SPECIAL PAMPHLET

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CONSERVATION OF EGG QUALITY

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GRICULTURAL SUPPLIES BOARD

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SAVING EGG QUALITY MEANS SAVING DOLLARS

PACKAGED food products sell most readily on their appearance. Continued or increased demand will depend upon the quality of the contents of the package. Eggs are packaged by nature and when produced under proper conditions have quality par excellence. The loss of this high quality is the result of poor handling and lack of care, from the time the egg is laid until it reaches the consumer.

Quality is the prime factor in increasing the consumption demand. It should therefore, be the aim and effort of everyone concerned to see that the quality which nature seals in the package is not lost through carelessness.

This is of vital importance to the producer, as it will not only determine the grade of the product but the actual cash return he receives. He may produce eggs in quantity but this must be coupled with quality if his poultry venture is to prove profitable.

The producer is not the only one responsible for the maintenance of egg quality. Everyone who handles eggs in any way from producer to consumer may contribute to the loss of quality. However, it is a fact that much depends, not alone on the feeding and management of the flock, but also upon the way the eggs are handled on the farm. Cleanliness, frequent collection, rapid cooling, and proper holding conditions, coupled with the removal of males from the flock before the warm weather sets in, will not only help to start the egg on its journey with new-laid quality but will also play a large part in ensuring its arrival on someone's breakfast table in a palatable condition.

Eggs are among the vital foods in the diet and at the same time one of the most perishable to handle. It is for these reasons that special attention must be given to the product, not alone by the producer, but by everyone who handles it from the time the egg is laid until it is taken from the carton in the consumer's kitchen.

Top Quality Eggs Mean More Profits

This problem of maintaining egg quality has two rather attractive features from which most of those concerned may benefit. The cost of producing quality eggs is, in most cases, no greater than that involved in putting out a poor product. The financial returns however, are much greater. If eggs that would normally grade "A" were, by reason of poor handling, reduced to "B", or 26517 50M-4863-5:41

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still lower to "C" grade, the loss would be felt by all concerned and would amount to from 5 cents to 20 cents per dozen between grades. For instance, in the latter part of August 1940, spot prices on the Montreal market were about 37 cents for Grade "A" large; 24 cents for Grade "B", and 16 cents for grade "C"; showing something like 70 per cent differential between "A" and "B", and 120 per cent or more between "A" and "C". This premium of course varies with the seasons and market conditions but nevertheless is indicative of the spread in price occurring on the markets at certain times. It certainly represents a worth-while reward for the better handling of the product.

It is a fact that the quality of an egg cannot be improved after the hen lays it. It is possible, however, by improved feeding to produce a better egg, and in addition, to conserve practically all the excellence of fresh quality until it reaches the consumer. Breeding, age of bird, and rough handling, may lower quality, but of much greater importance are such factors as feeds, hygiene, humidity, and temperature.

Feed Affects Egg Quality

Feed is very important in the production of high-quality eggs. This is readily evident in the variation occurring in yolk colour, albumen quality and shell texture of eggs produced by hens on different rations. Yolk colour may range from an extremely pale yellow or cream, resulting from a ration composed chiefly of milk, oats, cabbages, and other feeds low in yellow pigment, to those of very dark colour produced from heavy feeding of dark yellow corn, alfalfa and other highly pigmented feeds. There is a definite consumer resistance to the purchase of eggs with yolks showing either extremes of colour, but the greater objection is found to the very heavy yolks. This objection will also extend to eggs with green whites resulting from too heavy feeding of rape and to watery whites caused by excessive feeding of some sloppy feeds and mangels.

Almost everyone knows how important it is to have a product well packaged. In eggs this means a shell of good texture. What is more annoying than to have an egg shell crush between one's fingers when attempting to remove it from the carton? There is not only the reaction from the loss to the consumer for such breakage but to the much greater loss occurring as such poor shelled eggs move through the channels of trade. The loss may be even greater than that of the broken egg itself as its contents may become smeared over other eggs in a case, reducing them in grade from "A" to "C" with a reduction in value of from 8 to 12 cents per dozen. Shell quality of course is largely a question of mineral and vitamin D supply. Oyster shell is the main source of calcium for shell making while vitamin D is derived by birds from direct sunlight, or from cod or other fish liver oils.

The albumen or egg white varies greatly in respect to the relative amounts of thin and thick portions. The greater the proportion of thick white the better the quality of the egg. Thick white assists in keeping the yolk more definitely centred in the shell. In an egg with thin albumen the yolk will eventually rise and adhere to the shell membrane. When an egg is fried or poached, a thin albumen will spread over the pan or through the water. A thick albumen, which will hold its shape when the egg is broken out, is much more desirable. Albumen quality is not however, entirely dependent on feed, although milk would produce a much better quality white than any of the vegetable proteins commonly used. Temperature is possibly of greater importance in its influence on albumen quality than feed. This will be dealt with more specifically later. Too frequently the importance of hygiene in the production and handling of eggs is overlooked. It must be realized that the product is not likely to be any better than the raw materials from which it is made. Is it not the practice on most farms to allow the birds out of doors just as early in the spring as weather permits? They are allowed to pick most of their living, scratching over the manure pile, eating bugs, worms and similar materials which, while possibly relished by the hen, do not produce a very appetizing breakfast egg. Such materials may have high nutritional value for the hen and if eaten later in the day may possibly produce no injurious effects upon egg quality or flavour. It is possible, however, that if a supply of good mash and grain were available to the birds for a couple of hours in the morning while they are still confined in pens, improved flavour of the eggs would result, with a corresponding increase in consumption. While flavour cannot be detected by candling, its lack will reduce the consumption of eggs more rapidly than any other factor.

