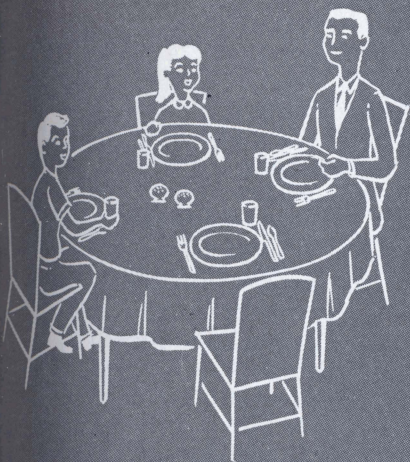


Know Egg Values



TEXAS AGRICULTURAL EXTENSION SERVICE
I. E. Hutchison, Director, College Station, Texas



Buy Wisely

Egg Facts

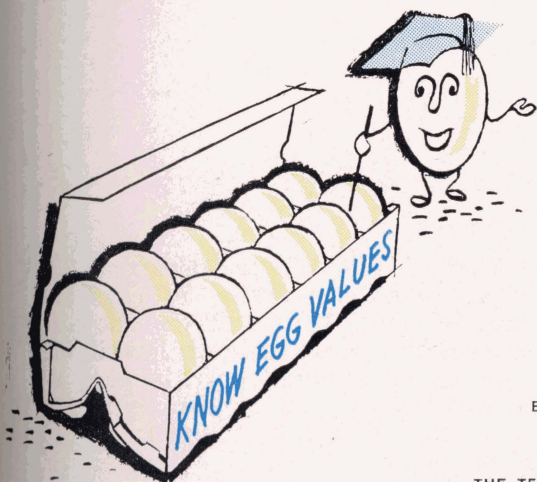
- Shell color does not affect the food value of eggs.
- Cracked eggs deteriorate rapidly. Use them as soon as possible.
- Left over yolks or whites can be held in the refrigerator for a short time. Cover yolks with cold water; use within 2 or 3 days. Place egg whites in a covered dish and use as soon as possible.

ACKNOWLEDGMENT

Appreciation is expressed to The Progressive Farmer Magazine and the Poultry and Egg National Board for photographs appearing in this publication.

Refrigerate Properly





FLOYD Z. BEANBLOSSOM
EXTENSION POULTRY
MARKETING SPECIALIST

●
GWENDOLYNE CLYATT
EXTENSION SPECIALIST IN
CONSUMER MARKETING
INFORMATION
THE TEXAS A. & M. COLLEGE SYSTEM

EGG VALUES concern millions of people, especially homemakers who buy food for the family and try to serve well-balanced, nutritious meals. Egg values are also of interest to producers, and persons in commercial food service and in merchandising channels. Eggs are one of the protective foods and are used many ways in meal preparation. They are easy to prepare and serve.

Eggs appear regularly on the family grocery list. Those who buy should know economic egg values, how to determine value of the different grades and thoroughly understand grade terminology. Homemakers should know egg value from the viewpoint of nutrition, calories, protein-fat ratio and the versatility of eggs in cooking.

The economic value of a dozen eggs is relative when compared to other foods. The economic value of one dozen eggs as compared to another is based upon quality and size which determine the grade. Contrary to common belief, the word "fresh" does not necessarily denote value unless associated with other known standards for Grade AA or A quality. The four factors commonly used to denote quality are *condition of shell, size and condition of air cell, condition of yolk and albumen*. The higher qualities in the larger sizes have greater economic values than the lower qualities and smaller size eggs. Look for the grade (quality and size) on the carton.



Egg Qualities . . .



