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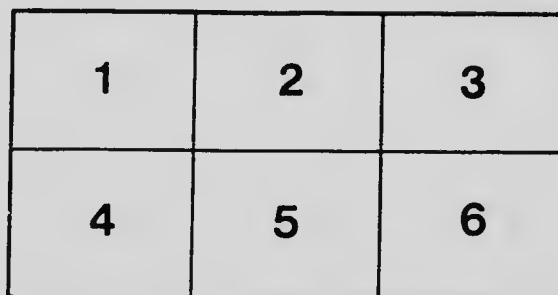
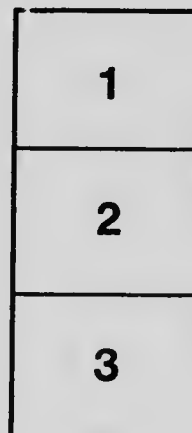
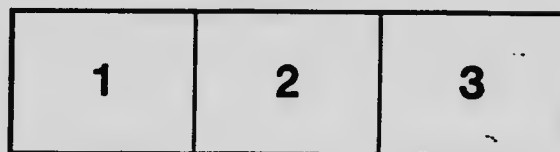
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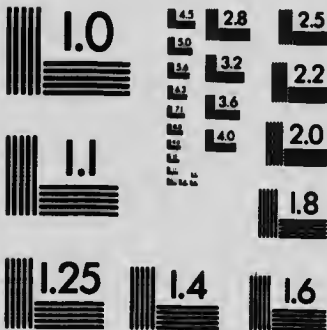
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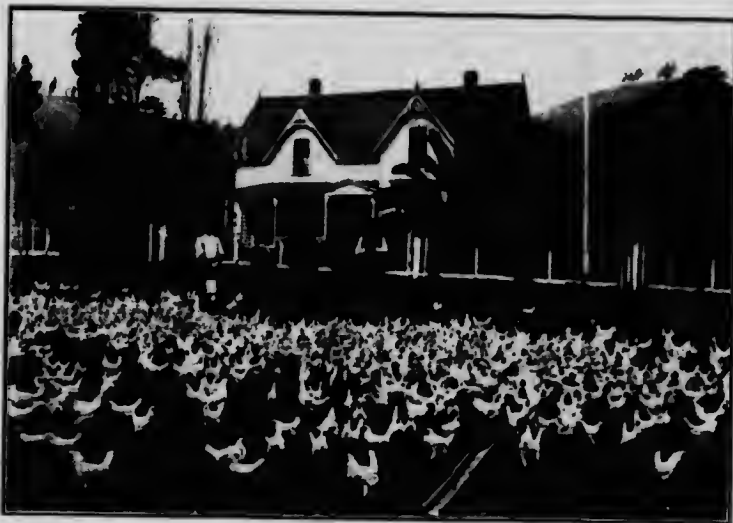
DEPARTMENT OF AGRICULTURE OF THE PROVINCE OF QUEBEC
POULTRY SERVICE

BULLETIN No. 57

Efficient Poultry Production In War Time

BY M. A. JULL

MANAGER AND LECTURER, POULTRY DEPARTMENT
MACDONALD COLLEGE, QUE.



WE MUST ALL HELP QUEBEC TO FEED HERSELF AS WELL AS OTHERS

PUBLISHED BY ORDER OF THE HON. J.-ED. CARON, MINISTER OF AGRICULTURE OF THE
PROVINCE OF QUEBEC

1918

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POULTRY PRODUCTION

The responsibility of the producer does not end in production alone. The products must be prepared and marketed to the best advantage of the producer and the consumer.

The back-yard flock, under proper management, is a valuable asset.

Fowls are economizers; they utilize waste products.

A well bred flock is the foundation of success in poultry raising.

The three essentials in producing a winter laying strain are good breeding, feeding and management.

Early hatching birds are the most profitable. Do not keep birds over two years old.

Never were good layers such profitable producers and never were poor layers such expensive boarders.

