Poultry Handbook
Judging Interior Egg Quality

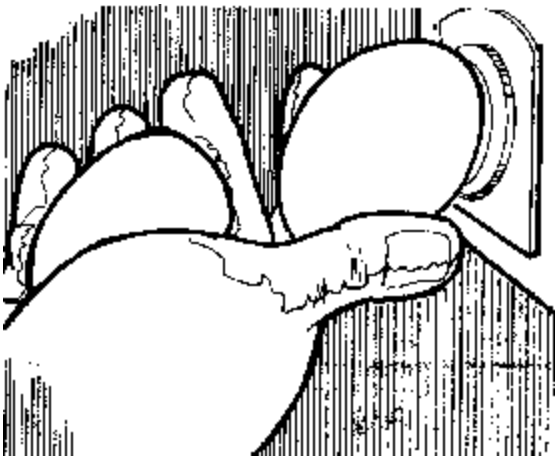
In Candling is used to judge interior egg quality. Each egg is graded on its individual merits of quality according to United States Department of Agriculture (USDA) Grades. The grades are AA, A, B, and Inedible. Knowledge of the parts of the egg is essential to understanding candling and grading. In a contest, the following are not considered as quality factors when candling eggs for interior quality:

- **T** Loose, bubbly or out-of-position air cell
- **T** Exterior stains or dirt
- **T** Faulty egg shell shape or texture

How To Candle An Egg

Hold the egg up to the candling light in a slanting position. You can see the air cell, the yolk, and the white. The air cell is nearly always in the large end of the egg. Therefore, put the large end next to the candling light.

Hold the egg between your thumb and first two fingers. Then by turning your wrist quickly, you can cause the inside of the egg to whirl. This will tell you a great deal about the yolk and white. When you are learning to candle, you will find it helpful to break and observe any eggs you are in doubt about.



Summary of Standards for Interior Quality of Eggs by Candling for Poultry Judging

Quality Factor	AA Quality	A Quality	B Quality	Inedible
Air Cell	1/8 inch or less in depth	3/16 inch or less in depth	More than 3/16 inch	Doesn't apply
White	Clear and Firm	Clear and reasonably firm	Clear and may be weak and watery	Doesn't apply
Yolk	Outline slightly defined	Outline may be fairly well-defined	Outline clearly visible	Doesn't apply
Spots - Blood or Meat	None	None	None	Blood or meat spots

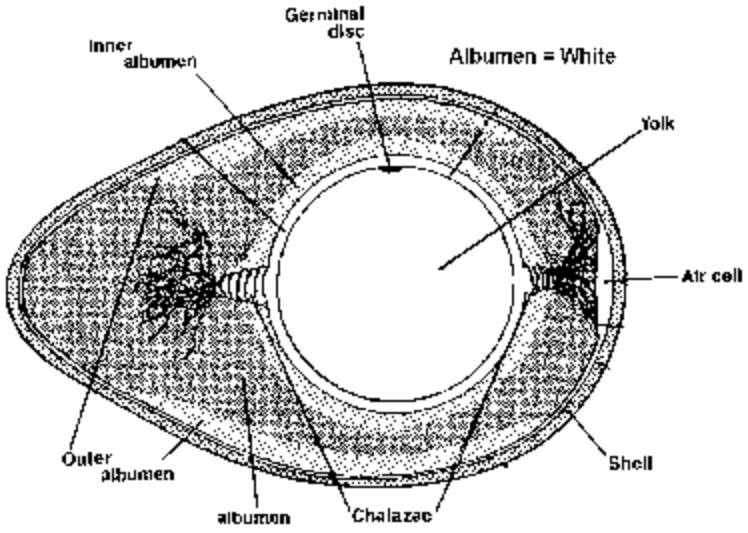
Parts Of An Egg

Air Cell generally forms in the large end of the egg and grows in size as the egg gets older

Chalazae are the white strings you see on top of or next to the yolk of a broken-out egg. They look like a whitish mass inside a candled egg.

Albumen or White is the clear jelly like stuff that surrounds the yolk.

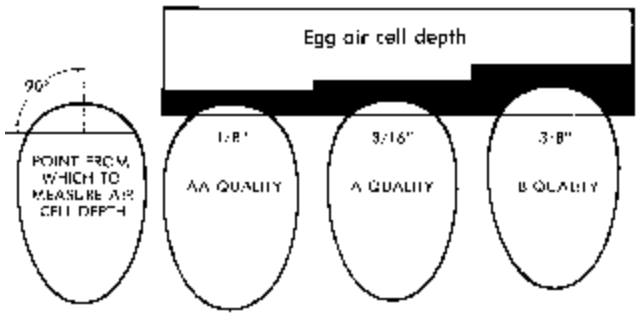
Germ or Germinal Disc is what the baby grows from.