Qualities of United States Department of Agriculture consumer grades of eggs are identified as AA, A, B and C. The size classes for each dozen and words identifying them are *30 ounces and over, jumbo; 27 ounces, extra large; 24 ounces, large; 21 ounces, medium; 18 ounces, small; and 15 ounces, peewee.*

Eggs of equal quality but varying in size have different values. Buyers should know the relative price spread for the different size classes at any given price per dozen. Table 1 lists these varying values in cents per

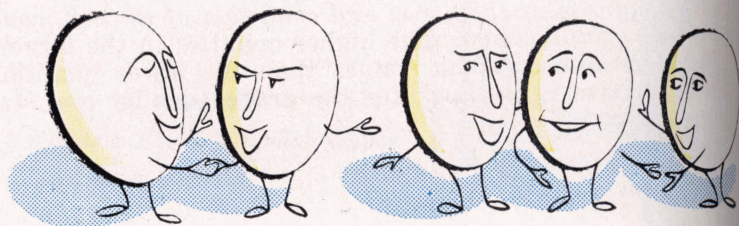
Table 1. Relative Value of a Dozen Eggs for the Different Size Class

| Minimum size of eggs per dozen | 27 | 28 | 29 | 30 | 32 | 33 | 34 | 35 | 36 |
|--------------------------------|----|----|----|----|----|----|----|----|----|
| Small 18 oz. | 27 | 28 | 29 | 30 | 32 | 33 | 34 | 35 | 36 |
| Medium 21 oz. | 32 | 33 | 34 | 35 | 37 | 38 | 39 | 41 | 42 |
| Large 24 oz. | 36 | 38 | 39 | 40 | 42 | 44 | 45 | 46 | 48 |
| Extra Large 27 oz. | 41 | 42 | 44 | 46 | 47 | 49 | 51 | 52 | 54 |
| Jumbo 30 oz. | 45 | 47 | 49 | 51 | 53 | 54 | 56 | 58 | 60 |

Table 2. Relative Cost per Dozen and per Pound

| | 36 | 38 | 39 | 40 | 42 | 44 | 45 | 46 | 48 |
|------------------------------------|----|----|----|----|----|----|----|----|----|
| Price per dozen (24 oz. per dozen) | 36 | 38 | 39 | 40 | 42 | 44 | 45 | 46 | 48 |
| Price per pound | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 |

Many who buy eggs do not consider the cost of these foods such as meats poultry or fish, since the cost of these foods is 1½ pounds) at varying prices per dozen.



and Size Classes

dozen. Table 2 gives the cost of a dozen large eggs (24 ounces — 1½ pounds) in cents per pound at varying prices from 36 to 78 cents per dozen.

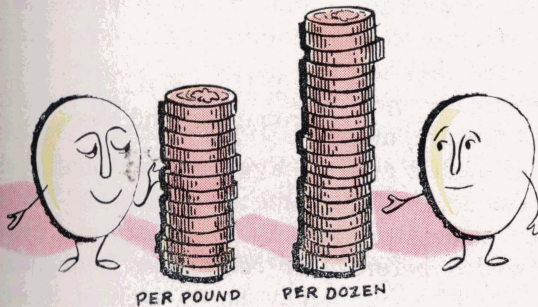
Eggs of different sizes are more plentiful during some months than others. Demands also vary for the different sizes. These conditions cause prices to vary for the different size eggs of equal quality. Use the information given in Tables 1 and 2 when buying eggs. This should result in more efficient buying. Many times, more food value can be bought for less money.

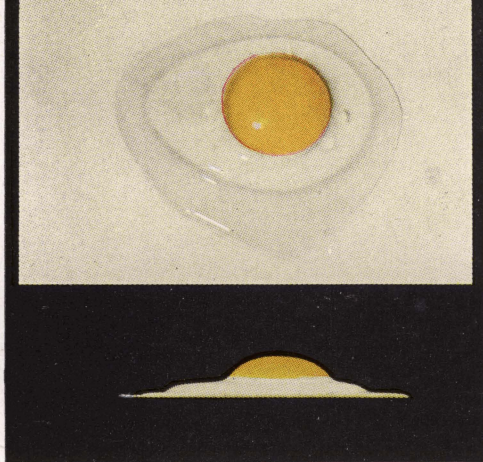


| | | | | | | | | | | | | | | |
|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 39 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 50 | 51 | 52 | 53 | 54 | 55 |
| 46 | 47 | 49 | 50 | 51 | 53 | 54 | 55 | 56 | 58 | 59 | 60 | 62 | 63 | 64 |
| 52 | 54 | 56 | 57 | 59 | 60 | 62 | 63 | 65 | 66 | 68 | 69 | 71 | 72 | 74 |
| 59 | 61 | 62 | 64 | 66 | 68 | 69 | 71 | 73 | 74 | 76 | 78 | 79 | 81 | 83 |
| 66 | 68 | 69 | 71 | 73 | 75 | 77 | 79 | 81 | 83 | 84 | 86 | 88 | 90 | 92 |

eggs on a pound basis. This should be done when comparing cost with other on cost per pound basis. Listed below is cost per pound of large eggs (24 oz. or

| | | | | | | | | | | | | | | |
|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 52 | 54 | 56 | 58 | 60 | 62 | 63 | 64 | 66 | 68 | 70 | 72 | 74 | 76 | 78 |
| 35 | 36 | 37 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 47 | 48 | 49 | 51 | 52 |