Efficient Poultry Production in War Time

BY M. A. JULL

We have come to realize that without an adequate food supply for the allied nations now at war our cause will be seriously endangered. The food problem has long since become so acute that increased production of foodstuffs is now of vital importance. The need for an adequate supply of poultry meat and eggs is common knowledge, since the per capita consumption of these products increased annually in pre-war times and the consumption has been stimulated during the war through the substitution of poultry meat and eggs for the beef and pork. In the Province of Quebec the question deserves the most serious consideration, since by far the larger part of the eggs and considerable quantities of the poultry meat consumed are imported from Ontario and the Middle Western States.

As the question of food supply becomes more and more acute the efficiency of the various domestic animals as human food producers will be taken more and more into consideration. Since it is imperative that Quebec produce more of her own requirements in poultry meat and eggs, and since the domestic fowl, under certain conditions, will produce human food more economically than most other classes of live stock, therefore, it is to be expected that farmers will give their flocks better attention and that people in the villages, towns and cities will keep poultry. These are the two important factors which should make for an increased supply of poultry meat and eggs. Rather than ask the average farmer to increase his flock materially, although he could well afford to keep one hundred hens annually, we do expect him to manage his flock so that it will produce to the maximum. The farmer who will not give his fowls the necessary attention shirks an important responsibility in the present crisis. The greatest increase in the number of fowls in the Province should take place on the village, town and city lots. There are thousands of such lots in Quebec able to accommodate thousands of fowls, the products from which would do much toward helping Quebec to feed herself as well as others.

It is particularly during these times of high feed prices for all classes of live stock that cost of production and selling prices determine the extent of production. As far as relative efficiency is concerned Plymouth Rocks, Rhode Island Reds and Wyandottes are practically on a par, bearing in mind, however, that the strain of a breed is more important than the breed



Barred Plymouth Rock No. 204, laid 91 eggs in four months, Nov. 1st 1917 to Feb'y 28th 1918, inclusive. This hen consumed, in the four months, approximately 26 lbs. whole grain, 4 lbs. ground grain, 10 lbs. mangels, 1½ lb. hen bone, 1 lb. oyster shell and ¼ lb. grit; the cost of same was In the vicinity of Montreal, Quebec and Sherbrooke, where producers sold direct to their customers, an average price was obtained of 60 cts. per dozen for the four months. In such cases hens laying as well as No. 204 made a profit of \$3.31 over cost of feed. In country places where the average price, for the four months, was 48 cts. per dozen a profit of \$2.40 over cost of feed would be realized in the four months. The good layer pays better than ever.

itself. With bred-to-lay stock under good management it requires about four and one-half pounds of feed to produce one pound of eggs or about seven pounds of feed to produce one dozen eggs. Under conditions where the fowls are supplied with practically every article of food, they each consume, on the average, about ninety pounds of grain, twenty pounds of green food, two pounds of oyster shells, one pound of grit and one-tenth pound of charcoal annually. On the average far 1 the amount of grain supplied would not amount to ninety pounds because of the considerable quantities

of food material secured by the hens while ranging from Spring to Fall. The farmer should learn to feed well during the winter months because winter egg production is most profitable; on feed cost alone sixty eggs eggs laid between November 1st and March 1st would pay for a hen's keep for one year. If the average hen produced an average of twelve eggs each month for the year she would be an efficient hen and would be making a good profit over present cost of feed. In proportion to pre-war prices feed



Rhode Island Red, No 446, laid 96 eggs in four months, Nov. 1st 1917 to Feb'y 28th 1918 inclusive. This hen consumed, in the four months, approximately 29 lbs. whole grain, 3.5 lbs. ground grain; 11-5 lbs. mangels, 1 lb. green bone, 1 lb. oyster shell, and 1 lb. grit; the cost of such was \$1.32, an average price of 60 cts. per dozen, for the four months, would realize a profit of \$3.48 over cost of feed, an average price of 48 cts. per dozen, for the four months, would realized profit of \$2.52 over cost of feed. Winter egg production is the most profitable phase of the poultry industry. Good winter production can only be secured through improved breeding stock and good management.

prices have advanced more than the egg prices so that the hen must lay about twenty more eggs per year than in 1914. The number of eggs laid above that required to pay for a hen's keep or one year, is of greater value now than in 1914 so that the heavy laying hen is more profitable than ever, particularly if the extra eggs are laid during the Winter months. Incidentally the poor laying hen was never so expensive to keep. The object lesson to be deduced is that production must be carried on as effi-

ciently as possible, and this means that birds over two years old should very rarely be kept, the majority of the laying stock should be pullets, the layers should be selected with the greatest care, and the method of feeding, breeding and general management should be such as to induce maximum egg production.