Soiled Eggs a Direct Loss

Flavour as already suggested cannot be detected by the candler. Dirty eggs, however, can be readily seen by anyone even without glasses. Losses from dirty eggs usually vary with the season and may range from a low of 10 per cent in July to a high of 25 per cent in April and May. Dirty nests and houses and allowing the birds to run out of doors into muddy yards are responsible for such eggs being placed in lower grades, with a loss to the producer of 8 to 10 cents per dozen as compared with the value of the same eggs if they were clean.

Dirty eggs are hard to sell, and in addition, because the shells are contaminated with dirt carrying moulds and bacteria, spoil quickly. Frequent collection of the eggs from the nests will help to reduce the loss from dirty shells. Such practice will also decrease the loss from broken eggs. Collecting eggs two or three times per day may easily pay good dividends on the extra labour involved. Some people still believe they can clean dirty eggs satisfactorily. However, this is not always the case and the loss from these so-called cleaned eggs is sometimes very heavy.

A little more attention to frequent renewal of nesting litter and to the cleaning of pens would help to eliminate the dirty egg. If this were coupled with the practice of not allowing the birds to run outside when the yards are muddy, the loss from this source would practically disappear.

Severe Jolting Detrimental

The motor car or truck, common to present-day transportation, may have a definite effect upon egg quality. While travelling at considerable speed over highways that are frequently rough, sharp jars and jolts occur which may result in the breaking down and mixing of the egg contents. The membrane enclosing the yolk material may rupture, allowing the yolk to mix and be churned up with the white, with the result that the product is useless. It does not make a particle of difference where or when the jarring occurs, whether in the hands of the farmer, trucker, or dealer, the result will be the same. The loss of these eggs must be added to the cost of those safely delivered.

Humidity Important

The effect of humidity on egg quality has for some time been recognized, but comparatively few people are aware of its importance. If the moisture content of the air in an egg-holding room is around 50 per cent or lower, heavy shrinkage in weight occurs resulting in enlarged air cells. If, however, the humidity rises to extreme levels of 90 per cent or more, mould growth with resultant musty flavour will be serious. This will be quite marked if this high humidity is associated with a temperature of 40° or higher. The importance of humidity is possibly more clearly shown by the results secured in some experimental work carried on in the study of egg quality. When an average humidity of 38 per cent was maintained in the egg room, only 8 per cent of the eggs graded in top grade and 92 per cent were in second grade. When the relative humidity was raised to 77 per cent with no other change in practice, the eggs all graded in the top grade.

Temperature a Vital Factor

Possibly the most important factor in conserving egg quality is temperature. The fact that in the fertile egg, germinal development starts at about 68° makes it seem logical that eggs should be held below this temperature. In fact a holding temperature of 65° or lower would appear desirable. Work carried out at Guelph definitely showed that, if eggs of similar quality were divided into two groups, the one held at 50° F. while the other group was kept at 70° F., there was a marked difference in quality in a very short time. The eggs held at 50° showed better cooking quality at the end of ten days than the eggs held at 70° did at the end of 24 hours. The egg white very quickly becomes watery at the higher or so-called summer temperatures. It is perhaps just as important that the holding temperature should not be too low. For instance, eggs held at a temperature of 50° or lower, if brought out into summer temperatures of 70° or higher will sweat severely and spoil quickly. The optimum holding temperature is possibly 60° to 65°. In no case should the holding temperature go below 55° especially from April 1 to October 15.

Various types of special coolers have been devised with varying measures of success from the standpoints of economy and efficiency. However, as most farm cellars can provide temperatures of from 60° to 65° —the recommended range—these would appear to offer the most logical place for storage. It would of course be vitally important that the cellar permit of good ventilation and that it be free from strong odours. Some farms might offer special facilities for cooling, such as running spring water or evaporative cooling from a wet jute curtain, or peat moss screen. The type of cooling is not so important as is the fact that eggs be kept at the proper temperatures and under conditions that will not affect their quality adversely. The problem will be greatest in those sections of the Dominion with a temperature range of 70° or higher from April to October.

High quality eggs are the result of judicious feeding of a properly balanced ration of moderately pigmented feeds. Clean nests, pens, and yards, will facilitate the production of clean eggs and frequent collection ensures against early loss of interior quality. Eggs should be held in wire baskets or other containers that will permit free circulation of the air to extract the animal heat. This may require several hours in warm weather. When thoroughly cooled the eggs should be packed in a standard egg case with the small end of the egg down and held in the cool room. When the eggs are removed from the cool room to the candling station or market, keep the cases covered to avoid them becoming heated by the sun. Market at frequent intervals.

Eggs produced and handled as suggested will retain that freshness and quality so much desired. Equally important, such handling will ensure a higher grade and a better financial return for the product. Remember, an egg is perishable and does not improve with age or poor treatment and the less they are handled the longer the high quality will last.

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