Judging Interior Egg Quality

CANDLED APPEARANCE

Air Cell Depth: The depth of the air cell is the distance from its top to its bottom when the egg is held with the air cell up. In a fresh egg, the air cell is small, not more than 1/8-inch deep. As the egg ages, evaporation takes place and the air cell becomes larger and the egg is downgraded. **The air cell is one of the first factors observed in candling and can be the determining factor in classifying the individual egg as to interior quality.** Depth of the air cell is the only quality factor considered. Movement of the air cell is not considered a quality factor. The air cell may show unlimited movement and be free or bubbly in all qualities - AA, A, and B. The maximum sizes of air cells permitted in the various qualities are as follows:



The gauge may be used to determine air cell depth when practice grading. The back of the book has a cut-out gauge for you to use when practicing.

Yolk: **The appearance of the yolk as the egg is twirled in candling is one of the best indicators of the interior quality of the shell egg.** The yolk appearance is dependent on the condition of the albumen (egg white). Three factors considered in judging egg quality by the yolk are **(1)** size and shape of the yolk, **(2)** distinctness of yolk shadow outline, and **(3)** defects and germ development.

(1) Size and Shape of the Yolk		
AA	A	B
Round & Firm	Round & Firm	Enlarged & Flattened

(2) Distinctness of Yolk Shadow Outline		
AA	A	B
Yolk appears to blend into the white as the egg is twirled.	Yolk is visible, but not clearly, as the egg is twirled.	Yolk is visible as a dark shad-ow when the egg is twirled.

(3) Defects and Germ Development	
INEDIBLE	
O	Blood caused by development of the germ in a fertile egg to a point where it is visible as definite lines or as a blood ring.
O	"Blood rings" appear on the yolk as brilliant blood-red circles from 1/8 inch to 3/8 inch in diameter.
O	Large "blood spots" appear brilliant red in color (or dark gray in so-called "meat spots") when observed before the candling light.

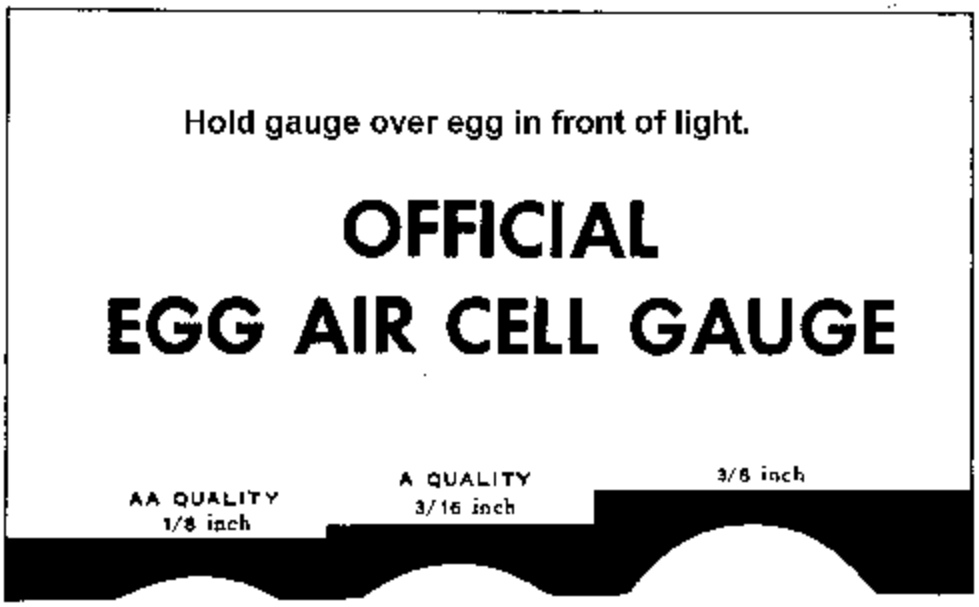
White: The condition of the white is determined by the intensity of the yolk shadow and the freedom of yolk movement as the egg is twirled before the candling light. These factors are related to the thickness of the white.

- **T** Thick whites permit limited movement of the yolk and a slight shadow results.
- **T** Thin whites permit free movement of the yolk and a distinct shadow results.