FEEDING THE LAYING STOCK

Since it is desirable that we eliminate milling wheat from our poultry rations at least to the extent of twenty-five per cent of the scratch ration, we must use suitable substitutes. Substitutes for milling wheat include: feed wheat, oats, barley, buckwheat and corn. Feed wheat is available but poultry producers must use judgment in the purchase of same as certain grades of feed wheat are apt to run low in feeding value. Good plump oats make an excellent poultry feed whereas poor oats, having a high percentage of hull, should be used very sparingly. Barley is also a good feed and can be used with moderation, particularly if it is boiled. Buckwheat could be used to a limited extent but buckwheat and barley alone cannot be expected to produce eggs, contrary to the common practice among many farmers. Corn is one of the best substitutes for milling wheat and it is to be hoped a supply will be made available.

The need for adequate supplies of eggs and poultry meat is so great that it is very urgent that farmers and poultrymen use every economy in feeding. It is better to keep no birds at all than to feed them poorly. Under a good method of feeding, however, good egg production can be obtained, and for the scratch ration feed wheat along with oats should constitute the principal part of the ration. Boiled barley and buckwheat may be added occasionally to give variety. When corn is available it should be used as much as possible.

Farmers are in a good position to supply their fowls with the required amount of green food in the form of mangels, turnips, well cured alfalfa or clover hay, or if none of these are available then sprouted oats may be used. It has become very urgent that farm and town poultry raisers should make the best possible use of all waste products. Table scraps, waste soup, garbage in general and other materials should be incorporated in the wet mash ration. Potato peelings should be boiled.

The practice at Macdonald College is to feed the scratch ration in the litter morning and evening, thereby inducing the laying hens to take plenty of exercise. The mash ration is fed in self-feeding hoppers in a dry form and a limited quantity only is fed each day as a wet mash in V-shaped troughs. The dry mash hoppers are kept closed until noon thus inducing

the hens to scratch for the whole grain in the litter. Green food is fed daily about noon. Grit and oyster shall are provided in self-feeding hoppers. Water and buttermilk are fed ad libitum.

Scratch ration.—The scratch ration is composed largely of feed wheat and oats, using barley and corn to a limited extent. The proportions vary depending upon the market situation.

Mash ration.—The mash ration is composed of the following mixture:

Ground wheat screenings.	132 lbs.
Wheat bran.	66 "
Crushed oats.	66 "
Beef scraps.	66 "
Cornmeal.	33 "
Middlings.	3 "
Charcoal.	4 "

A large proportion of wheat screenings is used to lessen the cost of the mash since it replaces largely cornmeal and middlings. This makes a mash which is quite palatable and which the birds relish.

Animal foods.—Ground green bone is fed daily allowing $\frac{1}{4}$ oz. per bird. Buttermilk is also provided ad libitum. These forms of meat foods are fed in addition to the beef scraps in the dry and wet mash rations.

Green foods.—Mangels or sprouted oats are provided daily. Well cured alfalfa hay is also fed occasionally.

Mineral foods.—Oyster shells and grit are fed ad libitum.

Drink foods.—Water and buttermilk or skim milk are provided ad libitum.

