POULTRY JUDGING

7307

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Specialist Committee

National Poultry Judging Manual

National 4-H Poultry and Egg Conference
Extension Committee

Prepared by

Charles J. Wabeck, Chairman
University of Maryland

Phil Clauer
Virginia Polytechnic Institute and State University

John Struwe
University of Nebraska

Judging is a tool used to develop 4-H club members. Participation in judging and other competitive events helps 4-H'ers learn to make and defend decisions and to speak in public. Poultry judging provides an excellent opportunity for 4-H'ers to learn about live birds and the basis of grade and quality of poultry products.

This manual was prepared as an aid in teaching beginners, as well as experienced individuals, to properly evaluate egg-producing hens and to apply USDA standards in grading ready-to-cook poultry and eggs. It is intended for use at the local, state and national levels in training poultry judging teams.

Although local contests may vary, state and national contests test ability in the following classes:

- Past-production judging of four Leghorn hens per class.
- Oral reasons on the above past-production class.
- Grading eggs based on:
   —Exterior quality
   —Interior quality by candling
   —Broken-out quality
- Grading ready-to-cook carcasses.

Past Egg Production Judging

In past egg production classes, four live birds are judged and ranked according to the number of eggs they have laid before the contest. The birds are judged on the factors of **Persistency, Intensity,** and **Health and Vigor.** The **Persistency** factors of pigment loss and molt tell you which hen has the longest period of continuous production and are the best indicators of the number of eggs each hen has laid. **Intensity** factors indicate the hens current rate of production. Intensity is determined by the handling quality of the pubic bones, abdominal skin and vent, and lack of fat under the shank scales. Abdominal capacity and the condition of the comb and wattles are additional indicators of Intensity. **Health and vigor** are indicated by the shape and brightness of the eye, proportional shape of the head and the condition of the comb and wattles.

Pigment loss is the first characteristic that should be used to place the class. The hen that has bleached the most should be placed first. If two birds have the same pigment loss, use handling quality to split the pair. The bird with the better handling quality is placed up. Two birds with equal bleaching and handling quality are placed on differences in abdominal capacity. The hen with the larger abdomen is the better layer. Finally, split two birds by their molt condition. The nonmolter, or the one that has molted the fewest primary feathers is placed over a hen with a more advanced molt. Health and vigor are not used in placing the birds, but you should describe these factors when giving reasons. This manual will teach you how to look at a hen, see each of these factors, use them to place a class of past production hens and then give oral reasons to defend your placing.

You need to know the parts of the bird important for production judging. (Shown in Figure 1.) Learn them and you will then be able to examine birds and talk about them properly when you give reasons.
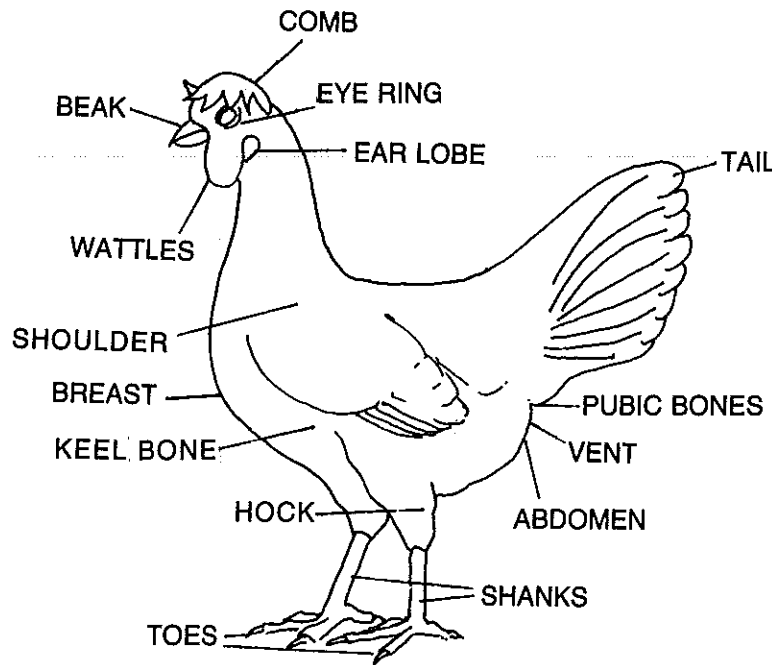

Figure 1. Parts of a chicken, giving common names used In production Judging.

Bleaching

The most important factor in determining past egg production is the loss of pigment from the skin and shanks of the bird. Leghorn hybrids used for egg production have yellow-pigmented skin and shanks. This pigment is deposited in the skin, beak, shanks and feet while the bird is a growing pullet. At sexual maturity, which is 16-22 weeks of age, she starts to lay eggs. The pigment then bleaches from the pigmented areas in a definite order according to the approximate number of eggs she has laid. If you learn the order of pigment loss or bleaching, you can easily rank the hens for past egg production. The order is:

(1) vent,
(2) eye ring,
(3) ear lobe
(4) beak (corner of the mouth toward the tip),
(5) bottom of the foot,
(6) front of the shank (top down to the foot),
(7) back of the shank (bottom up to the hock) and
(8) the hock and top of the toes.

This order is shown in Figure 2. The figure also includes a table showing the number of eggs laid as pigment bleaches from each part of the body. Memorize Figure 2.
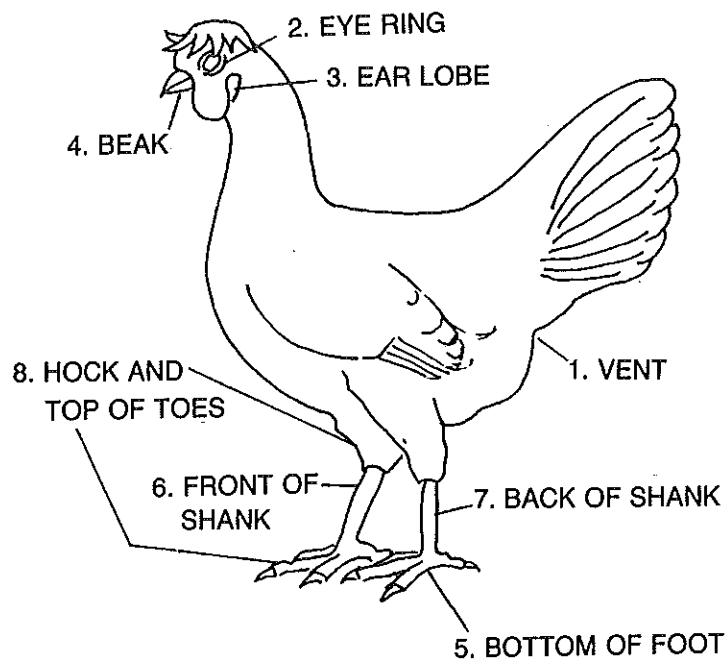
SKIN ZONE	CUMULATIVE EGGS LAID	ELAPSED TIME
VENT	0-10	0-2 Weeks
EYE RING	8-12	2.0-2.5 Weeks
EAR LOBE	10-15	2.5-3.0 Weeks
BEAK	35	5-8 Weeks
BOTTOM OF FEET	68	
FRONT OF SHANK	96	
BACK OF SHANK	159	
TOP OF TOES & HOCKS	175-180	20-30 Weeks

Figure 2. Diagram and table showing order of bleaching of hen pigmentation.

Hens regain their pigment when they stop production. The pigment returns to the skin in the same order it is bleached; vent, eye ring, ear lobe, beak, bottom of the foot, front of the shank, back of the shank and hock and toes. Hens that show signs of repigmentation are poor producers.

Getting Started

Let's learn about judging hens for past production by looking at some birds. First, prepare to take notes on each birds as you study her past production characteristics. Get a clip board and make a form like the one below:

NOTES

Months of Production_____

Bird #	Pigment Loss (P)	Handling Qualities (HQ)	Abdominal Capacity (AC)	Molt (M)
1				
2				
3				
4				

Placing_____

To begin, stand back and look at the class as a whole (Figure 3). Before you handle the birds, sort them into top and bottom individuals or pairs on visible pigment loss.
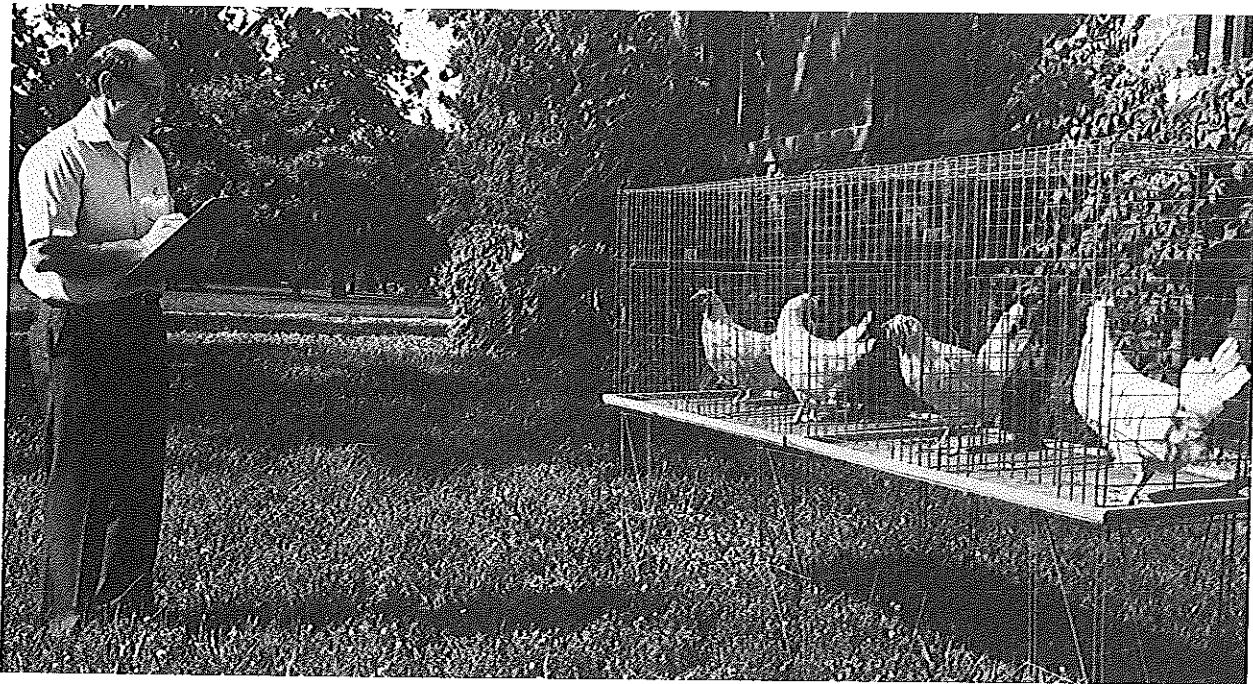
Figure 3. Stand back and look at the class.

