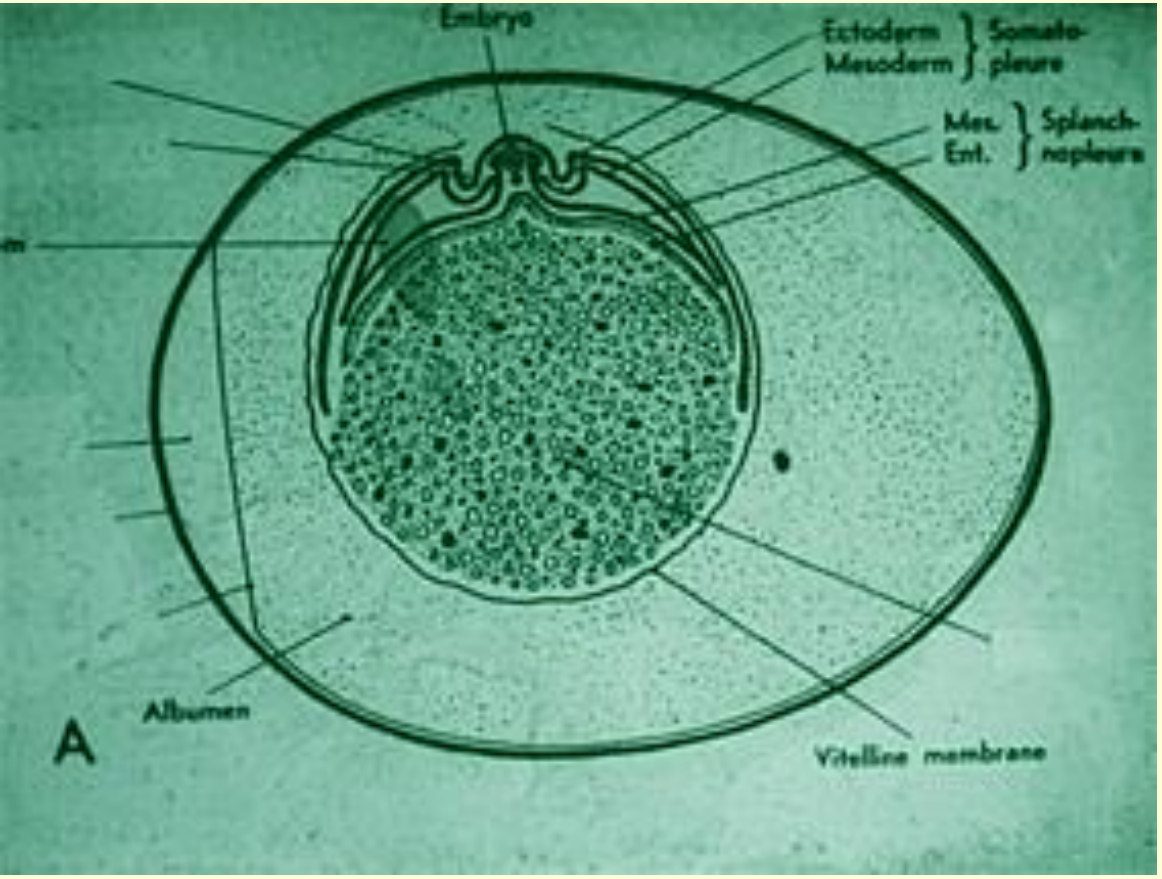
Subsequent developments from zygote in Poultry - 2

- **Mesoderm: dorsal, intermedier and lateral mesoderm to develop in 3 sections.**
- **The dorsal mesoderm; somites and subdivides (dermatome, myotom and sclerotom) occur.**
- **Intermedier mesoderm; kidney and internal genital organs occur.**
- **Lateral mesoderm participate structure of somatopleura and splanchniopleura.**