FEEDING THE SURPLUS STOCK

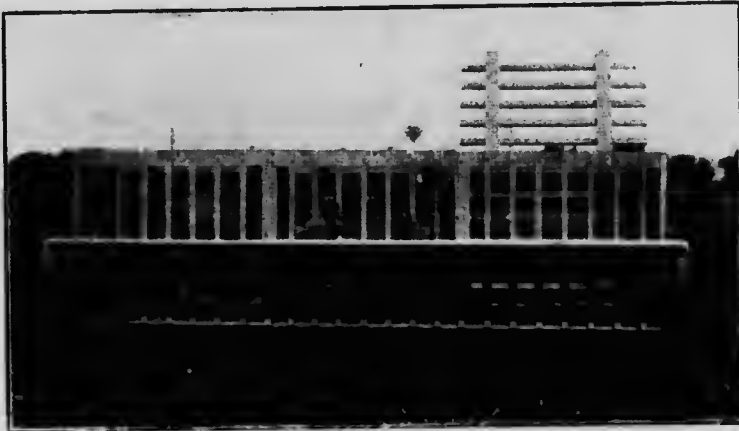
Most of the surplus stock, the cockerels and cull pullets, is fattened and sold as roasters in the Fall of the year.

Under present conditions of food production and the need for economy in consumption, it becomes imperative that every effort should be made to produce stock of such good quality that there will be the minimum waste. A roaster of the highest quality is one which is young, full grown, plump and well finished. A chicken is "ripe" as a choice roaster for a short time only. After a pullet has commenced to lay eggs, her flesh changes in quality. When the spurs of a cockerel begin to harden, the flesh begins to get tougher. A good roaster must always be plump and fat, that is, it must be well finished where the fat and lean meat are well intermixed in good proportions. A well finished and good appearing chicken will look well on the table, while the unfinished chicken lacks flavour and when prepared for eating may present anything but an appetizing appearance.

The consumers, or the general public, are so accustomed to purchasing dressed poultry of poor quality, that they usually do not recognize the difference between a poor roaster and a well finished one. If the poultry is well fattened, properly killed and dressed, there are few kinds of meat so wholesome and with so much flavour.

A thin bird is not attractive when dressed and is not appetizing when roasted. The flesh appears shrunken and the bones are prominent. When roasted, the meat is dry and tough.

A plump, well finished chicken has a rich flavour and an abundance of tender meat of good quality.



A good style of fattening crate for farm use

The fattening of poultry, then, is a finishing process. The object in fattening is to prepare in the best possible way poultry flesh for human consumption. There is always a good demand for properly dressed poultry. Poorly fattened birds, however, bring low prices, and sometimes no profits are made in selling them. Plump birds are in the greatest demand at highest prices, and birds of high quality always yield the largest profits. Fattening, then, means heavier birds and higher prices. There is usually a difference in price of five cents or more a pound between thin and plump poultry.

There are two methods of fattening poultry for the market. The method usually employed on the farm is the pen method, where the birds are confined in a pen or box-stall. The other method is crate-fattening, and is usually more profitable.

The fattening-crate is made of laths nailed upon a stout framework, with a few light boards for the ends and partitions. The crate should be 6 feet long, 18 inches wide and 18 inches high. The laths on the top, back and bottom run lengthwise of the crate and are placed 2 inches apart; care should be taken to have the front and back slats on the bottom at least one inch from the front and back sides of the crate, so that droppings may pass through and not accumulate. The laths on the front of the crate run up and down and are placed 2 inches apart, so that the fowls may eat from the trough.

A V-shaped trough, 3 inches deep and 5 inches wide at the top, is placed on brackets which are placed 4 inches from the bottom of the crate.

The crate should stand on legs about 3 feet high.

The fattening-crate should be placed in a cool, comfortable place, and where the birds will not be disturbed. The birds should be dusted with powder to rid them of lice and mites, otherwise they will not fatten profitably.

Best results are obtained by feeding all fattening birds on soft mashes. The gain in weight is greater and the quality of the flesh is superior when wet mashes are used than when the chickens are fed whole grain. The ground grains used to make up the mashes are usually oatmeal-feed, finely ground buckwheat, cornmeal, low-grade flour and middlings.

With a ration composed of two parts oatmeal-feed, two parts buckwheat, one part middlings and five-eighths parts beef scraps, all parts by weight, one pound of gain in weight may be obtained with four pounds of grain.

These ground grains should be mixed thoroughly, and the mixture moistened with sour skim milk. Milk is an excellent food for fattening chickens. It tends to develop the tissues and improves the quality of the meat. The proportion of milk to the mash mixture is about two pounds of milk to one pound of mash by weight. Best results are secured when the food is mixed twelve hours previous to feeding. Give the birds grit once a week.

