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A TREATISE ON EGGS

How to Candle Eggs

Why Eggs Spoil

How to Save Eggs

*and also showing the use of the great
Dry Pack*

NATIONAL Egg Saver

IT PRESERVES
THE EGGS

EAT FRESH EGGS
ALL WINTER

SOLD EXCLUSIVELY BY

**INTERSTATE
CHEMICAL CO.**

COUNCIL BLUFFS, IOWA.

“National Egg Saver”

has been tried and tested by the
IOWA STATE COLLEGE OF AMES, IOWA;
and found to be satisfactory.

Illustrated Pages are by Courtesy
Iowa State College,
Ames, Iowa.

Leading dealers handle “National Egg Saver”. In case your dealer hasn’t placed “National Egg Saver” in stock, kindly send his name and money order or draft covering amount and we will ship parcel post prepaid. Quart size, \$1.50. One quart preserves 100 dozen.

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INTERSTATE CHEMICAL CO.
Council Bluffs, Iowa,
U. S. A.

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Introductory

The idea of putting out a booklet of this nature is twofold. Probably the mercenary idea is uppermost, in that it tells the public of our product and brings them in closer touch with the commodity that we sell, and of course, that is one of our prime motives to fix our product, so firmly, in the mind of the public, that whenever they think of packing eggs away for winter use, they will not think of the old unsatisfactory methods of packing their eggs in oats, salt or lime, but will think of the new and scientific invention—"National Egg Saver"—the great dry pack egg preservative.

Science has long known, that if an egg could be sealed up absolutely air tight with a thin transparent coating so that the coating would not check, crack or peel off in the course of ordinary handling, and then if the egg was kept in a cool place, that it would keep in a fresh state for a long period of time. Chemists have worked on the above theory for years and their efforts have now been crowned with success, so that the public can now pack their winter supply of eggs in the spring for their winter's use and pack them away dry in a common egg case with the use of "**National Egg Saver.**"

The other idea is to carry more or less of an educational program to our patrons so that they will have a greater knowledge of the importance of the poultry industry and also a greater knowledge of the food value of eggs, one of our chief foods, and in order that we may save a greater part of over \$5,000,000.00 which is being lost every year in the state of Iowa alone, half of this book will take up the care and candling of eggs.

The laws of our country, both national and state, have become more drastic year by year, for the reason of doing away with the careless handling of eggs and trying to save for all those concerned in the buying and selling of eggs, what they have been losing, and we ask all those who come in contact with this book to kindly study it and to do their part in the eliminating of this great waste.

INTERSTATE CHEMICAL COMPANY,

Council Bluffs, Iowa, U. S. A.

Use "National Egg Saver"

A Treatise on Eggs

The industry we have to deal with—the egg industry—is of no small importance when it comes to the fact of material wealth. The actual moneys derived each year, according to the 1910 census in the United States alone, more than equals the amount of wheat raised or the combined amounts of gold, silver, iron and coal, or in other words—it's a billion dollar industry. Iowa ranks first with a total egg production of over fifty million dollars. There is no reason why the raising of poultry should not continue at an increase as this country is ideal in its adaptation for the raising of poultry in the fact that it is such an agricultural country and every farm should have its allotment.

The food value of eggs alone should command our attention when you stop to consider that a common hen's egg contains 13.4% protein and 10.5% fat according to the government analysis of a whole hen's egg, and it is due to this nutritious value in eggs, that the different states, through their agricultural departments, have advocated the preserving of eggs in the spring, when the quality is the best and the price the lowest, for your fall and winter's supply, thereby enabling people to obtain one of the best foods, at the time of the year when they need that kind of a food, at a price which all can afford and in turn we advocate very strongly the use of "**National Egg Saver**" to do that preserving.

We do not claim for "**National Egg Saver**" that it will make a bad egg good, or that it will preserve soiled, dirty or cracked eggs and keep them for a long time, for if bacteria enters the egg there is nothing known that will save the egg and bring it back to its fresh state, although it will probably prolong its keeping qualities to a considerable extent. Questionable eggs should be sold at once for immediate consumption, but the thing we all should bear in mind is not to let the eggs reach either one of those stages. Cleanliness and care in handling will eliminate a large proportion of spoilt eggs.