AA	A	B
White is free from discolorations or from any floating foreign bodies		
White is thick and prevents the yolk from approaching the shell.	White permits the yolk to approach the shell more.	White is weak, thin, and watery and allows the yolk to appear plainly visible and dark.

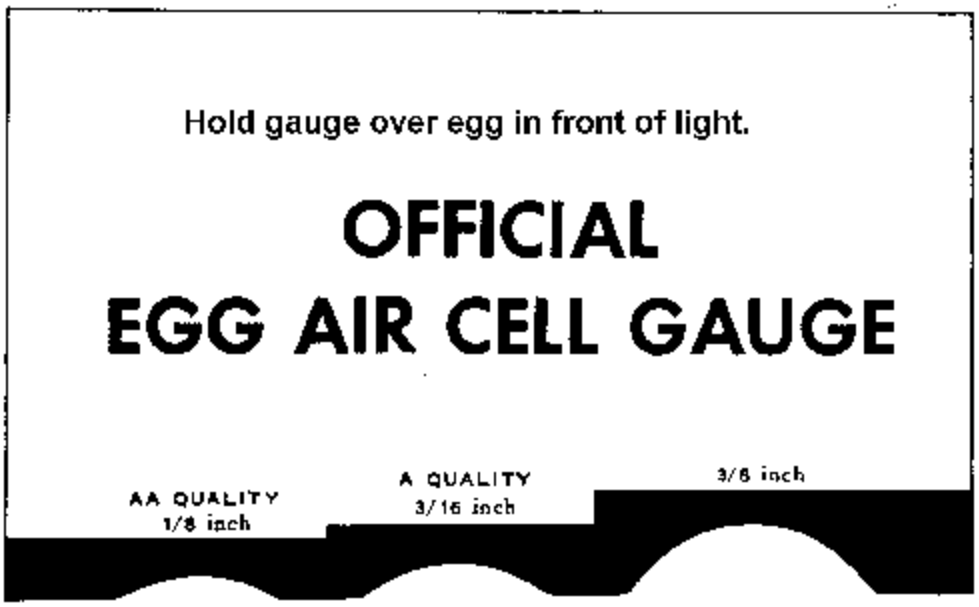
Students should follow this order when judging interior quality AIR CELL, YOLK and WHITE for each egg.

- **O** A final grade of either AA, A, B or inedible is made for each egg based on these factors.
- **O** The final grade given an egg is based on the factor having the lowest grade.
- **O** Example: An egg is AA or A in Air Cell size, Yolk is B, no defects, and White is A. The final grade is a B due to the yolk.



Cut-out this gauge and use it to practice judging egg air cell size.

You will not be allowed to use this card during the contest.



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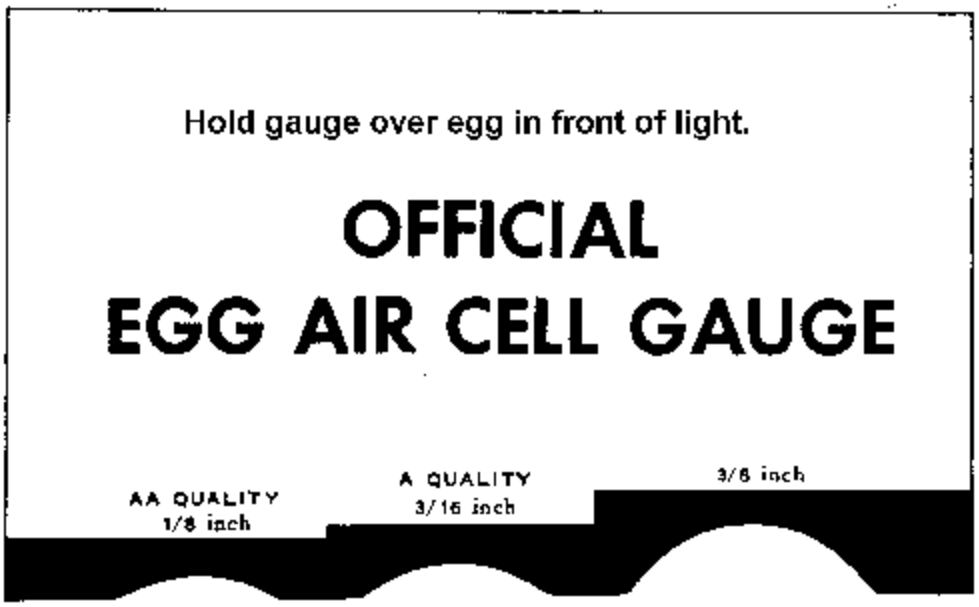

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