AA Excellent Table Eggs

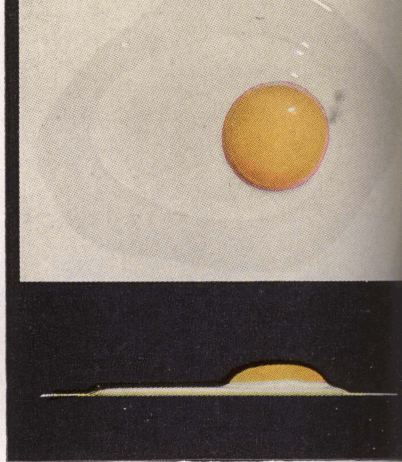
An egg possessing AA quality as shown in the picture above covers a small area and the yolk and albumen may be described as follows:

YOLK: Round and up-standing, free of apparent defects and well centered in the white.

THICK WHITE: Large amount, firm and clear, also standing up very well around the yolk.

THIN WHITE: Small proportion and clear.

In addition to the above mentioned U. S. Standards for AA quality of eggs, they must have shells that are unbroken and practically normal in shape and texture, and they must be free of dirt and stains. They must also show less than $\frac{1}{8}$ inch in depth of air cell when twirled before the candling light.



A Fine Table Eggs

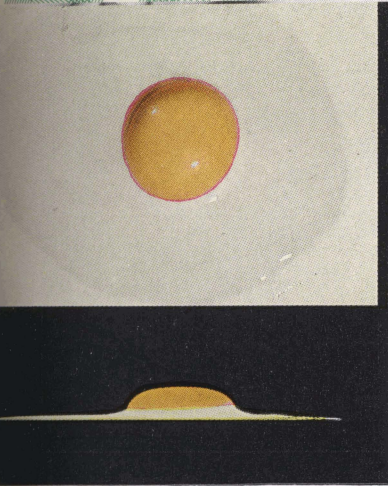
When an egg possesses A quality as shown in picture above, it will cover a moderate area and the yolk and albumen may be described as follows:

YOLK: Round and up-standing, practically free of defects and must not be more than one-fourth of distance from its normal center position.

THICK WHITE: Large amount, clear, may be reasonably firm, may permit yolk to move freely from its normal center position when egg is twirled, thus showing a fairly well-defined yolk outline when put before the candling light.

THIN WHITE: Small proportion and clear.

Eggs of A quality have same requirements for shell condition as AA quality. The air cell in an A quality egg may be $\frac{1}{4}$ inch in depth.



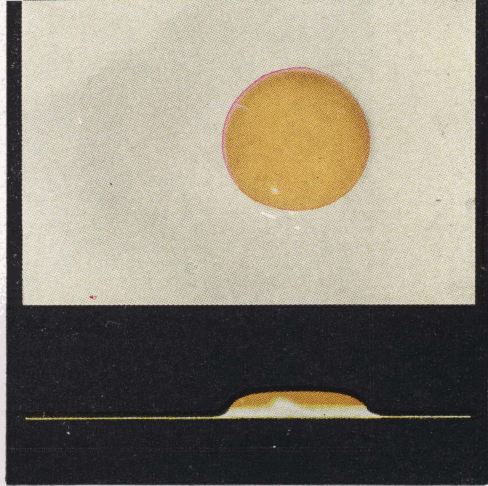
B Cooking and Baking Eggs

If an egg possesses B quality, it will cover a wide area when broken out of shell. The yolk and albumen will have the following qualities:

YOLK: May appear slightly enlarged and flattened. It may also show definite but not serious defects.