The use of "**National Egg Saver**" is very simple. The product itself comes prepared ready for use, without the adding of any other ingredients. It is packed in convenient quart tins with an air tight screw top so that you may use "**National Egg Saver**" from time to time and each time you use "**National Egg Saver**" pour it back in its original package, screw on the top and in that way eliminate any waste due to evaporation.

The method of preserving is as follows and please do not get it confused with any other product where you have to keep your eggs in a solution, because with "**National Egg Saver**" you pack your eggs away dry:

"National Egg Saver"

Take a can of "**National Egg Saver**" and pour the contents out into an open container and place the eggs to be preserved in the solution. Great care should be exercised in the candling of the eggs first to see that all eggs are strictly fresh and free from cracks. Remove the eggs from the solution with a wire spoon or egg beater and place them on a wire net, either a wire screen or chicken fence netting will do very nicely, and they will dry in a few minutes. The length of drying depends upon the condition of the atmosphere at the time of drying. The preserving of the eggs may either be done inside or out of doors. After the eggs have become thoroughly dry you may take them and pack them in a common egg case with the little end down and put them away in your basement where it is cool and dry for future use. It is needless for us to point out the difference in the price paid for eggs in the spring and then what you have to pay for them in the fall and winter and we do not believe that it is necessary for us to show you what this saving amounts to, for anyone can readily see the desirability for preserving eggs for the amount of money saved alone. And then the food value is one of large consideration. Families must live within their means and when the price of a commodity doubles in value they naturally curtail the use of that article as much as possible and that is what happens in regard to eggs. But this difficulty in people not being able to have eggs in the winter time on account of the price has now been overcome by the use of "**National Egg Saver**"—the **dry pack egg preservative**—which only raises the price a cent or so a dozen, so pack them when the eggs are the lowest in price, and use them freely when they are the highest.

STRUCTURE OF AN EGG.

We find in order to do work thoroughly you must first understand just what that work is and all about it and be able to look ahead and see the finished product, and that is why we are outlining in a more or less of a rough way the structure of an egg, so that you will be able to candle the egg with a firm knowledge that you are right after you have passed judgment.

We will first start with the yolk of an egg which is very complex in composition. From it the nervous system of the chick is developed. The yolk contains much phosphorous and lime and also contains 15 to 16% of protein; 32 to 33% of fat in the shape of a clear yellow oil, which is one of the most digestible forms of fats. On the yolk, always facing upwards, if you allow the egg to come to position, is a circular area called the germinal disk from which the chick develops and is present on all eggs as the female cell. When the yolk leaves the ovary of the hen and passes into the oviduct it is here that

The Dry Pack Egg Preservative

it comes into contact with the spermatozoa or male cell, and germination at once starts, even before the egg is fully completed.

Fig. 1. Fresh fertile egg showing germ development at time egg was gathered, seven hours after it was laid.

The yolk sack itself is called vitelline membrane, and is made up of material very similar to your finger nails. Surrounding the yolk you have a thin layer of white, then a heavy layer, and then another thin layer; and then, surrounding the white and yolk of the egg, you have two membranes, the first being of a more delicate nature and follows the outline of the egg, while the last one is of a tough texture and follows the outline of the shell. Running from each side of the yolk sac to the inner membrane, surrounding the white of the egg, are two twisted-like cords of white material, termed the "chalazae"; and it is these cords that hold the yolk in suspension in the solution of white, allowing the yolk to turn freely when the egg is rotated.

The shell which surrounds the egg is made principally of carbonate of lime, and varies in color from white to dark brown. The shell being of very porous nature, bacteria soon enters and the eggs start spoiling; but, thanks to "**National Egg Saver**," that trouble can easily be done away with and the pores of the shell sealed up tight.

WHY EGGS SPOIL.

