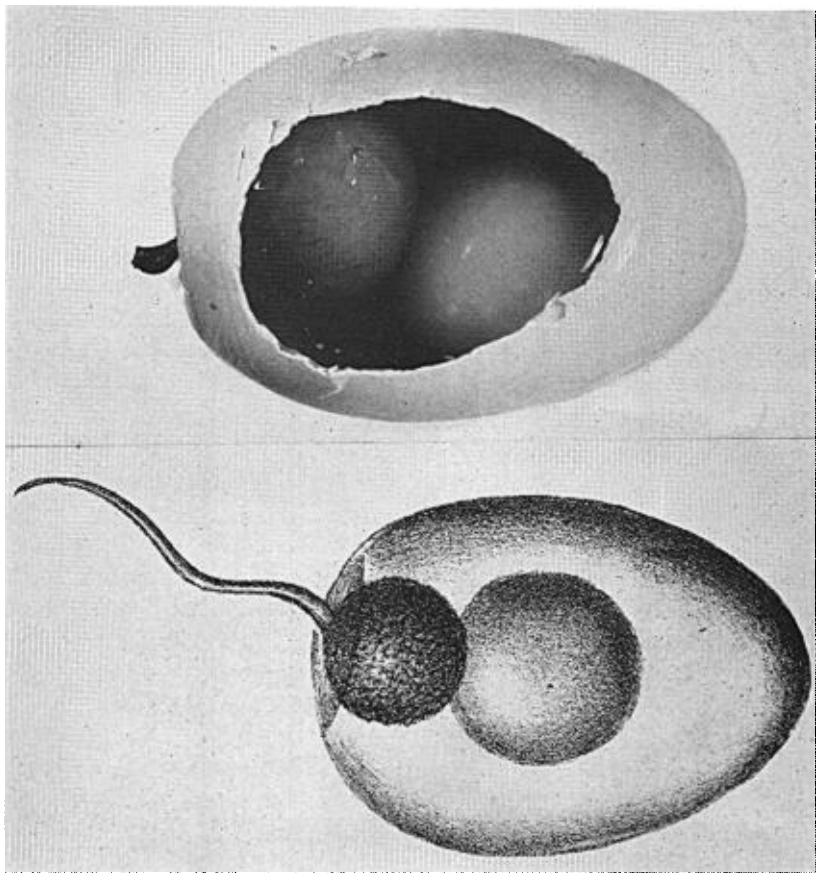
An egg is described and illustrated that contained one normal yolk and another still enclosed in an ovarian follicle. The stalk of this protruded through the shell membranes at the large end of the egg. This end was truncated and the membranes there had only a very thin covering of shell.

Two similar cases are cited from the literature and Cleyer's figure of such an egg, drawn in 1682, is reproduced from Davaine's memoir.

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*(Upper figure)*, THE EGG DESCRIBED IN THE CONTEXT.

*(Lower figure)*, CLEYER'S ILLUSTRATION OF A SIMILAR EGG DESCRIBED IN 1682  
(FROM DAVAINÉ).

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## EVIDENCE OF TRANS-GULF MIGRATION

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PREFATORY NOTE.—It was my privilege to review in manuscript the present paper by Mr. Lowery which, with his paper in the *Wilson Bulletin* for June, 1945, I commend to all students of bird migration.

The phenomenon that we know as the migration of birds is a highly complex subject involving much more than the recording of the dates of arrival and departure of the winged travelers. Although much remains to be learned, there are certain ideas about migration that, on the basis of available information, have been accepted as facts for many years. Among these is the concept of trans-Gulf migration. Admittedly, data have not been extensive, but logical deductions from their study have fully justified this interpretation. Possibly acceptance has been due in part to the fact that on a world-wide basis, over-water travel by birds of equal or greater distances is not unusual. Because of this, many students of the migration of North American birds have been startled by the recent challenge to what they have rightly considered an accepted feature of the movement as applied to the Western Hemisphere.

Accepting the challenge, Mr. Lowery has not only obtained important new material in support of the original concept, but by an inspired analytical discussion of all features, particularly the climatological situation, has firmly re-established the belief that many, perhaps most, of the North American migrants that spend the winter season in South and Central America reach their destinations in spring and fall by direct flight across the Gulf of Mexico.—FREDERICK C. LINCOLN, *Biologist in Charge, Distribution and Migration of Birds, U. S. Fish and Wildlife Service.*

FOR many years all ornithologists agreed that vast numbers and many kinds of land birds migrate straight across the Gulf of Mexico each spring and fall. Recently, the existence of this trans-Gulf flyway was denied on theoretical grounds (Williams, 1945). Consequently,