THICK WHITE: Medium amount and flattened. Clear, but lacking in thickness or viscosity. Permits yolk to move quite freely from center position in egg, thus when egg is twirled before candle light it presents a well defined yolk shadow.

THIN WHITE: Medium to large proportion and clear. Shell unbroken, slightly abnormal, may show slight stains that do not detract appreciably from appearance. Stains may cover one-thirty-second of shells surface if localized or one-sixteenth if scattered.



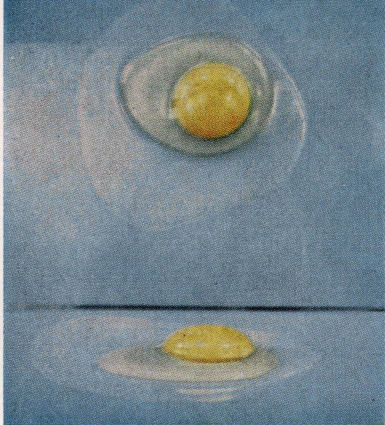
C Cooking and Baking Eggs

Above is an egg possessing C qualities. It covers a very wide area. Its quality factors may be described as follows:

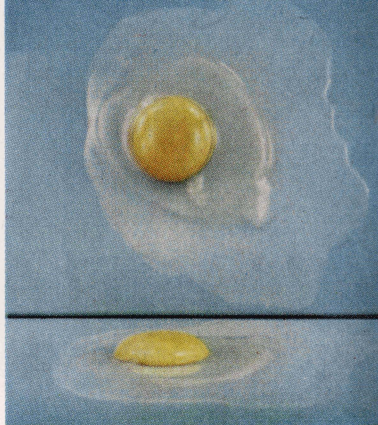
YOLK: Very flat, breaks easily, may appear dark and show germ development but no blood due to such development. Small blood or meat spots may be present.

THICK WHITE: Practically none and very little viscosity which gives a watery condition. When twirled before candling light, yolk appears off center and the outline of yolk shadow is clearly visible.

THIN WHITE: Large amount. Shell unbroken, may be abnormal. Air cell may be over $\frac{3}{8}$ inch in depth, and may be free or bubbly. May have slight to moderate stained areas covering not more than one-quarter of the shell surface. No prominent stains or adhering dirt permitted.



Egg 6 days old held at 55 degrees F. Compare the quality with the egg on the right. Note more upstanding yolk and more thick white.



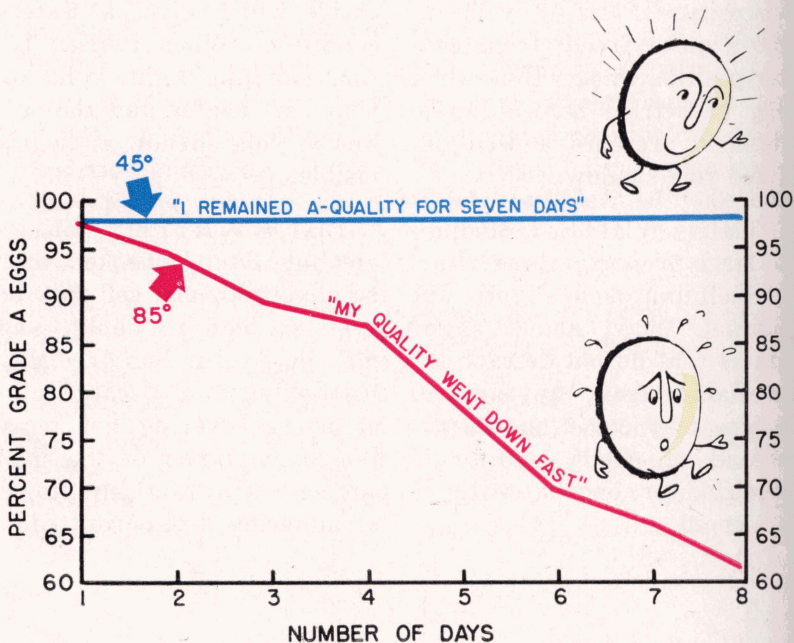
Egg 6 days old held at 88 degrees F. Much less thick white than egg held at 55 degrees F. for same time. Yolk more flattened.