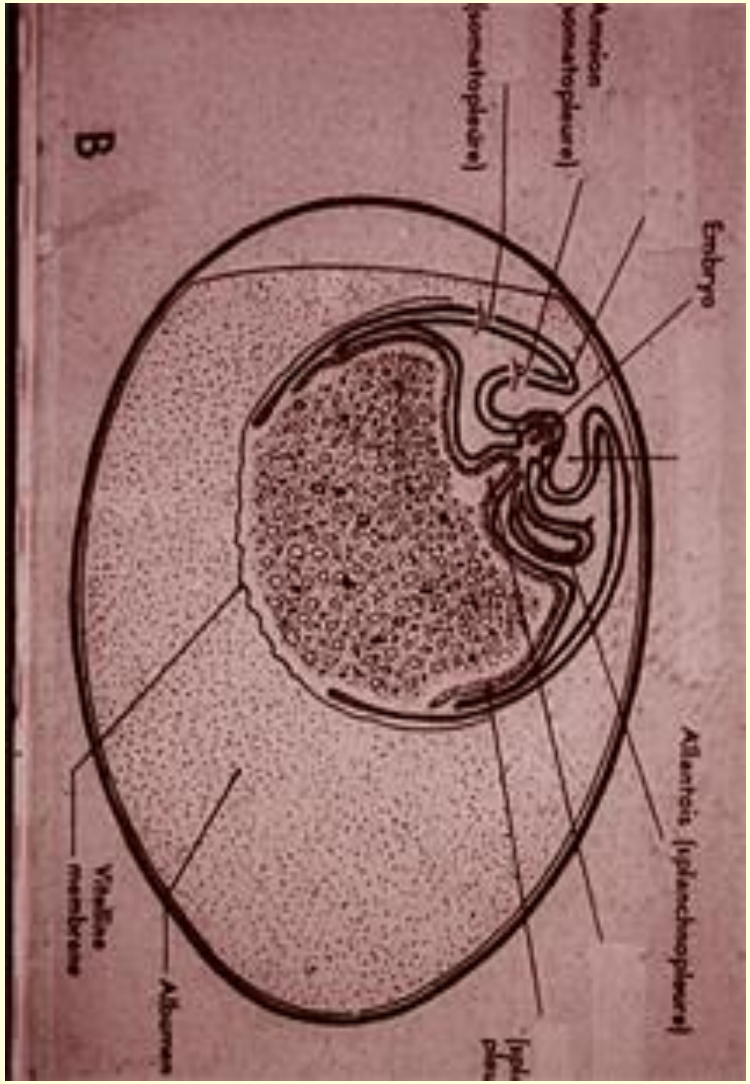
2-day chick embryo



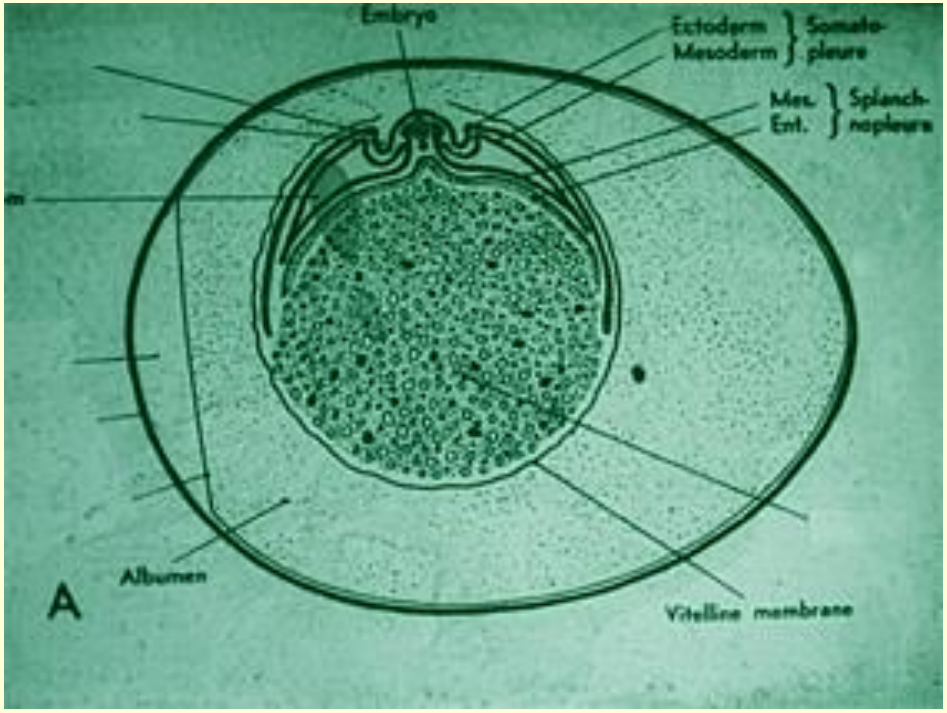
SOMATOPLEURA (exterior) = Parietal part of lateral mesoderm (somatic mesoderm) +ectoderm.