Look for the best producers first. Their beaks and shanks should be well bleached. They should also show good intensity by having bright red, glossy combs and wattles. Healthy vigorous hens will have round, bright, alert eyes and well-proportioned heads. The poor layers may have some pigment in the beak or shanks. They may also have signs of low present production shown by dull, shrunken combs and wattles, dull, sleepy eyes and shallow heads. Remember that the bird with the most pigment loss has laid the most eggs regardless of her intensity or state of health.
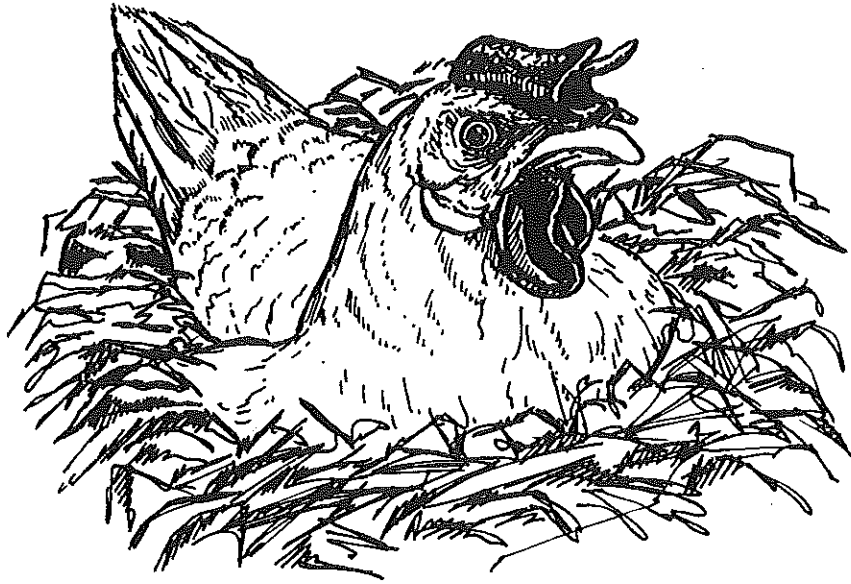
Catching and Handling the Bird

After seeing the class as a whole, remove each bird from her cage and make notes of your observations. To remove the bird from the cage and examine her, follow the next set of photographs.

Place your hand above the hen and quickly but gently pin her to the floor of the coop (Figure 4). In the photograph, her head points away from the door. Steady the bird with your free hand and hold one wing at the shoulder. Turn her head to the door (Figure 4).
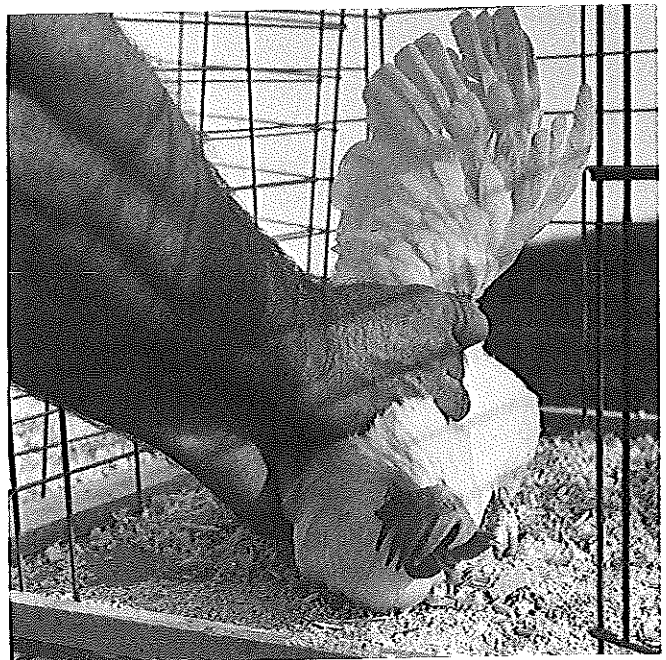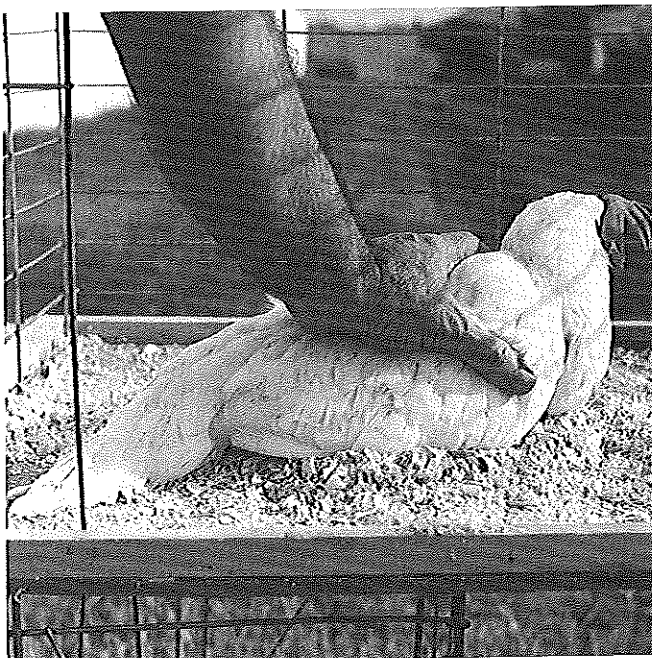
Figure 4. Pin the bird to the floor and turn her head to the door.

With both hands, hold the wings next to the body; lift the bird off the floor and take her from the cage headfirst (Figure 5).
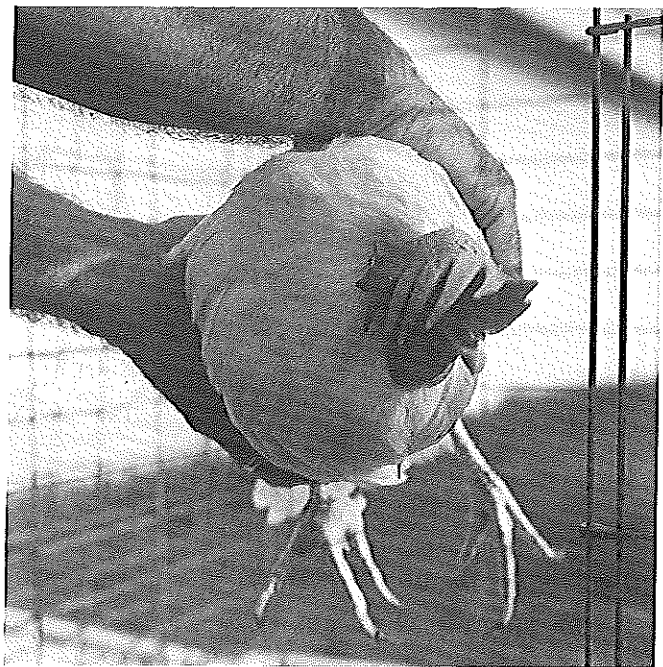
Figure 5. Hold the wings and remove the hen headfirst.

Slide one hand under the bird so the breast sets in the palm of your hand (Figure 6). Steady her with your free hand. Hold the legs gently above the hocks. Put your index finger between the hocks, your thumb around one leg and your remaining fingers around the other leg. Carry the weight of the bird with the breast in the palm of your hand as shown in Figure 6.

Figure 6. Hold the bird's breast in your palm. With a finger between the hocks, grasp the legs.

To examine the bird, hold her back against your stomach, head down (Figure 7). From this position you can see the vent and check handling quality, abdominal capacity, bleaching of the feet and shanks and molt.

Bleaching of Vent and Shanks and Handling Quality

Use your free hand to spread the feathers and look at the vent (Figure 7). It should be bleached, moist, large and oblong in shape.

Look at the feet and shanks (Figure 7). They should be bleached through the hocks and top of the toes. Also, they should be thin and have a groove down the side. Record your observations in your notes.

Figure 7. Look at the vent, feet and shanks for pigment loss.

Handling Quality

Keep the bird in the same position. Gently feel the pubic bones for sharpness and flexibility (Figure 8). Take a pinch of skin just below the pubic bone (Figure 8). Roll it gently between the thumb and finger to feel its thinness. Feel the softness or hardness of the abdomen. Softness means a lack of fat. Hardness means fat in the abdomen. A lean, trim condition of the pubic bones, skin, abdomen and shanks means good handling quality. Also, the abdomen should be full instead of tight when handled. Record this information in your notes.
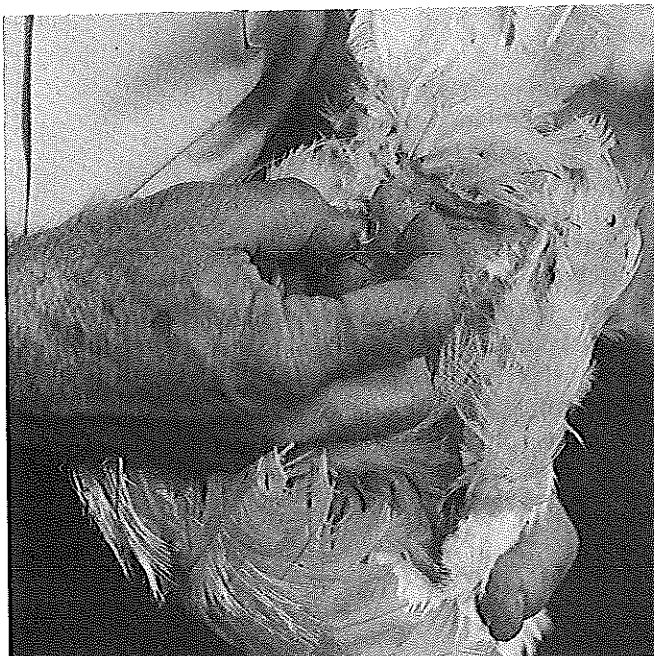

Figure 8. Feel the pubic bones and skin for handling quality.

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Abdominal Capacity

Examine the abdominal capacity (Figure 9). Place as many fingers as you can between the bottom of the pubic bones and the rear tip of the keel bone. Count the fingers (our example shows three) to find the abdominal depth. Turn the bird sideways, breast toward you, with the head under your elbow. Count the fingers between the pubic bones (in this case three). This is abdominal width. These numbers are recorded as 3x3 under abdominal capacity.
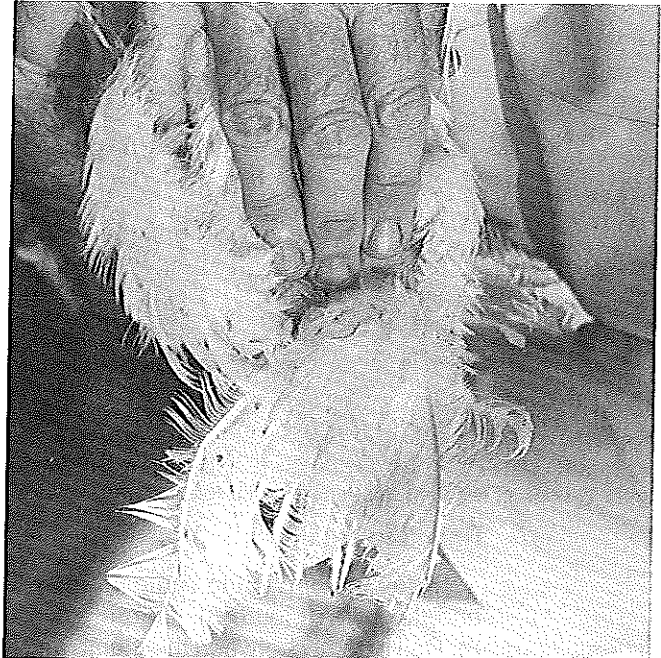
Figure 9. Measure abdominal capacity with your fingers.