Owing to the short time that it takes to hatch a chick, the egg is very susceptible to heat; and this one thing alone causes more spoilt eggs by far than can be laid to any other reason. This book has several illustrations where fertile and infertile eggs have been subjected to the same amount of heat for the same length of time, and the results are very apparent by a study of the cuts. What is one of the most important things in the helping to eliminate the loss of eggs is to dispose of all male birds as soon as the hatching season is over, which means the first of June, as all chicks should be hatched during the months of March, April and May for several reasons. Probably the most important one of these reasons is that producers should get the greatest amount of eggs the first year, and that means, if the supply of eggs comes early, they will receive almost double the value for those eggs than if the supply comes later in the season, when the demand for fresh eggs is fully

Use "National Egg Saver"

supplied; so have your chicks come early so the pullets will start laying in the early winter, when the price of fresh eggs is extremely high, and don't forget that eggs must be gathered at least once a day, and twice a day is much better in the summer.

Sanitary conditions should be followed out very closely, keeping the nest clean and also the roosting places, using a disinfectant at least once in two weeks. You should have at least one nest for every four or five hens so the hens won't disturb the ones laying while waiting to secure the nest, and also will not soil the nest by droppings. The nest should be closed at night to keep the birds from roosting in them if they bother in that way.

We quote for your study, the following table of percentage of loss, taken from Extension Bulletin No. 25, Iowa State College, Ames, Iowa:

Dirtyies	2.0
Breakage	2.0
Chick development	5.0
Heated and shrunken.....	5.0
Rotten eggs	2.5
Mouldy and badly flavored eggs.....	0.5
Total	17.0

And this loss, which means millions of dollars, could practically be done away with by careful watching.

HOW TO CANDLE EGGS.

The method of candling eggs is very simple. All that is necessary is a small pasteboard box with a light placed inside of it, either a lamp or an electric light, which is by far the best, will do. Cut a hole about the size of a half dollar just opposite the light, and place the box and light in a dark room. In candling eggs you always place the large end of the egg toward the light and hold your egg with two fingers, so you don't cover up the egg any more than possible, at an angle of about 45 degrees. The first thing in candling an egg to look for is the air chamber. You will find this at the large end of an egg, not measuring over three-fourths of an inch in diameter on a strictly fresh egg, and as the egg increases in age this air chamber increases in size. That is due to the fact that, as the egg becomes older, the water in the egg evaporates and the contents of the egg shrinks. One wall of the air chamber is made up of the membrane which follows the outline of the egg, and, as the contents shrink, the membrane which follows it forces the enlargement of the air chamber. The second thing to notice in the candling process is the position of the yolk. It should be floating in the white in the central part of the egg and will look as a shadowy form with no distinct outline. On a strictly fresh egg, when the egg is rotated before the candle,

Tried and Tested and Found Perfect

which should be done, the yolk will be seen to move with a sluggish nature; but, as the egg increases with age and the white becomes thin and watery-like, the yolk will move with greater rapidity when the egg is being rotated, and will show more distinct outlines through the thinner white.

The only way for a beginner to learn to candle is to break open all eggs of doubtful appearance after candling and to determine exactly how they look before the candle and out of the shell, and it will give the candler more actual experience than he can get from reading.

We will outline the different kinds of eggs, first giving the edible ones or those fit for food.

EDIBLE EGGS.

KIND	CHARACTERISTICS
1. Fresh egg.....	Small air chamber, firm white, yolk indistinct.
2. Hatch spot egg.....	Enlarged air chamber, thin white, yolk reddish at hatch spot.
3. Stale egg	Enlarged air chamber, thin white, yolk distinct.
4. Egg with movable air chamber.	Air chamber always on top, edible if contents have not deteriorated.
5. Egg with olive-colored yolk..	Yolk olive-colored, edible if contents have not deteriorated.
6. Egg with yolk slightly stuck to shell, that can be loosened without breaking.....	Air chamber enlarged, white, thin, yolk stuck to shell, edible if yolk can be loosened without breaking.

INEDIBLE EGGS.