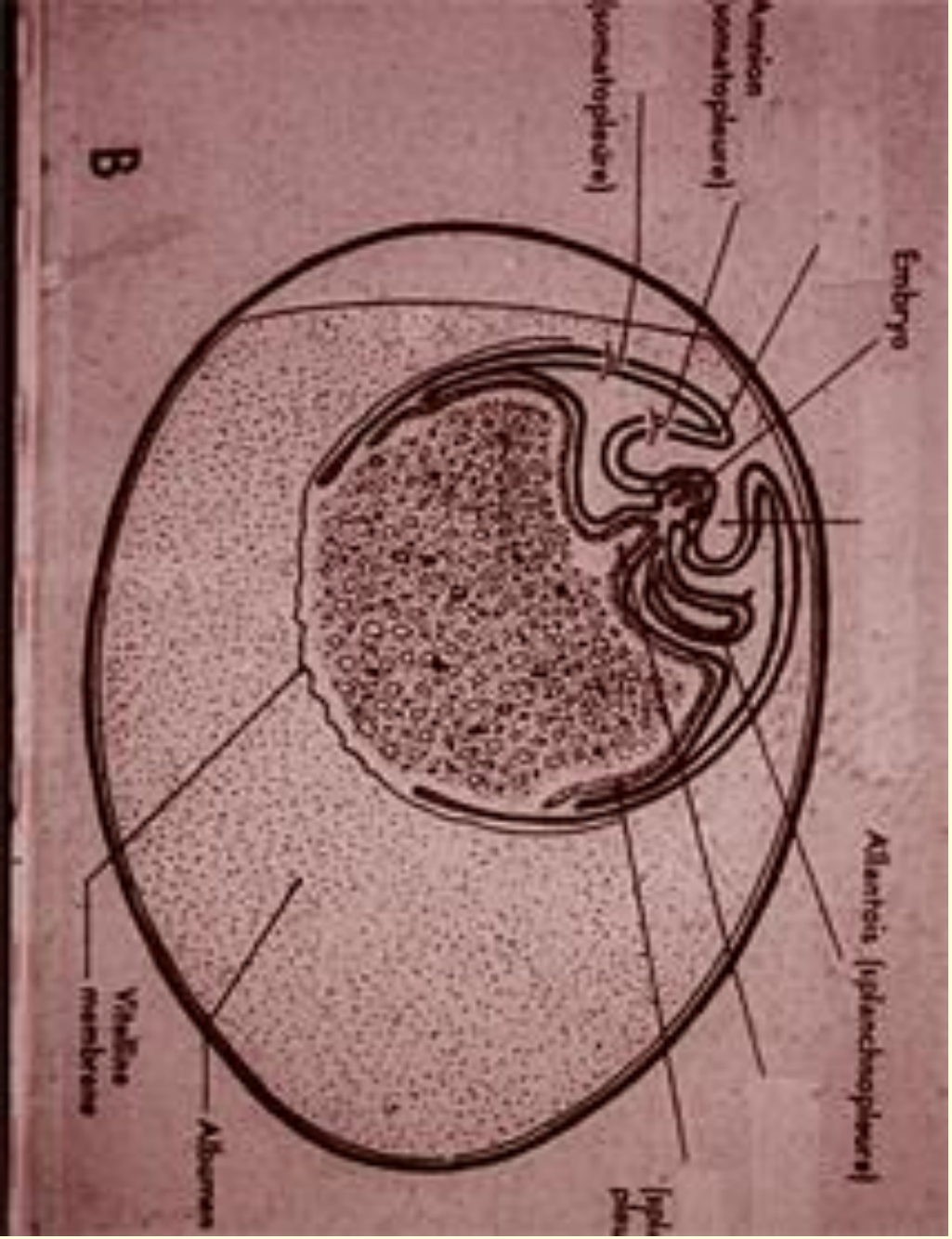
SPLANCHNIOPLEURA (interior)=Visceral part of lateral mesoderm (splanchnik mesoderm) + endoderm.