Molt

With the hen tucked under your arm, hold the wing open like a fan (Figure 10). The short feather in the middle is the axial feather. There are ten primary feathers on the outside of the axial toward the wing tip. These are the feathers we will study. They molt from the axial to the tip. Old feathers that have not been molted will be worn on the ends and may be broken or dirty. New or molted feathers will have neat, smooth ends and appear clean. They also may show different lengths if the bird is molting now.

The good producer shows all old, worn feathers, indicating she has not molted. Our poor producer has some short new feathers just outside the axial, showing she is now in a molt. Some birds will continue to lay while molting, but usually at a reduced rate. This means they will have laid fewer eggs than those that have not molted. Preferably a hen should not molt until she has completed 12-14 months of production.

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Figure 10. Check the primary feathers for signs of molt.
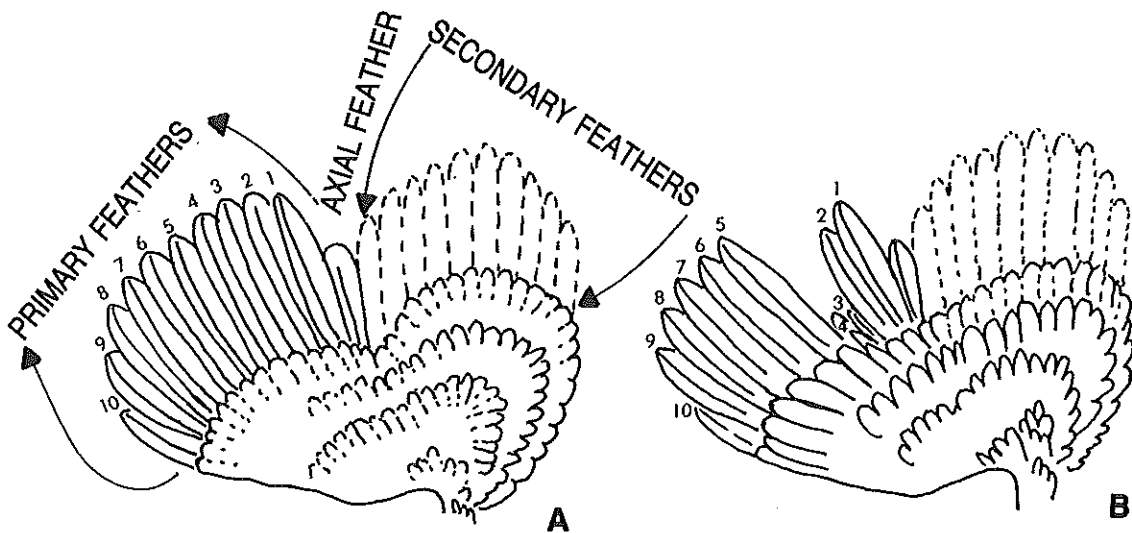
Figure 11. Diagram of primary feathers of nonmolting and molting hens.

Figure 11 illustrates what the wing feathers look like. A shows a normal wing with the axial feather dividing the primaries from the secondary feathers. B is a wing with primaries 1 through 4 being molted. The more primaries molted, the longer the hen has been out of production and the fewer eggs she has laid.

Bleaching of the Head Areas

Lift the bird in front of you. Hold her in the palm of your hand. Your free hand should gently hold the neck and head (Figure 12). Look for pigment loss from the eye ring, ear lobe and beak. You have now looked for bleaching from the vent, eye ring, ear lobe, beak, bottom of the foot, front of the shank, back of the shank, hock and top of the toes. Record the last area that has bleached.

Comb, Wattles, Eyes and Head

Look at the comb, wattles, eyes, and head. These features can change rather quickly, but should be used to gain an overall impression of health and vigor. The comb and wattles should be bright red and glossy. Eyes should be bright, alert, and round. Balance of the head means that there is good proportion to its length, width and depth. Record the condition of these parts in your notes.

This completes the examination of the bird. Return her headfirst to the coop.

Figure 12. Look at the head for bleaching, comb and wattle condition and brightness of eye. Return the hen to the coop head-first.

Comparison of Good and Poor Production

Now that you know how to catch and examine the bird, let's compare two birds. On the left is a good producer. On the right a poor producer.

The good producer has a bleached vent. Look at its outer edges shown on the left in Figure 13. Notice its moistness. Also, the vent is large and oblong in shape. This is the appearance of the vent of a high-performing layer.

Notice the yellow pigment in the vent of the poor producer (Figure 13, right). It has some moistness, but the vent is small and round in shape.

Figure 13. Vent of good and poor layer.

There is total bleaching of the eye ring, ear lobes, and beak of the good layer. The comb and wattles are bright red and glossy. There is good balance or proportion to the head. Notice the bright, alert, round eye (Figure 14).

Yellow pigment is present in all parts of the poor layer's head (Figure 14). The comb is small and pale and the eye is dull and sleepy. The head is too long or shallow in proportion to its depth.

Figure 14. The heads of good and poor laying hens.

The bottom of the good layer's feet are pink and show a loss of yellow pigment. If there is too much dirt on the foot, gently bend the toe and look in the skin cracks at the joints. There is much pigment in the bottom of the foot of the poor producer (Figure 15).
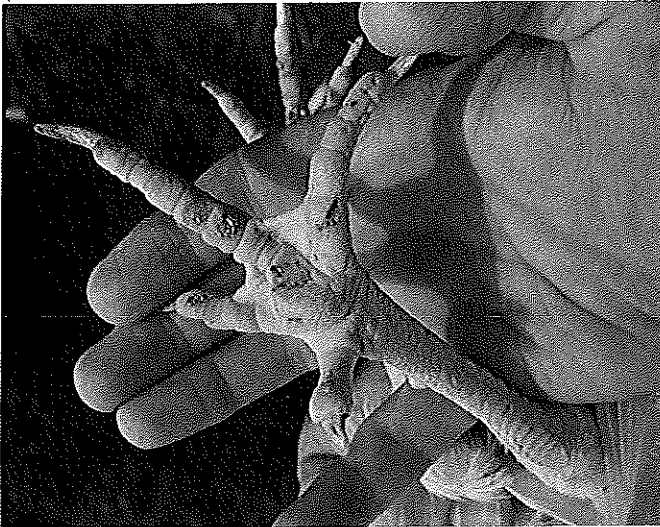
Figure 15. Bleached and pigmented feet of good and poor layers.

Cover the top of the foot with your hand to hide any pigment that may be there. **Some very good layers may never bleach this part of the foot.** Start at the top of the shank and study the loss of pigment down the front toward the foot. The good layer has bleached this area of the shank (Figure 16).

Just below the feathers at the top look at the yellow in the front of the shank of the poor producer (Figure 16). It extends down to the foot.
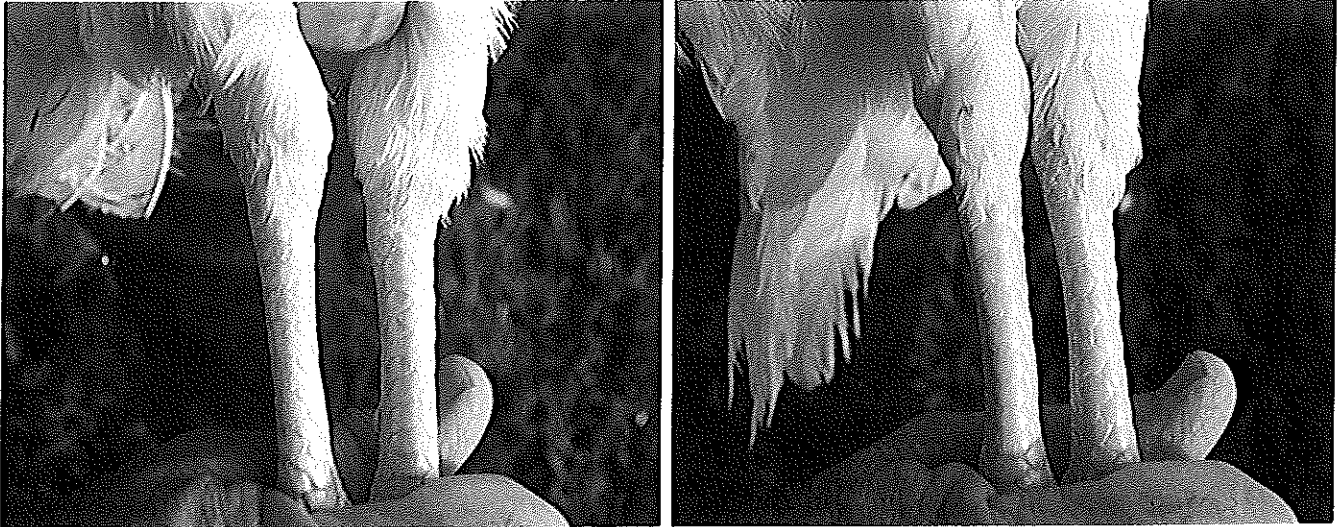
Figure 16. The front of the shanks of good and poor producers.

The back of the shank has bleached from the foot up to the hock (Figure 17). Look closely at the bottom of the shanks on the left. There is no pigment to be seen in the area up to the hock.

On the right, the poor producer has yellow color at the bottom of the shank and on up to the hock.

Figure 17. Back of the shanks of good and poor layers.

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Pull the feathers back from the hock to see the last of the scales in this area. There may be a few of them that have pigment. If you don't look, you can be fooled. Curl one toe back to see if pigment is in the top of the toe.

The good producer is bleached in the hock and toes. There is yellow in the hock and toes of the poor layer (Figure 18).

Remember, your placing is based on bleaching or pigment loss from the vent, eye ring, ear lobe, beak, bottom of the foot, front of the shank, back of the shank, and hock and top of the toes, in that order. The more of these parts that are bleached in order, the more eggs the hen has laid. Birds with identical bleaching are split on handling quality, next on abdominal capacity and then molt.

Figure 18. Hock and top of the toes of bleached and pigmented good and poor producers.

Placing the Class and Preparing Oral Reasons

The following make-believe notes are used to demonstrate how this is done.