Eggs Are Perishable

High temperature and low humidity are most common causes for quality loss in eggs. High temperature is the more important of the two, under average handling conditions. Purchasers should consider this fact and also the temperature under which they will keep the eggs until used or sold.

The pictures at top show two broken out eggs held at different temperatures for 6 days.

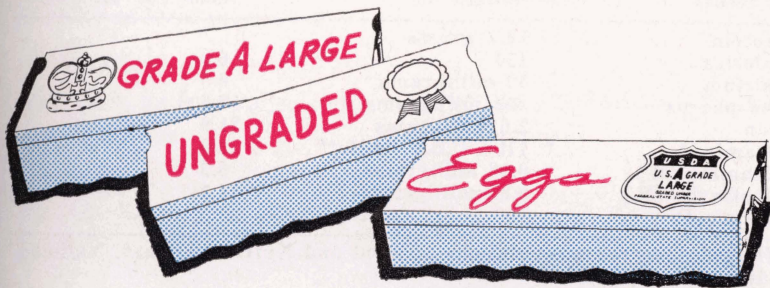
The graph below shows the loss of quality at varying temperatures from 1 through 7 days.



Carton Identification

The quality and size of eggs should be labeled plainly on the top of their carton. If they are sold as USDA grades there will be a USDA shield clearly shown on which quality and size will be given. The quality will be identified by the letters AA, A, B or C, and the size will be identified by the words *jumbo*, *extra large*, *large*, *medium*, *small*, and *peewee*. Eggs graded under USDA regulations automatically meet state requirements. If they are graded according to Texas Egg Law requirements and sold as

graded eggs, the quality and size class should be clearly stated on the top of the carton. The quality and size will be identified with the same letters and words used for USDA grades but will not be prefixed with the letters U. S. or within a shield. An explanation of these letters appears on pages 6 and 7. The meaning of the words identifying size class appears on pages 4 and 5, under the heading "Egg Qualities and Size Class;" also Tables 1 and 2.



Consumer Responsibility

To prevent eggs from losing quality and absorbing off-flavors, keep them in a clean, covered container in a refrigerator with temperature about 45 degrees F. Refrigerate eggs as quickly as possible after purchase. Never leave eggs in a hot car while on a shopping tour, or in a hot kitchen while sorting

other groceries. The egg shell that protects the edible part is porous. Odors can penetrate through the shell; moisture can be drawn from the inside out. Off-flavors absorbed by eggs in the refrigerator come largely from such foods as onions, citrus fruit and cheese.

Eggs In the Diet

Eggs should be included in meals every day. Nutrition-wise, they are a rich source of the nutrients necessary for growth and health. See Table 3, "Inside Story of Egg Composition."

The protein in eggs is of high quality. Two eggs provide almost as much protein and as much iron as an average serving of meat or cheese. Eggs are relatively

low in calories—about 75 to 80 in a large (2 ounce) or medium (1 and 11/12 ounce) size.

Eggs shine more brightly now than ever in the breakfast spotlight. A breakfast containing high-quality protein such as in eggs staves off fatigue hours longer than a morning meal low in protein. Research in nutrition has shown this fact.

Table 3. Inside Story of Egg Composition

| Food nutrients | Two eggs contain | Two (2-oz.) eggs contain the following percentage of recommended daily needs for an adult* |
|------------------------------|---------------------|--|
| Protein | 12.2 grams | 17.2 |
| Calories | 154 | 6.0 |
| Calcium | 52 milligrams | 6.5 |
| Phosphorus | 202 milligrams | 13.5 |
| Iron | 2.6 milligrams | 21.6 |
| Vitamin A | 1100 U.S.P. units** | 22.0 |
| Thiamine (B ₁) | 0.08 milligrams | 6.2 |
| Riboflavin (B ₂) | 0.26 milligrams | 16.3 |
| Vitamin D | 100 U.S.P. units | 25 |

*Based upon recommendations of Food and Nutrition Board, National Research Council.