Then, somatopleur a curl into embryo. The amnion and chorionic sacs occur enclosing embryo.



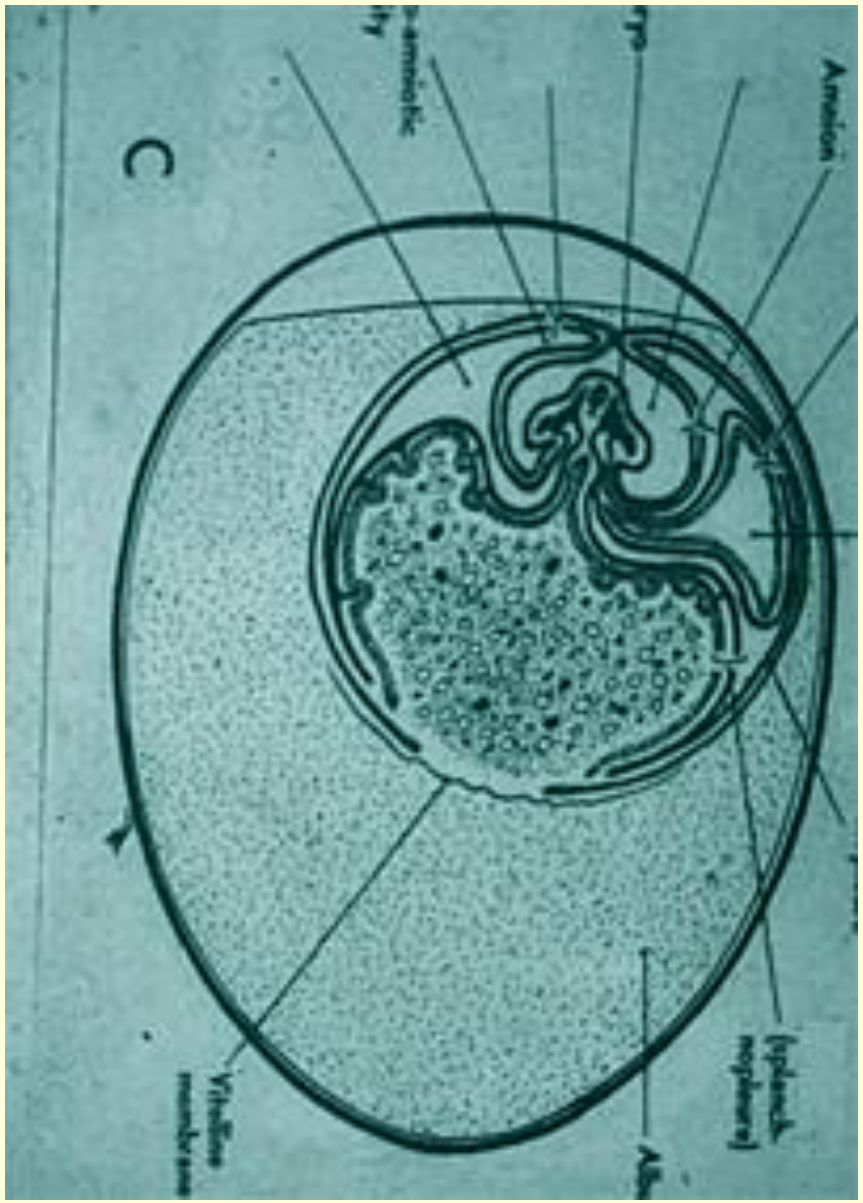
- **There is a gap in somatopleura and splanchniopleura. Initially, this small slit-shaped space as named Mesocoelom, then broaden to intraembriyonal and extraembriyonal field.**





- **Embryonic field is ENDOCOELOM, embryonal fields outside part (extraembryonic) takes the EXOCOELOM name.**
- **Both spaces are in communication with each other. Endocoelom will make abdomen, heart and chest sac gaps in subsequent developments.**

5-day chick embryo



- Exocoelom remain as a large space containing the extraembryonic sacs (chorion, yolk, amniotic sac and allantois).
- The mission of this space also ends with the hatching.