Months of Production   14

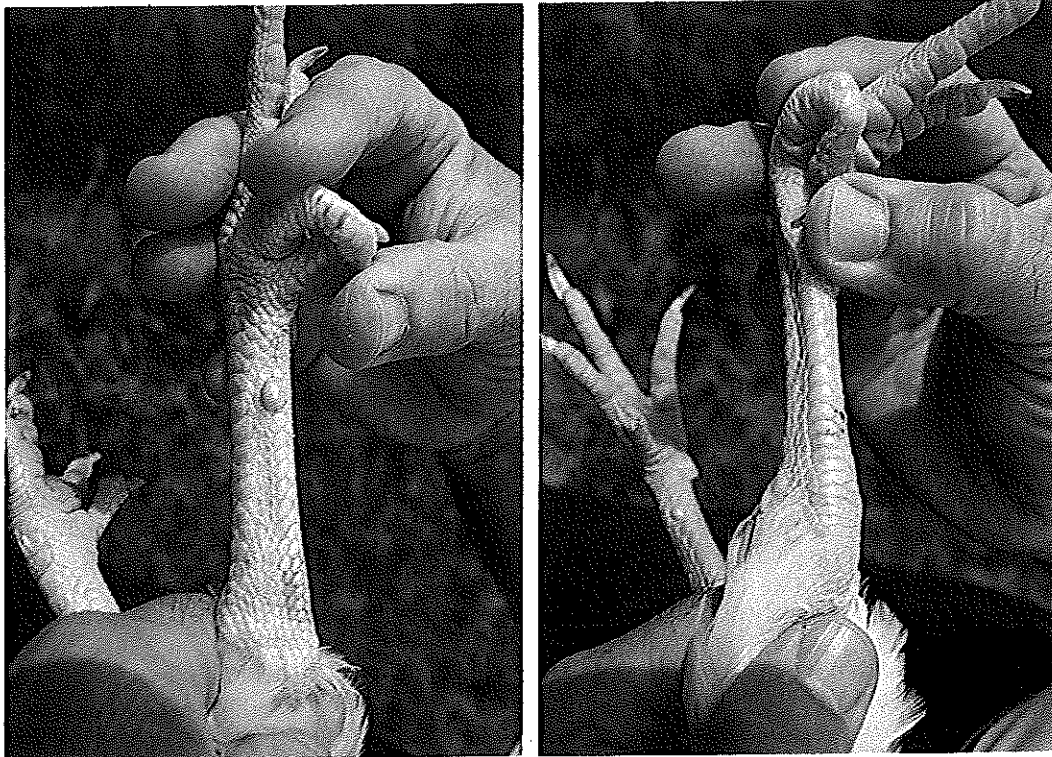| Bird #	Pigment Loss (P)	Handling Qualities (HQ)	Abdominal Capacity (AC)	Molt (M)
1	*Bleached through bottom of foot, yellow shanks*	*Thick, fat pubic bones, hard abdomen*	*2 x 2*	*None*
2	*Bleached through hocks and tops of toes*	*Soft, pliable abdomen, sharp flexible pubic bones*	*3 x 4*	*None*
3	*Bleached through shanks, yellow in hocks and tops of toes*	*Soft, pliable abdomen, pubic sharp*	*3 x 4*	*None*
4	*Bleached throughout but some pigment on toes, back of shanks*	*Pubic bones sharp, abdomen hard*	*3 x 4*	*None*

Placing 2-4-3-1

To place the class, first rank the hens according to their pigment loss. Look at the notes. Hen number 2 is the only bird that is completely bleached through the hock and the top of the toes. She has laid more eggs than numbers 1, 3 and 4. She is placed first. Hen number 4 is placed second because she is bleached throughout but has some pigment on the back of her shanks and top of the toes. Hen number 3 which is bleached through the shanks with some pigment in hocks and toes is placed third. Hen number 1 with yellow shanks, has bleached only to the bottom of her feet, therefore she is placed fourth. The placing is now made ranking the hens 2-4-3-1.

As you read the following set of reasons, study how each of the notes is used to either describe the class, justify a placing, describe a hen, or compare two birds. Notice how the terms bleaching, pigment loss, persistency, handling quality, abdominal capacity, molt, condition of the vent, eyes, comb and wattles, head and intensity are used:

Good Morning:

I am Contestant #10.

I place the class of White Leghorn Production hens 2-4-3-1. I had an easy top pair, close middle pair and an easy bottom pair.

I place 2 at the top of the class and over 4 because of pigment loss and handling qualities. Bird number 2 is totally bleached through the hock and the tops of the toes. This indicates that 2 is a persistent layer and has laid for a long time without stopping. Two (2) is also a more intense layer as evidenced by her superior handling qualities. Her abdomen is soft and pliable and pubic bones are sharp and flexible while 4 has a hard abdomen showing signs of fatty deposits. Both hens had an abdominal capacity of a 3x4 finger spread. The number 2 bird was also larger and wider than the number 4 hen.

I place number 4 second and over number 3 because of pigment loss. I found that 4 has slightly less pigment on her shanks than 3, particularly on the hock joints and tops of the toes. I grant that 3 has a slightly softer and more pliable abdomen than 4. However, I still placed 4 over 3 because 4 has been a more persistent layer as shown by the greater bleaching. Both hens had an abdominal capacity of a 3x4 spread. Both hens also had bright and alert eyes, red and waxy combs which demonstrates their intensity of lay.

In the easy bottom pair I placed 3 over 1 because of pigment loss, handling qualities and body capacity. Bird 3 shows pigment loss in the shanks while bird number 1 has only bleached through the bottom of the foot and shows intense pigment over the entire shank. Three (3) has a softer abdomen and sharper more flexible pubic bones whereas number 1 has thick, fat pubic bones and between her pubic and keel bones than does number 1. The number 3 hen had a better abdominal capacity of 3x4 whereas the number 1 hen had a 2x2 finger spread.

I placed 1 last because she lacks persistency as shown by the intense pigment in her shanks and lacks intensity as well because of her fatty abdomen and pubic bones. She also had a narrow head and shrunken comb and wattles.

Molt was not a factor in placing this class.

For these reasons I placed this class of White Leghorns 2-4-3-1.

Are there any questions?

Summary

Remember, hens ranked for past production are first placed on pigment loss, then handling quality, followed by abdominal capacity, and finally molt. Pigment loss indicates the number of eggs laid. Good handling quality is characterized by the leanness and trimness of the hen. Large abdominal capacity goes with high egg production. Signs of molt mean the hen stopped or slowed her production and did not lay as many eggs as she should have. These four factors are the keys to judging hens for past egg production.

Egg Quality

Interior Quality

Candling is used to judge interior egg quality. Although other factors help determine the grade of an egg, the interior quality is most important. 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 (Figure 19).
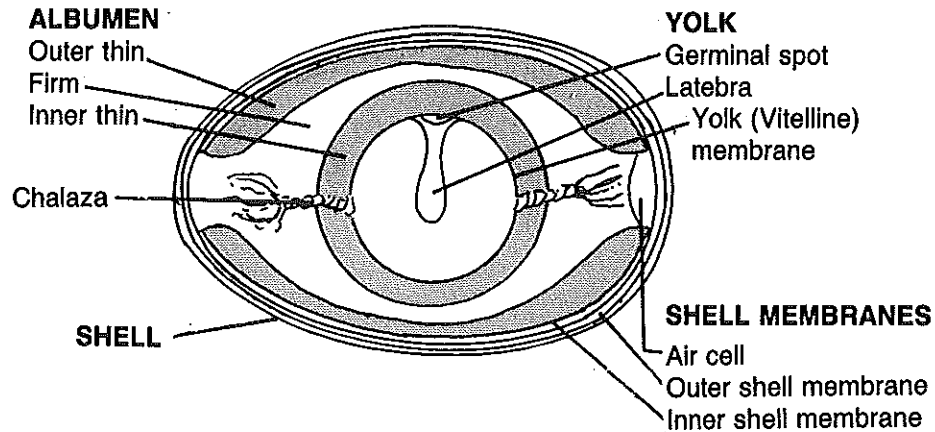

ALBUMEN
Outer thin
Firm
Inner thin

Chalaza

SHELL

YOLK
Germinal spot
Latebra
Yolk (Vitelline) membrane

SHELL MEMBRANES
Air cell
Outer shell membrane
Inner shell membrane

Figure 19. The parts of an egg.

How to Candle

Hold the egg up to the candling light in a slanting position (Figure 20). 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.
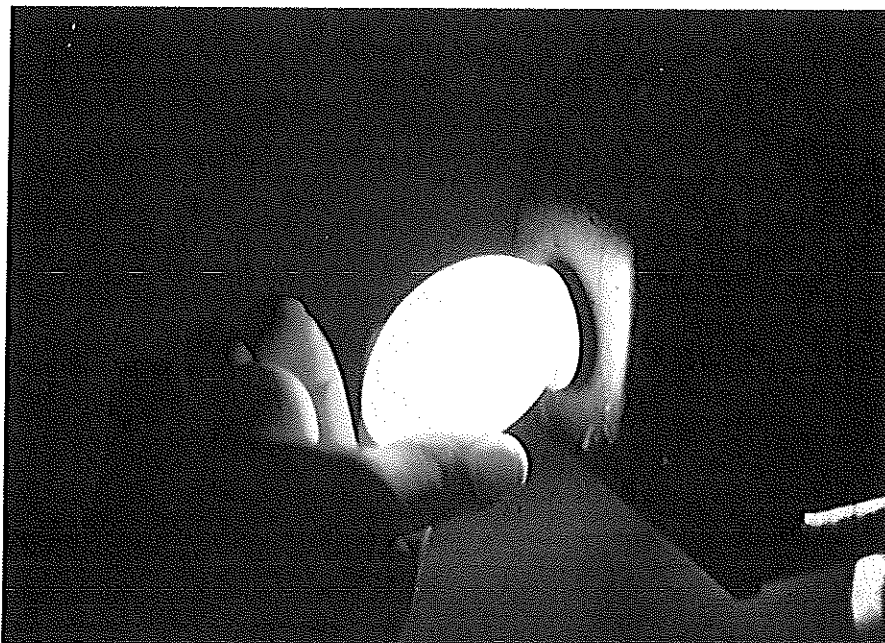

Figure 20. The way to hold eggs while candling.

Application of Standards

Use the specifications given in Table 1 to determine the grade of an egg by candling. Consider air cell depth, yolk outline, and albumen quality.
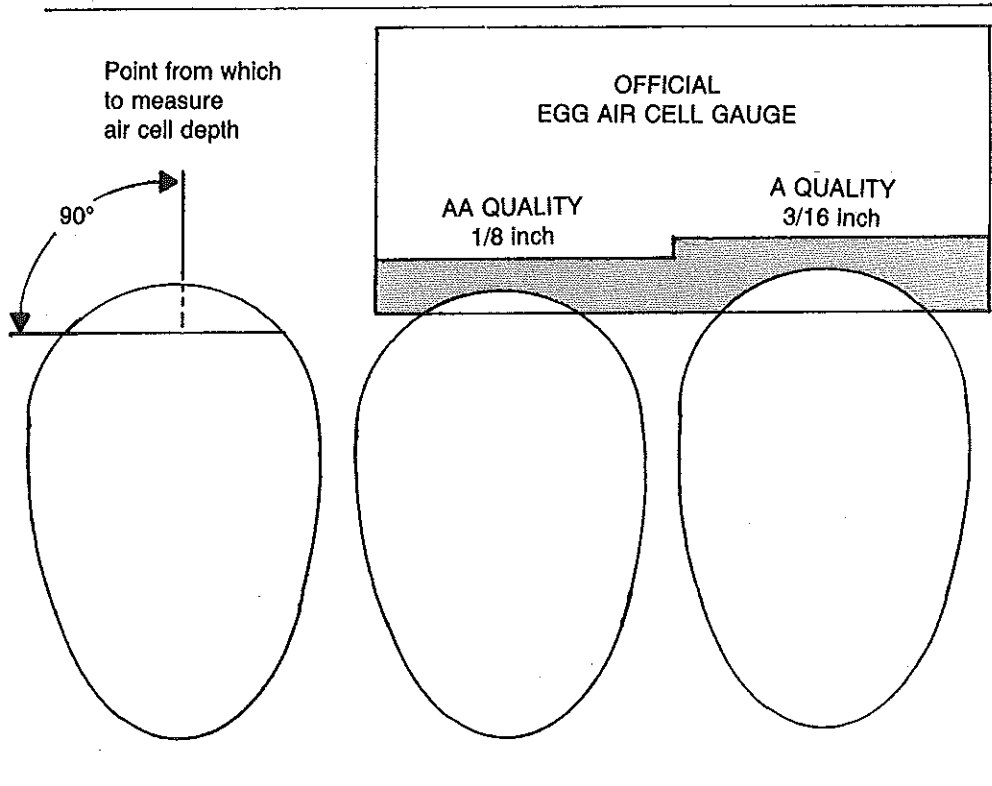
Table 1. Summary of Standards for Interior Quality of Eggs by Candling for 4–H Poultry Judging

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 Firm	Clear May be reasonably firm	Clear 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	Blood or meat spots aggregating not more than 1/8″ in diameter	Blood or meat spots aggregating more than 1/8″ in diameter

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 (Figure 21). 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.