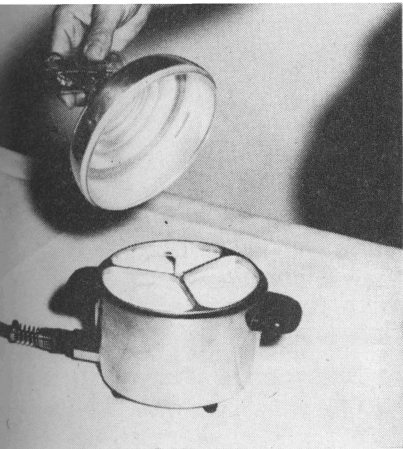
**United States Pharmacopeia unit.

Eggs Are Versatile

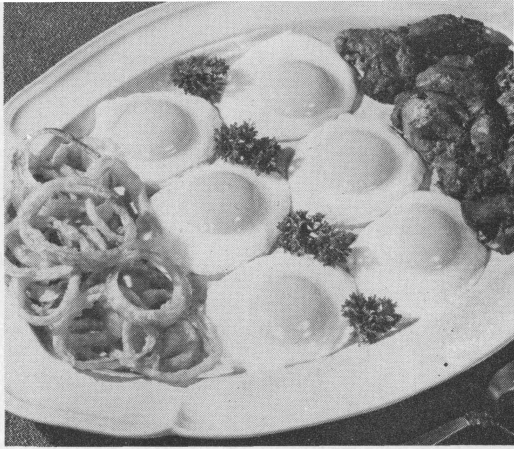
Eggs lend themselves to numerous combinations. Since they are rich in high-quality protein, they enrich the value of supplementary proteins in the cereals and vegetables used with them. Eggs are rated as one of the most important protective foods, interchangeable with meat, poultry or fish in planning family meals. They are

easily and quickly prepared by cooking in the shell, frying, broiling, baking, poaching, scrambling and making into simple omelets.

Eggs are used in the preparation of beverages, breads, cakes, desserts, salads, salad dressings, sandwiches, sauces, cheese, fish, meat and vegetable dishes.



Poached eggs



Fried eggs

In cookery, eggs do these things:

Thicken, as in custards and puddings

Leaven by beating to incorporate air, as in cakes

Add color, richness and flavor to individual dishes

Coat, as in breaded meats

Garnish, as in salads, soups and canapes

Bind, as in meat loaves and croquettes

Emulsify, as in salad dressings and cream puffs

Clarify as, in preparation of consomme or in "boiled" coffee

Hinder crystallization, as in candy making

Cooking Tips

Moderate to low temperatures (275-325 degrees F.) with proper timing assure uniformly tender, attractive egg dishes. The protein in eggs determines the rules to follow in cooking eggs and egg-rich dishes. Higher temperature and long cooking cause protein to shrink with an accompanying loss of moisture, making it rubbery and tough. The egg white is almost pure protein, and deteriorates more and becomes less digestible from high temperature than does the yolk. When high temperatures are recommended, the length of cooking time must be reduced correspondingly as in some recipes for angel food cake and soft meringue.

- Remove only the number of eggs needed from the refrigerator.
- Four to six whole eggs (weighing 2 ounces each); 8 to 10 egg whites or 12 to 14 egg yolks from eggs of the same size equal one standard measuring cup.
- Egg whites will not beat up to full volume if any yolk is in them. Remove any yolk that may break into egg whites.
- To prevent loss because of an occasional inedible egg, break all eggs into a container other than the one used for cooking or mixing.
- Cook eggs in water below the boiling point. Fry eggs in fat at a low temperature. When eggs are used in casserole dishes, the dish should be set in a pan of water while the food is baking so that the temperature will stay below boiling point.
- In combining hot mixtures and eggs such as in custards, cream fillings or souffles, pour the hot mixture slowly into the beaten egg, stirring or beating constantly.
- To make whipped cream go farther, fold a meringue made of 1 egg white and 2 tablespoons sugar into 1 cup whipped cream.
- For extra color and flavor, add a well-beaten egg to mashed potatoes.
- The air incorporated into beaten egg whites can easily be lost. To avoid this, use a light under-and-over motion when you fold beaten egg whites into other mixtures. For omelets and souffles, fold the heavy mixture into the beaten egg whites.
- When topping a pie with meringue, cool the pie filling first. This helps to prevent drops of moisture, either between the filling and meringue or on top. Spread the meringue to touch edge of the pastry. This helps to prevent shrinkage.

Eggs--a convenience food!