1. Blood ring	Enlarged air chamber, white, thin, reddish glow in which is seen a blood ring.
2. Black rot	Enlarged air chamber, shell black in color.
3. Seeping yolk	Enlarged air chamber, white, yellow, yolk weak and usually mottled.
4. Mixed rot	Enlarged air chamber, white, with yellow streaks, yolk sac broken.
5. Moldy egg	Enlarged air chamber, shows black on shell where mold has formed.
6. Bloody white	Small or enlarged air chamber, white, red in color or streaked, yolk intact.
7. Yolk stuck to shell.....	Enlarged air chamber, white, thin, yolk fastened to shell.
8. Green white.....	} Not possible to candle.
9. Musty egg.....	
10. Sour egg.....	

There are three kinds of eggs that it is impossible to candle with accuracy, and those are eggs with a green white; musty eggs; sour eggs; but, as it happens, those eggs are the least common of all spoilt eggs and are detected only on breaking.

Pack Your Eggs for Future Use with

Fig. 2. Strictly fresh egg. Note the strong, heavy, thick, viscous white, firm cords, special, well rounded yolk. Would grade as select.

Fig. 3. First signs of heat. Watery thin, white, cloudy yolk, cords broken loose, enlarged germ.

"National Egg Saver"

Fig. 4. Sun egg. Note the round dark red-like spots on yolk, sometimes called bruise spots. Might be classed as Second or poor Trade egg.

Fig. 5. First real formation of heat. Note the size of germ, watery membrane like formation on surface of yolk. Would be candled as a light floater and graded as Seconds.

"National Egg Saver"

Fig. 6. Badly heated or heavy floater. While the white shows quite firm, notice how the germ has developed to the place where blood is ready to form.

Fig. 7. Blood ring or blood rot. The dark ring with a question mark-like object in center is the young chick. Note the appearance of the yolk as well.

Preserves the Eggs

Fig. 9. White or sour rot.

Fig. 8. Addled egg.

Don't Pack Eggs in Solutions

Fig. 10. Germinal or dead chick rot. Fig. 11. Black rot. Fig. 12. Black Mould attached to shell.

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Fig. 13. A fertile egg that has been exposed to the sun from early morning when it was laid, until gathered at night. Note the enlarged germ and the red heat spots.

Fig. 14. A fertile egg allowed to remain under a broody hen twenty-four hours after it was laid. Note the rapid growth of the germ.

Fig. 15. An infertile egg that has been held at 103 degrees F. for 36 hours. Note the size of the germ and the lack of heat spots.

Fig. 16. A fertile egg that has been held at 103 degrees F. for 36 hours. Note the enlarged germ covering more than one-half of the surface of the yolk.

Remember "National Egg Saver"

Fig. 17. A fertile egg that has been held at 103 degrees F. for 48 hours. Blood has formed and made the egg unfit for use as food.

Fig. 18. An infertile egg held for 48 hours at a temperature of 103 degrees. Note the lack of heat signs, the size of the germ is normal.

Fig. 19. This is a fertile egg that has been held at 103 degrees for 60 hours.

Fig. 20. This is an infertile egg that has been held at 103 degrees for 60 hours. Egg free from heat signs and good for food purposes.

Is the Dry Pack Egg Preservative

TO OUR PATRONS:

There are two ways to preserve eggs for future use. One method is to use certain ingredients mixed with water that will make a solution heavy enough to keep out the air, but does not do away with the evaporation from within the egg, and the other method is to use "National Egg Saver", the egg preservative that seals the egg up air-tight and holds it in it's natural form.

With the use of "National Egg Saver" you do not have a sticky, messy solution that you have to keep your eggs in and then wash those eggs when you go to use them, but on the other hand you have nice, clean eggs that need no washing, and you can use them for any purpose that you would use a fresh laid egg for--boil, poach, fry or scramble. The cost is about half what you would pay for other methods and then the convenient part is that you pack your eggs dry.

If you are not already a "National Egg Saver" enthusiast, we want you to try it so we may add your name to our already large and growing list.

Yours very truly,