Measuring Air Cell Depth

Point from which to measure air cell depth

90°

OFFICIAL EGG AIR CELL GAUGE

AA QUALITY 1/8 inch

A QUALITY 3/16 inch

Figure 21. Gauge for measuring depth of air cell.

Yolk

The yolk of a fresh, high quality egg will be surrounded by a rather dense layer of albumen or white. Therefore, it moves only slightly away from the center of the egg when it is twirled before the candler. Because of this, yolk outline is only slightly defined or partially visible. As the egg ages or deteriorates in quality, the albumen thins and the yolk tends to move more freely and approaches the shell more closely. The yolk then becomes more visible when candled.

White or Albumen

The character and condition of the white or albumen is determined largely by the behavior of the yolk of the egg when the egg is candled. When the egg is twirled, if the yolk retains its position in the center, the white is usually firm and thick.

Eggs with blood or meat spots more than 1/8-inch in diameter would be classified as inedible. Eggs with small spots less than 1/8-inch in diameter should be classified as Grade B. However, very small pinpoint spots should not be used in judging contests. Contestants should not confuse blood spots with the chalaza. This string of albumen serves to help hold the yolk in the center of the egg and may be prominent in some eggs. The chalaza is distinguished from a blood spot by a bright area of refracted light that accompanies the darker shadow of the chalaza.

When determining the grade of an egg by candling, the lowest factor in the air cell depth, yolk or albumen quality will determine the grade. For example, an egg may have a clearly-defined yolk that is flat and at the bottom of the egg while the air cell is less than 1/8-inch in depth. This egg would be a B grade.

The following will not be considered as quality factors when candling eggs for interior quality:
- Loose, bubbly or out-of-position air cell
- Exterior stains or dirt
- Faulty egg shell shape or texture

Exterior Quality

In commercial egg-processing plants, eggs are graded simultaneously for exterior and interior quality. However, in judging contests, it is necessary to grade eggs for exterior quality separately, because handling of eggs by contestants can change the grade. Exterior quality standards reduce the number of eggs with defects that detract from the appearance of the egg or that would have a low probability of surviving the rigors of handling in normal market channels. In other words, we want the consumer to have clean, unbroken eggs with practically normal shape and texture. Contestants should not be too harsh in assigning grade to eggs that may have minor defects. This is especially important when judges have gained experience in evaluating eggs with various degrees of abnormalities.

Exterior Quality Grades

Table 2 summarizes the descriptive terminology used in the USDA Egg Grading Manual to help determine the grade of an egg by exterior quality. For 4–H Poultry Judging Contests, eggs will be assigned the grades of A, B and Dirty. Grades AA and A have identical standards. The factors that affect exterior quality are discussed below.

Table 2. Summary of Standards for Exterior Quality of Eggs

Factor	Grade		
	AA or A	**B**	**Dirty**
Stain	Clean—may show small specks, stains or cage marks that do not detract from general clean appearance of the egg— may show traces of processing oil.	Slight, or moderate localized stains less than 1/32 of shell or scattered stains less than 1/16 of shell.	Prominent stains. Moderate stains covering more than 1/32 if localized and 1/16 of the shell if scattered.
Adhering Dirt or Foreign Material	NONE	NONE	Adhering dirt or foreign material (1.0 mm in area or greater)
Egg Shape	Approximately the usual shape.	Unusual or decidedly misshapen (very long or distorted).	
Shell Texture	May have rough areas and small calcium deposits that do not materially affect shape or strength.	Extremely rough areas that may be faulty in soundness or strength. May have large calcium deposits.	
Ridges	Slight ridges that do not materially affect shape or strength.	May have pronounced ridges.	
Shell Thickness	Free from thin spots.	May show pronounced thin spots.	

Stains

Grade A eggs must be clean. These eggs can show traces of processing oil (used to preserve freshness). This processing oil may give a shiny or opaque appearance. Eggs with slight stains, or moderate stains covering less than 1/32 of the shell, if the stain occurs in one localized area, or 1/16 of the shell surface, if the stains are scattered, are assigned Grade B.

Figure 22 will help to visualize these areas. Dirty eggs have prominent stains, or moderate stains covering more than 1/32 of the shell if localized, and 1/16 of the shell if scattered. Eggs with adhering dirt or foreign material are also classified as dirty.

Contestants will be evaluating only the exposed surface of the egg. The underside of the egg should be considered free from defects. Evaluate only what you see.
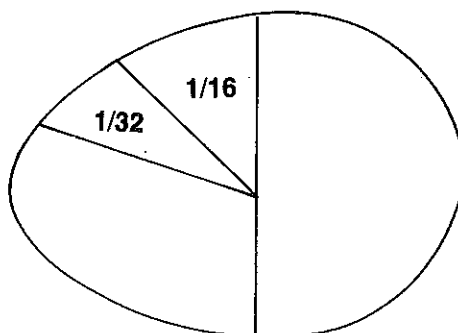

Figure 22. One-thirty-second and one-sixteenth of shell surface of an egg (areas shown are approximate).

Adhering Dirt or Foreign Material

Grade A and B eggs cannot have any adhering dirt or foreign material. Eggs with adhering material (3-dimensional) larger than a speck (about 1.0 mm) should be classified as Dirty. Small specks of dust or lint that may have settled out of the air should not be considered.

Egg Shape

There is a considerable range of egg shapes that could be considered "approximately the usual shape" or Grade A. Eggs that are perfectly spherical (round) or too long to fit in the egg carton should be graded B quality. B quality grade for egg shape will include eggs that are clearly misshapen or that have definite flat areas.

Shell Texture

Eggs with faulty texture are much weaker in shell strength and may be broken during distribution. Shells with large calcium deposits (greater than ⅛ inch in diameter) should be classified as Grade B. Eggs with small calcium deposits are classified as Grade A. There is no standard for number of calcium deposits which means that small calcium deposits over the entire shell may be classified as Grade A if otherwise qualified. A good rule of thumb is that if you were to pull your fingernail across a calcium deposit, and there would be a good size hole if it came off, it would be classified as Grade B.

Ridges

Ridges can result in weakened shells. Many eggs show small ridges and most of these should be classified as Grade A. Those eggs with large ridges are Grade B.

Shell Thickness

The shell should appear thick enough to withstand reasonable handling without breaking. Grade A eggs must have thick shells with no thin spots. Thin shells or thin spots would place an egg in Grade B. In all cases the shell must not be broken.

Broken-Out Quality

Eggs broken out for this class will be Grades AA, A, B and Inedible. Eggs with spots (blood and meat) more than ⅛-inch in diameter will be classified as inedible. Eggs with spots less than ⅛-inch will be classified as Grade B.

The only other criteria that should be used to grade broken-out eggs is the height of the thick albumen relative to the size of the egg. The size, flatness, or position of the yolk should not be considered. Broken-out grade determination must be based on "U.S. Standards for Quality of Shell Eggs" from the USDA. Representative AA, A, and B grade eggs from this chart are provided in Figure 23. The thick albumen retains the shape of the egg in a Grade AA and is thick, whereas there is a flattening and rounding of edges in a Grade A egg. The thick white in a Grade B egg is flat and barely visible.

AA *or Fresh Fancy Quality*   **A** *Quality*   **B** *Quality*
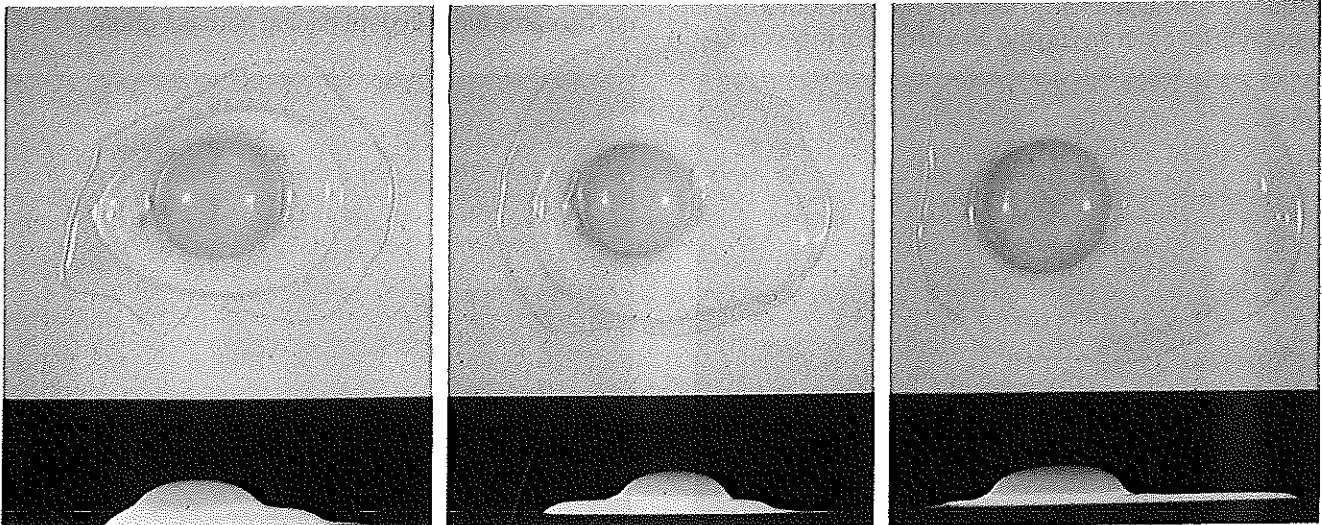

Figure 23. Specifications for broken-out eggs.

Contestants should learn to assign the proper grade by comparing actual broken-out eggs with the USDA broken-out egg chart. The diameter of the outline of the thick white (top view) may give an indication as to grade; however, the height of the thick albumen (side view) is the most important factor in determining grade. For example, an extra large egg may have a rather large, thick albumen outline and also sufficient height of thick albumen to be Grade AA.

Contestants should evaluate each egg on its own merit and not compare it with other eggs in the class. If you set an incorrect standard, your grade scale could be off, causing you to incorrectly grade several eggs. Learn by comparing to the USDA chart for broken-out eggs.

Carcasses are graded A, B, or C quality. Factors used in judging ready-to-cook carcasses in a 4-H Poultry Judging Contest are:

* exposed flesh,
* broken and disjointed bones, and
* missing parts.

Always mark your scorecard for the lowest grade defect found on the carcass.

Because of the length of most judging contests, carcasses will dry out. You should not place carcasses based on off-color areas such as bruised, dried out or brown burn areas. In addition, feathers and pin-feathers are not used as a quality factor in ready-to-cook judging.

Carcasses used for contests will usually have Grade A fleshing, conformation and fat cover. You should, however, be prepared to recognize poor fleshing and finish if such birds are available for a contest.