- Abdominal and chest cavities in poultry is a single space because the diaphragm is formed rudimentary.

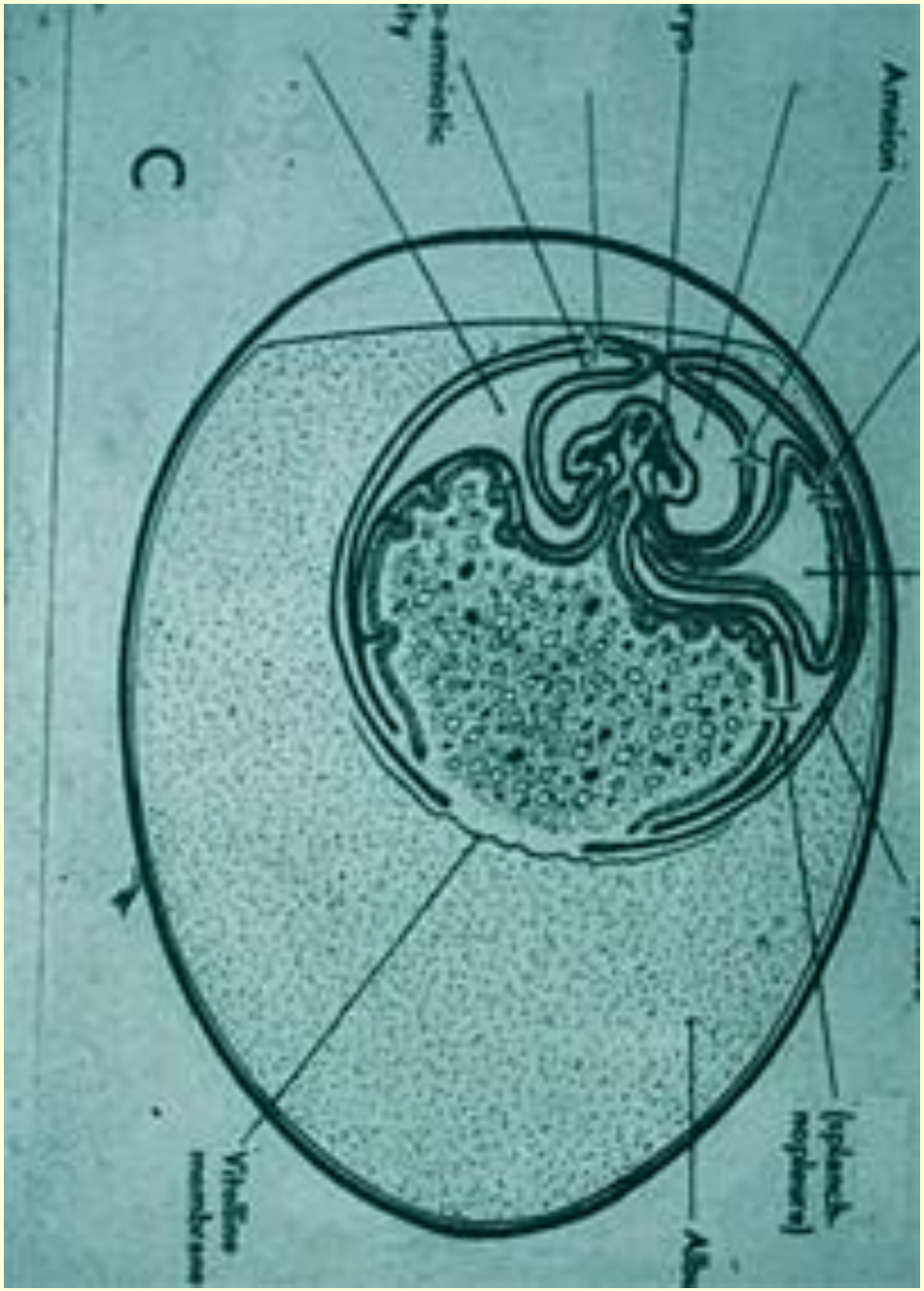
- During the development of the mesoderm and the chorda dorsalis, sulcus neuralis continues to grow. In contrast, the sulcus primitivus finally recede and disappear with nodus primitivus. Thus, the sulcus nöralis remains in the embryonic disc, only.