The carcasses you judge will be hanging form shackles. This method is used so it is easier to see all parts of the bird. CARCASSES CANNOT BE TOUCHED OR HANDLED DURING JUDGING. It is permissible to turn the shackle to see the whole bird as long as you do not touch the carcass. If the ready-to-cook carcasses are on plates, judge them as you see them.

Ready-to-cook poultry will be judged according not the quality specifications in Table 3. There are four weight categories for determining the size of cuts or tears on the different parts. There are no weight ranges for missing parts and disjointed and broken bones. Learn a method of judging carcasses by looking at one part at a time.

Cuts, Tears and Trims

Cuts, tears and trims are a result of a miscut with a knife or tearing of the skin during a processing operation. When ready-to-cook poultry is downgraded for cuts, tears, and trims it is based on the weight of the carcass and the part. The length of a cut or the amount of flesh showing on the part determines the grade. REMEMBER: CUTS, TEARS OR TRIMS MUST BE COMPLETELY THROUGH THE SKIN SO THAT THE MEAT, CALLED FLESH, CAN BE SEEN, IN ORDER TO PUT THE CARCASS IN A LOWER GRADE.

The grade is determined by the amount of exposed flesh as length of cut or amount of skin missing (Table 3). Sometimes there may be more than one cut, tear or trim on the same carcass or part. When there is more than one cut, tear or trim on a particular part, add the length or amount missing, to determine the grade based on that part only. Each part is graded separately and the grade is determined by the part having the lowest grade on that carcass. Exposed flesh from the continuation of an evisceration cut at the front and back of the breast should not be considered in determining carcass grade.

Figure 24. Cuts and tears on the breast.

Figure 25. Trim where meat yield is not affected.

Figure 24 shows some typical cuts, tears and missing skin on the breast. The Grade A carcass is not permitted to have any cuts, tears or missing skin. The Grade B carcass can have up to 1/3 of the flesh showing as long as meat yield is not materially affected. The Grade C carcass has more than 1/3 of the flesh showing.

Figure 25 shows a trim where the meat yield is not materially affected. A good rule of thumb is that the trim is a slight trim if it does not exceed the thickness of a five-cent piece (nickel) or 1/8". An excessive trim that would move the grade lower would have the appearance of a cupped effect that looks deeper than 1/8" a nickel as shown in Figure 25.
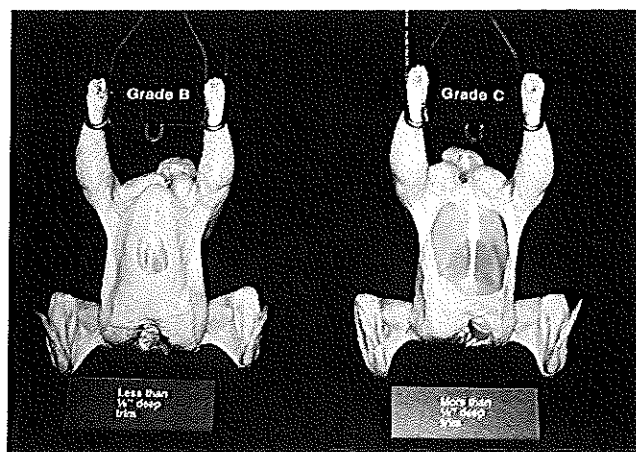
Parts such as wings and the back can have a cut, or tear, up to 1 1/2" for a Grade A carcass. A Grade B carcass is allowed to have up to 1/3 of the flesh exposed beyond what is allowed for a Grade A. Back or wings with more than 1/3 flesh exposed is a Grade C carcass. Length is as important, such as a knife cut, as a width, which is a result of a tear, in determining the Grade of a carcass. Figure 26 shows two carcasses. The carcass on the left shows a 1" cut and the one on the right has a 1" tear. Both are Grade A since both are less than 1 1/2".

Refer to Table 3 for the section on cuts and tears for the lengths and amount of exposed flesh that is allowed. Remember a slight cut into the meat not more than the thickness of a nickel (1/8") so that the appearance of the part does not look bad is permitted in Grade B. If the trim into the meat is more than the depth of a nickel (1/8") or the trim appreciably alters the appearance of the meat, then it is a Grade C.
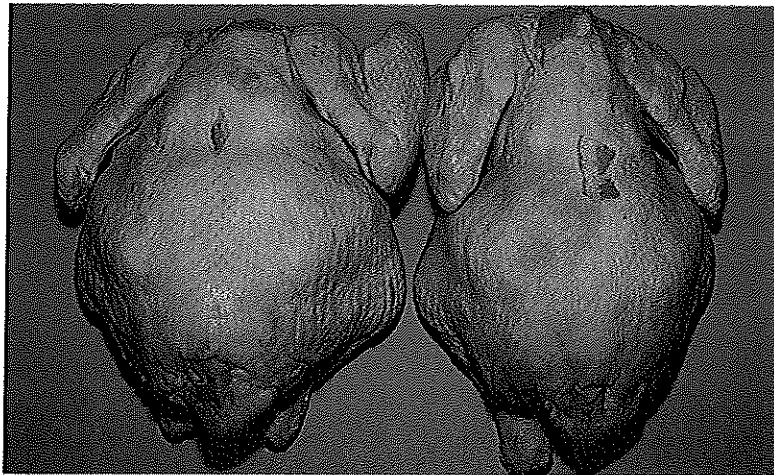

Figure 26. Cuts and tears on the back.

Missing Parts

Missing parts to be considered in judging are the wings, tail, and part of the back area if it is no wider than the base of the tail. It is important to remember that weight of the carcass does not count in judging for missing parts.

The Grade A carcass may have the wing tips and tail missing where the tail joins the back. The Grade B carcass may be missing the wing up to the second joint, as well as the tail and back less than halfway to the hips. In a Grade C ready-to-cook carcass the wing may be cut off at the third joint at the juncture of the body. In addition, the tail and back, more than halfway to the hip, may be missing. Examples are shown in Figure 27. The illustra- tion of the Grade A carcass shows the tail off at the base and some flesh showing due to an extension of the evisceration cut. There had been no removal of back on this carcass.

The Grade A carcass has the tail at the base of the body and the wing tips removed. For the Grade B ready-to-cook carcass, the back area, not wider than the base of the tail and halfway to the hip joint is removed. Part of the wing to the second joint has also been cut off. The Grade C carcass has the back area removed not wider than the base of the tail and extended to the hip joints, as well as one wing to the third joint where it joins the body.

For missing parts, use the lowest grade that you see for wings, tail, and back.
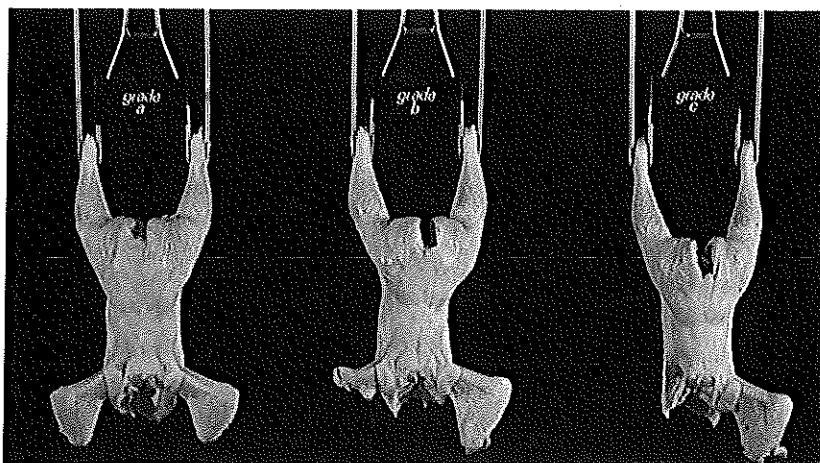

Figure 27. Missing wing, tail and back parts.

Disjointed and Broken Bones

A disjointed bone is where the joint is out of the socket. In other words, the part that is disjointed is still whole and not broken. You will be able to see the end, or knobby part of the joint underneath the skin.

Broken bones occur between the ends of the bone. They can be broken so that the bone either does or does not come through the skin. When the broken bones does not come through the skin it is called nonprotruding. As

shown in Table 3, a Grade A ready-to-cook carcass can have one disjointed, but no broken bones. A Grade B carcass can have either two disjointed or one disjointed and one nonprotruding broken bone. More than two disjointed and one or more broken, protruding bones, make the carcass Grace C. Figure 28 shows some examples of broken and disjointed bones you may see on carcasses.

As seen in Figure 28, the Grade A carcass has one disjointed bone on the leg between the thigh and drumstick where both parts would normally join together. The Grade B, ready-to-cook carcass has a broken, nonprotruding bone on the wing. The broken bone is in the middle and does not come through the skin. A broken, protruding bone is seen on the wing of the Grade C carcass.
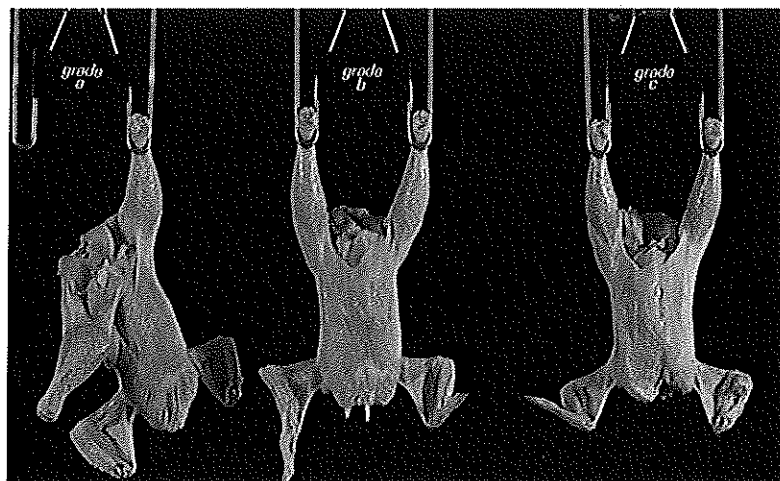
Figure 28. Disjointed and broken bones.

Table 3. Summary of Poultry Judging Contest Specifications of Quality for Individual Carcasses of Ready-to-Cook Poultry

Factor	A Quality		B Quality		C Quality
Exposed Flesh[1] **Carcass Weight**	*Breast[2]* *&* *Legs*	*Else-where*	*Breast* *&* *Legs*	*Else-where*	
Minimum *Maximum*					
None 2 lb	None	1"	1/3 of flesh exposed		
Over 2 lbs 6 lbs	None	1 1/2"	on each part of		No
Over 6 lbs 16 lbs	None	2"	carcass provided		Limit
Over 16 lbs None	None	3"	meat yield not appreciably affected		
Disjointed bones	1 disjointed		2 disjointed or		No Limit
Broken bones	None		1 disjointed and 1 nonprotruding broken		No Limit
Missing parts	Wing tips and/or tail removed at the base		Wing(s) to 2nd joint. Back area not wider than base of tail and extending halfway between base of tail and hip joints.		Entire wing(s) Back area not wider than base of tail extending to area between hip joints.