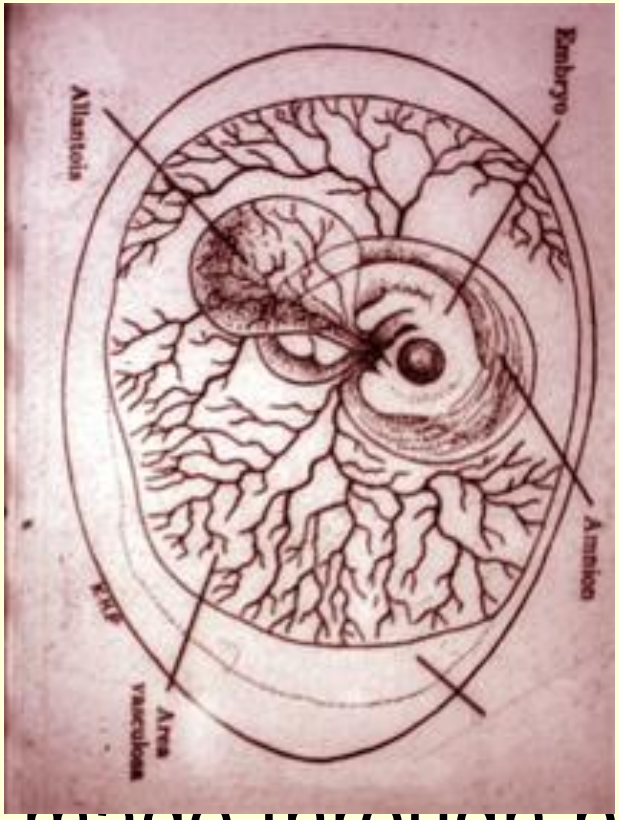
- This area is referred to as area embriyonalis where the embryo develops.
- Sulcus neuralis starts to shut down. When it is completely closed, transformed into canalis nöralis.
- Canalis nöralis will provide encephalon, spinal cord and spinal ganglia in the subsequent development.

- During the formation of the amniotic sac and chorion, yolk sac which wrapped splanchnopleura articulates from the part close to embryo. Thus, yolk sac is divided into two portions.

- Dorsal region which stay in embryo grows cranio caudal direction. Thus, canalis intestinalis is occurred.

- Ventral part remains as yolk sac. Yolk sac that is filled by egg yolk, has a duty to feed the puppies until hatching.
- Because the offspring develops outside the uterus in poultry, but it is fed with egg yolk continuously.





- Nutrition is made through blood vessels. Blood vessels are formed in the part of the yolk sac near the embryo,on the splanchnic mesoderm and slowly spread over the yolk sac. Therefore, two region are distinguished on the yolk sac (vascular and avascular region).

- The vascularized area is called AREA VASCULOSA. Avascular region are also given the name AREA VİTELLİNA.
- Area vasculosa to say how widespread the development of the embryo is so advanced.
- Blood vessels on the yolk sac are ARTERİA and VENA VİTELLİNAE.

7-day chicken embryo and
extra-embryonic sacs.

- The handle portion of vitellus sac (ductus vitellinus) which is connects to intestinal duct remains as a short blind sac after hatching;

- The yolk sac part seen in the central area of the small intestine called the Meckel's diverticulum.