[1]Longest length for a cut and total area for tears and missing skin based on the whole part.
[2]For purposes of definition the parts of the carcass shall be each wing, leg, entire breast and entire back.
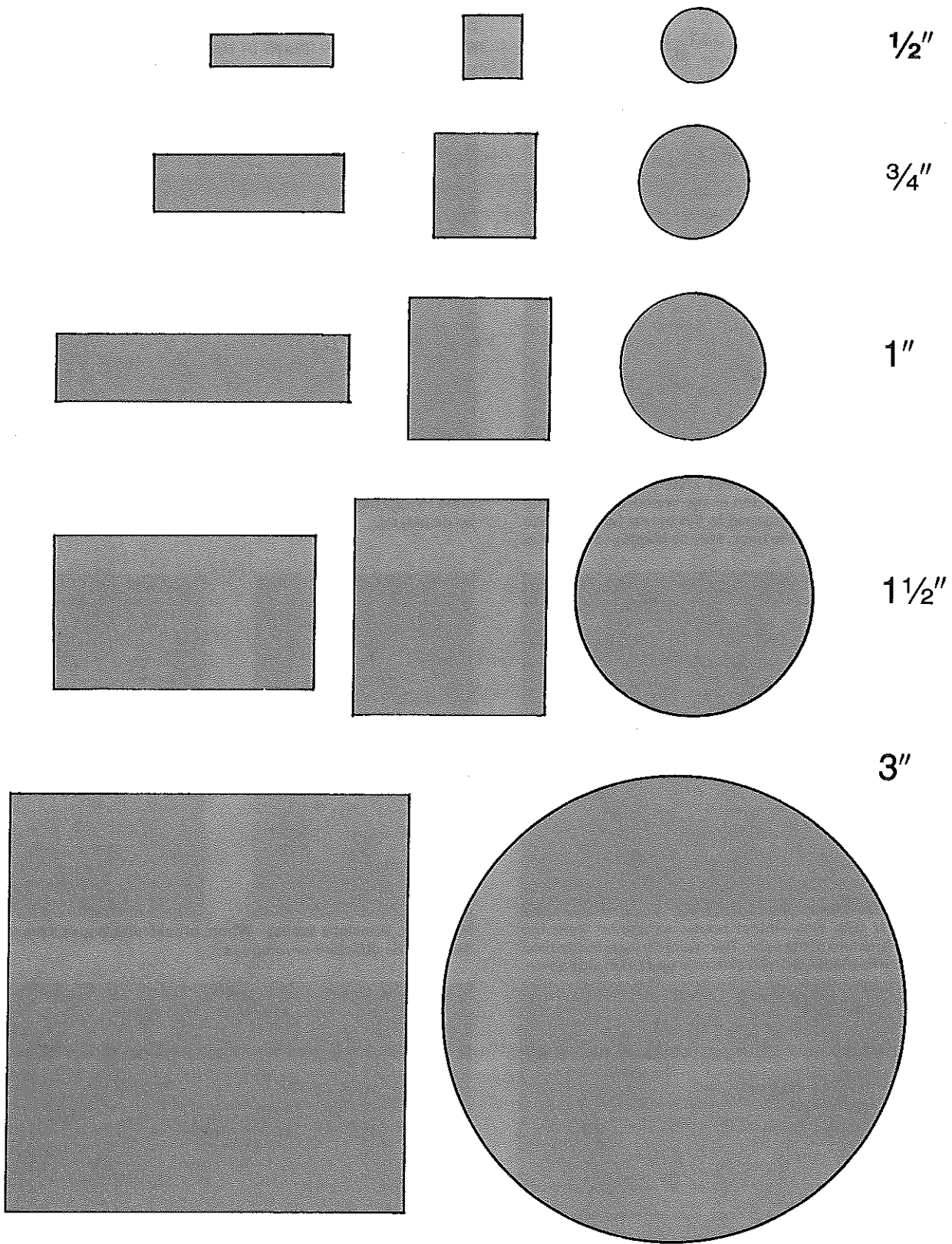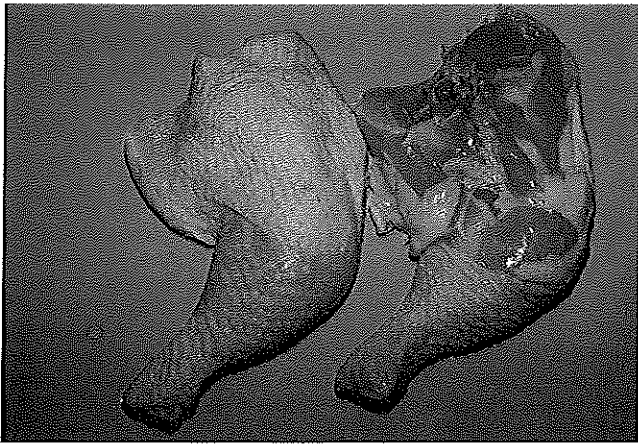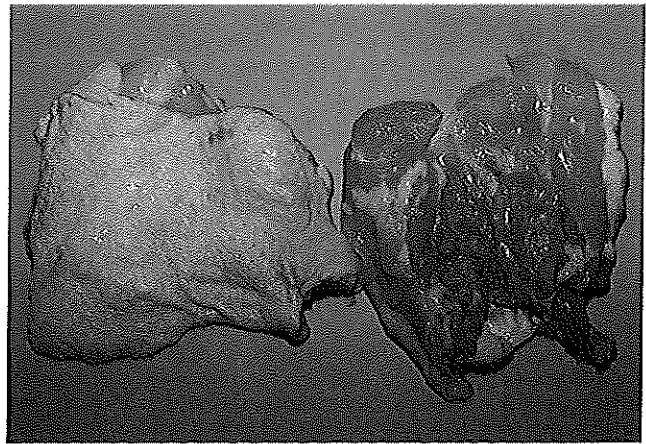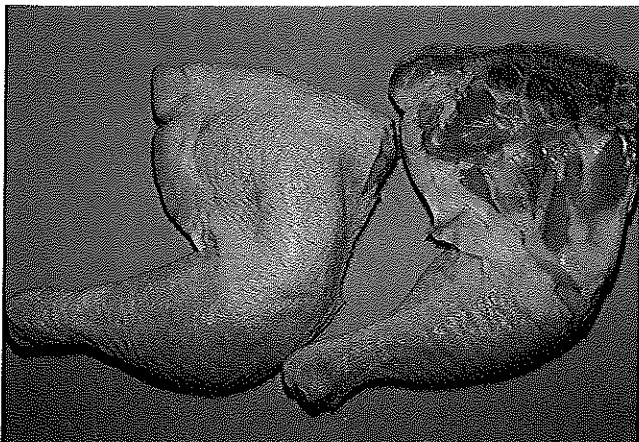
24

½″

¾″

1″

1½″

3″

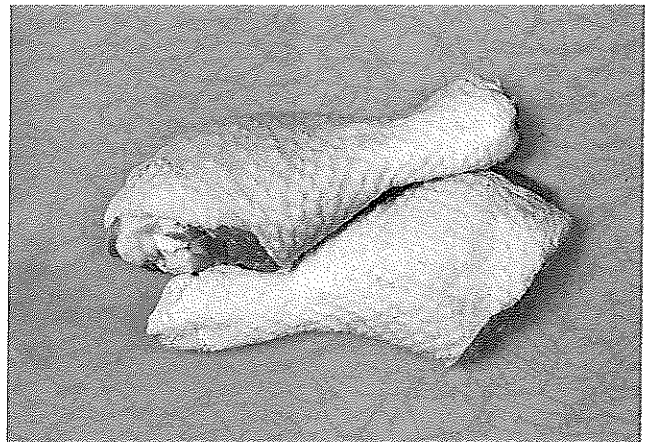Figure 29. Guide for estimating the relative size of cuts, tears and discolorations

Figure 36. Whole leg—Thigh and drumstick attached with back portion removed. The oyster can be attached. The oyster is the piece of meat on the back that lies just in front of the hip joint.
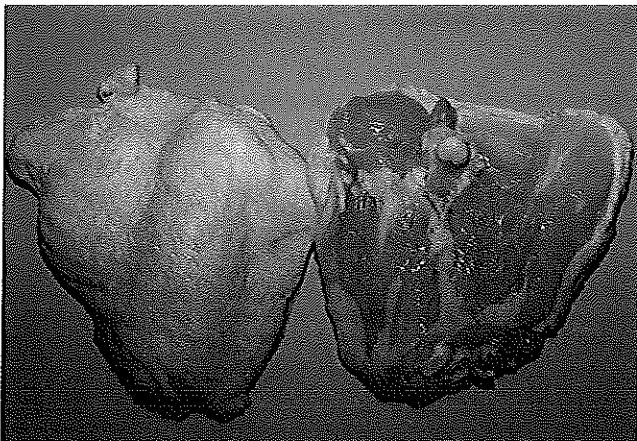

Figure 39. Boneless thigh—Whole thigh with bone removed. Skin may or may not be attached.
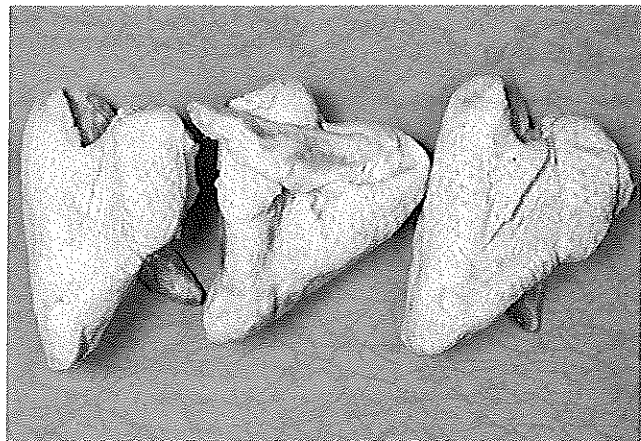

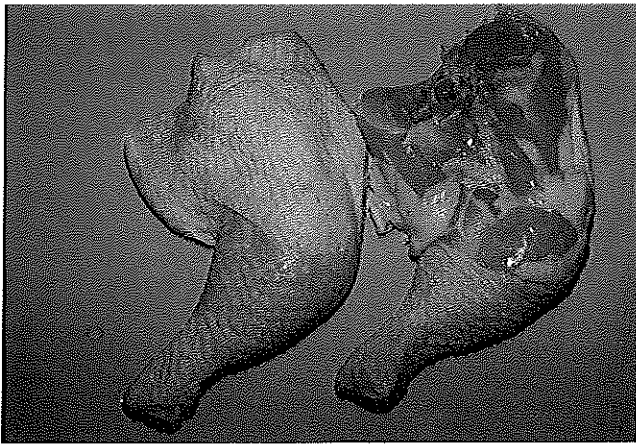Figure 37. Leg quarter—Thigh and drumstick with a portion of the back attached.

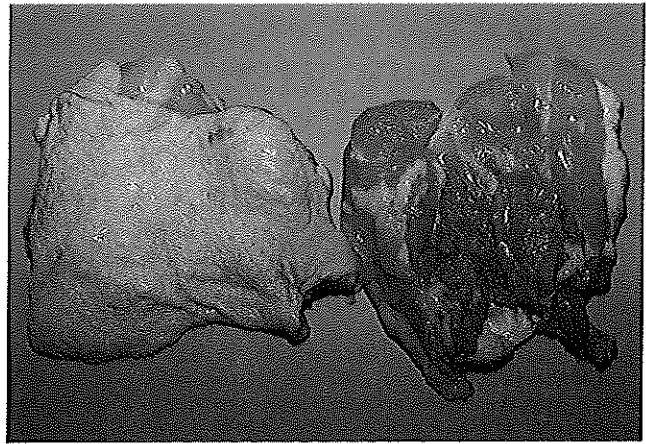Figure 40. Drumstick—Lower portion of the leg that is separated at the knee and hock joints.

Figure 38. Thigh—Upper portion of the whole leg that is separated at the knee and hip joint.

Figure 41. Wings—Entire wing with all muscle, bone and skin attached except that the wing tip, or portions of the wing tip, may be removed.

27

Figure 36. Whole leg—Thigh and drumstick attached with back portion removed. The oyster can be attached. The oyster is the piece of meat on the back that lies just in front of the hip joint.

Figure 39. Boneless thigh—Whole thigh with bone removed. Skin may or may not be attached.

Figure 37. Leg quarter—Thigh and drumstick with a portion of the back attached.

Figure 40. Drumstick—Lower portion of the leg that is separated at the knee and hock joints.

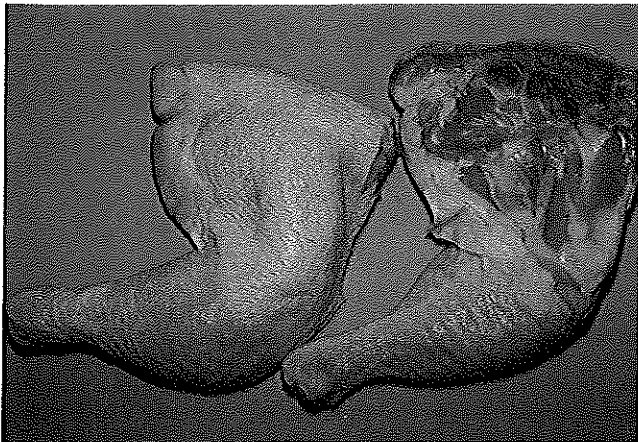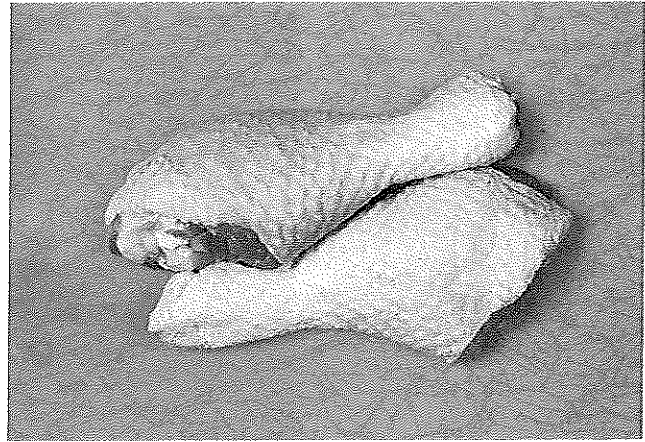Figure 38. Thigh—Upper portion of the whole leg that is separated at the knee and hip joint.

Figure 41. Wings—Entire wing with all muscle, bone and skin attached except that the wing tip, or portions of the wing tip, may be removed.

27

Figure 42. Giblets—Heart, gizzard and liver.
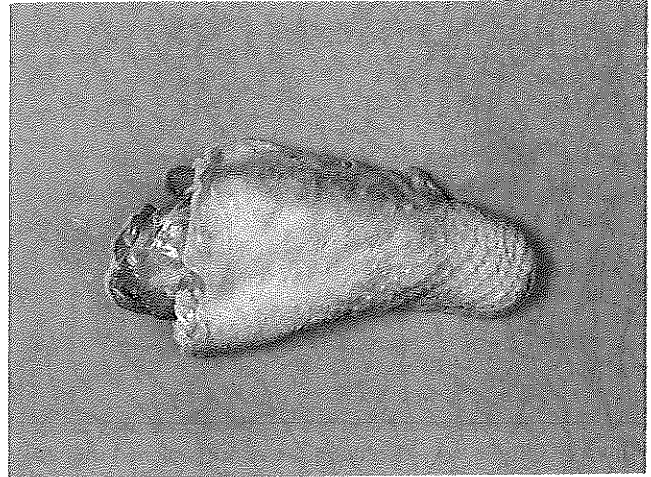
Figure 43. Neck—The neck bones with flesh attached. The skin may or may not be present.
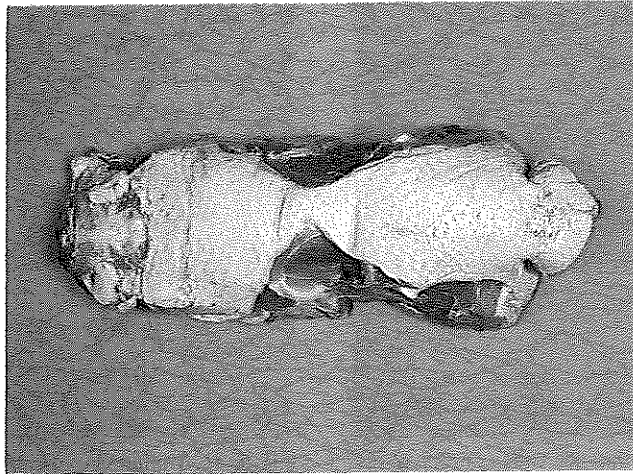
Figure 44. Back—The back of the carcass beginning at the base of the neck and extending backward to the tail. It includes the vertebral ribs, hip bones and attached flesh. All or portions of the oyster may also be attached.

Notes:

3-1-2-4—100.	3-1-4-2—100.	3-4-1-2—100.	3-4-2-1—100.	3-2-4-1—100.	3-2-1-4—100.
3-1-4-2—83.3	3-1-2-4—83.3	3-4-2-1—83.3	3-4-1-2—83.3	3-2-1-4—83.3	3-2-4-1—83.3
3-2-1-4—83.3	3-4-1-2—83.3	3-1-4-2—83.3	3-2-4-1—83.3	3-4-2-1—83.3	3-1-2-4—83.3
3-2-4-1—66.7	3-4-2-1—66.7	3-1-2-4—66.7	3-2-1-4—66.7	3-4-1-2—66.7	3-1-4-2—66.7
3-4-1-2—66.7	3-2-1-4—66.7	3-2-4-1—66.7	3-1-4-2—66.7	3-1-2-4—66.7	3-4-2-1—66.7
3-4-2-1—50.	3-2-4-1—50.	3-2-1-4—50.	3-1-2-4—50.	3-1-4-2—50.	3-4-1-2—50.
1-3-2-4—83.3	1-3-4-2—83.3	4-3-1-2—83.3	4-3-2-1—83.3	2-3-4-1—83.3	2-3-1-4—83.3
1-3-4-2—66.7	1-3-2-4—66.7	4-3-2-1—66.7	4-3-1-2—66.7	2-3-1-4—66.7	2-3-4-1—66.7
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2-3-1-4—66.7	4-3-1-2—66.7	1-3-4-2—66.7	2-3-4-1—66.7	4-3-2-1—66.7	1-3-2-4—66.7
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2-4-1-3—16.7	4-2-1-3—16.7	1-2-4-3—16.7	2-1-4-3—16.7	4-1-2-3—16.7	1-4-2-3—16.7
4-3-1-2—50.	2-3-1-4—50.	2-3-4-1—50.	1-3-4-2—50.	1-3-2-4—50.	4-3-2-1—50.
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4-1-2-3—16.7	2-1-4-3—16.7	2-4-1-3—16.7	1-4-2-3—16.7	1-2-4-3—16.7	4-2-1-3—16.7
4-2-3-1—16.7	2-4-3-1—16.7	2-1-3-4—16.7	1-2-3-4—16.7	1-4-3-2—16.7	4-1-3-2—16.7
4-2-1-3— 0.	2-4-1-3— 0.	2-1-4-3— 0.	1-2-4-3— 0.	1-4-2-3— 0.	4-1-2-3— 0.

4-1-2-3—100.	4-1-3-2—100.	4-2-1-3—100.	4-2-3-1—100.	4-3-1-2—100.	4-3-2-1—100.
4-1-3-2—83.3	4-1-2-3—83.3	4-2-3-1—83.3	4-2-1-3—83.3	4-3-2-1—83.3	4-3-1-2—83.3
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4-3-1-2—66.7	4-2-1-3—66.7	4-3-2-1—66.7	4-1-2-3—66.7	4-2-3-1—66.7	4-1-3-2—66.7
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1-4-2-3—83.3	1-4-3-2—83.3	2-4-1-3—83.3	2-4-3-1—83.3	3-4-1-2—83.3	3-4-2-1—83.3
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1-2-4-3—66.7	1-3-4-2—66.7	2-1-4-3—66.7	2-3-4-1—66.7	3-1-4-2—66.7	3-2-4-1—66.7
1-2-3-4—50.	1-3-2-4—50.	2-1-3-4—50.	2-3-1-4—50.	3-1-2-4—50.	3-2-1-4—50.
1-3-4-2—50.	1-2-4-3—50.	2-3-4-1—50.	2-1-4-3—50.	3-2-4-1—50.	3-1-4-2—50.
1-3-2-4—33.3	1-2-3-4—33.3	2-3-1-4—33.3	2-1-3-4—33.3	3-2-1-4—33.3	3-1-2-4—33.3
2-4-1-3—66.7	3-4-1-2—66.7	1-4-2-3—66.7	3-4-2-1—66.7	1-4-3-2—66.7	2-4-3-1—66.7
2-4-3-1—50.	3-4-2-1—50.	1-4-3-2—50.	3-4-1-2—50.	1-4-2-3—50.	2-4-1-3—50.
2-1-4-3—50.	3-1-4-2—50.	1-2-4-3—50.	3-2-4-1—50.	1-3-4-2—50.	2-3-4-1—50.
2-1-3-4—33.3	3-1-2-4—33.3	1-2-3-4—33.3	3-2-1-4—33.3	1-3-2-4—33.3	2-3-1-4—33.3
2-3-4-1—33.3	3-2-4-1—33.3	1-3-4-2—33.3	3-1-4-2—33.3	1-2-4-3—33.3	2-1-4-3—33.3
2-3-1-4—16.7	3-2-1-4—16.7	1-3-2-4—16.7	3-1-2-4—16.7	1-2-3-4—16.7	2-1-3-4—16.7
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3-4-2-1—33.3	2-4-3-1—33.3	3-4-1-2—33.3	1-4-3-2—33.3	2-4-1-3—33.3	1-4-2-3—33.3
3-1-4-2—33.3	2-1-4-3—33.3	3-2-4-1—33.3	1-2-4-3—33.3	2-3-4-1—33.3	1-3-4-2—33.3
3-1-2-4—16.7	2-1-3-4—16.7	3-2-1-4—16.7	1-2-3-4—16.7	2-3-1-4—16.7	1-3-2-4—16.7
3-2-4-1—16.7	2-3-4-1—16.7	3-1-4-2—16.7	1-3-4-2—16.7	2-1-4-3—16.7	1-2-4-3—16.7
3-2-1-4— 0.	2-3-1-4— 0.	3-1-2-4— 0.	1-3-2-4— 0.	2-1-3-4— 0.	1-2-3-4— 0.

These tables show even cuts only. In actual contests, we occasionally use light and heavy cuts for top, middle, and bottom pairs.