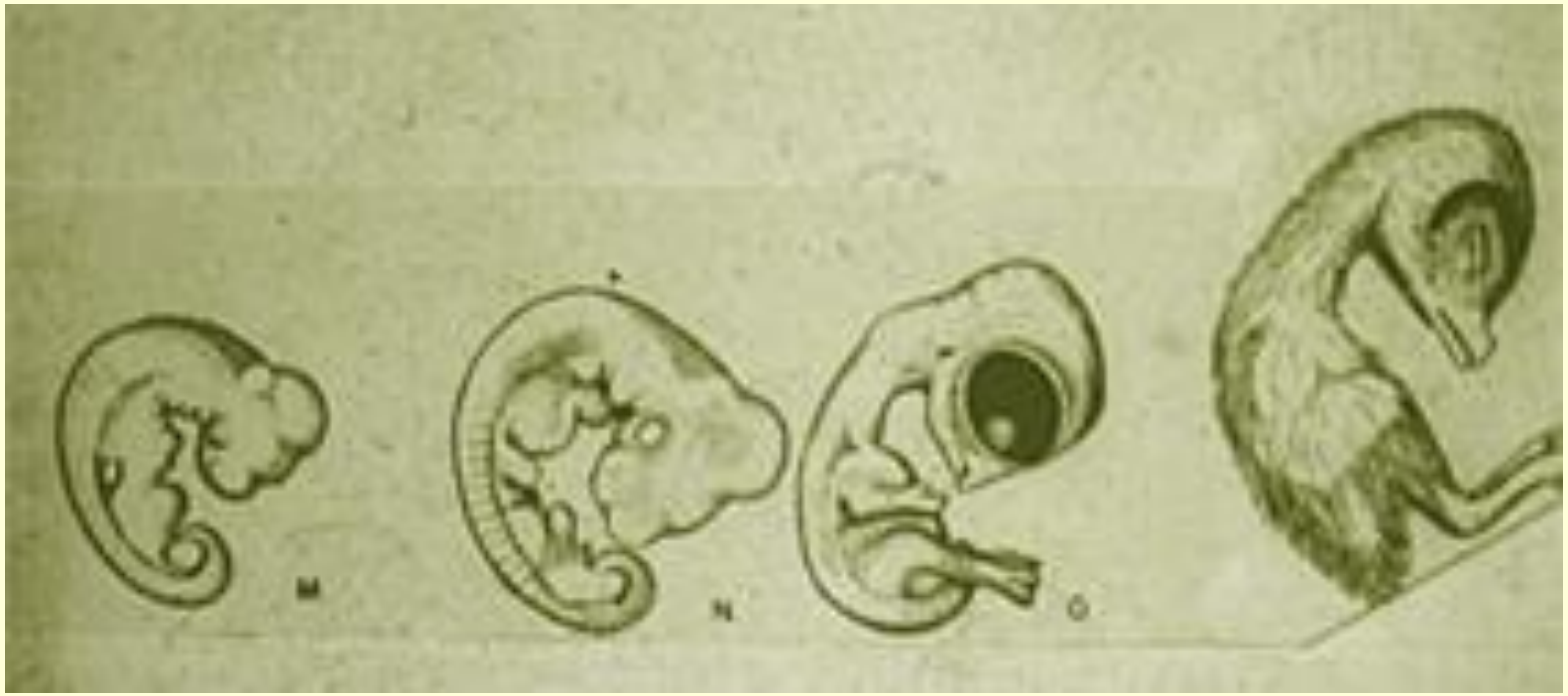
- **Then, a evagination occur at the back of the intestinal tract.**

  This evagination expands towards to exocoelom and a sac (allantois sac) takes the form.

  Then spread below chorion.

- Allantois sac reabsorbes albumin from egg white via their vessel, as well as giving away the oxygen and carbon dioxide from the air (by calcareous shell and chorion) serves breathing.

Egg white protects and nourishes the offspring. Therefore, it corresponds to the mammalian uterus.



SUMMARY

- **In poultry:**
- **1) Egg-type polylecithal.**
- **2) The egg thrown from the ovary without corona radiata.**
- **3) Polyspermy is seen.**
- **4) Morula is formed with partial-discoidal cleavage of zygote.**
- **5) Blastula is discoblastula type.**
- **6) Endoderm is formed from blastoderm (ectoderm) with polyinvagination.**

- **7) It is distinguished area opaca and area pellucida in embryonic field in the blastula stage.**
- **8) Sulcus primitivus, fossa primitivus, nodus primitivus (hensen nodus) and neuralis sulcus occurs on embryonal disc.**
- **9) Chorda dorsalis and mesoderm consist of ectoderm.**
- **The ectoderm cells proliferate in sulcus primitivus and hensen nodus. Thus, it is occurred undifferentiated cell cluster.**

- **10) Extra embryonic sac (vitellus, amnion, allantois, chorion) occurs.**
- **11) It is distinguished area vitellina and area vasculosa regions on the yolk sac.**