Great care should be taken not to feed the birds too much during the first week of the fattening period; feed very lightly three times per day. For the second week feed more heavily, and for the third week feed all they can possibly eat.

Under average conditions a chicken will gain about one pound in weight after three weeks of careful feeding.

When the birds are ready to be killed, they should be starved about twenty-four hours. This will clean out the crops and intestines of all food and the birds will keep longer and will be of better quality. When they

are being starved, they should be given water to drink, which will wash food particles out of the digestive tract. This is a very important matter—starve before killing.

KILLING MARKET POULTRY

There are different ways of killing a fowl. One of the best is to bleed it by severing the arteries in the neck. From the ceiling of the room in which the killing is to be done, the fowl is suspended by the feet at about the height of the shoulder. Any stout cord with a short stick in the end will do to wrap round the bird's feet. The wings are crossed at the back so that the bird cannot flutter. In that position it is ready to be bled.



A convenient style of killing knife

For this purpose a particular kind of killing knife is necessary. The blade of the knife should be of a heavy piece of steel, about 2 inches long, $\frac{1}{4}$ inch wide, and 1-8 inch thick on the back. It should be ground to a



Showing the manner of suspending bird. Note how the feet are tied, how the wings are locked at the back and how the operator holds the head in the left hand and cuts the blood vessels with the right hand.



Showing the manner of piercing the brain after the blood vessels have been severed. Note the position of the knife.

sharp point with a straight cutting edge, the slope of the point being taken from the back edge rather than from the front edge. The handle should be fairly stout so that it can be grasped readily.

It takes but a fraction of a second to suspend the bird for killing, and when all is ready the head of the fowl is taken in the left hand and the killing knife in the right hand. With the thumb and forefinger of the left hand the mouth is forced open by pressure and the knife is inserted into the mouth with the blade pointing toward the back of the head. The knife is then forced up to the juncture of the head and neck where the arteries come down on each side of the neck; these are severed, which causes the fowl to bleed freely.

Immediately after the fowl has been bled the knife is forced into the roof of the mouth. This is done by withdrawing the knife from the juncture of the head and neck, turning it over so that the back of the knife now passes along the upper beak into the groove in the roof of the mouth. It is immediately forced into the brain cavity, so that the brain is pierced. If the brain has been pierced properly the bird will squawk and it will also make a convulsive movement which tends to loosen the feathers located along the feather muscles. Proper piercing of the brain makes plucking much easier, whereas if the brain has not been properly pierced, the feathers are hard to pluck and the skin is frequently torn badly.



The blood-can is about 6" high with a hook at the top and some lead in the bottom.

Just as soon as the bird has been bled and the brain pierced, a blood-can, which is weighted in the bottom, is hooked on to the lower mandible to catch the blood; it also prevents the bird from moving its body too much.

The sooner the bird is plucked the better. Experts can pluck a fowl in less than one minute. The birds are always plucked dry; it gives them a much nicer appearance and they will keep longer.

In dry plucking, rapidity of movement is necessary. Different pluckers have different ways of plucking, but we have found the following order to be convenient and rapid: neck, breast, wings, tail, legs, back and body.

As soon as the blood-can has been hooked on the beak, a squeezing motion with the fingers round the neck from the base toward the head removes the feathers of the neck. The soft feathers covering the breast are removed readily by a sort of rubbing motion, rubbing the opposite way the feathers normally lie. Then the wings are held firmly in the left hand and the main wing feathers are removed with one jerk by the right hand and the main tail feathers are given a slight twist which should remove them with ease. The thighs and legs are easily plucked in much the same manner as the neck; then finally the back and body of the bird

are plucked. After plucking [has been completed pin feathers may be removed by using a dull, round-bladed knife. Care should be exercised not to tear the skin. Even small blemishes lower the market value of the dressed bird.



A well finished roaster properly prepared for market. Note the abundant fleshing, the neatness of dressing and the attractive appearance.

After the bird has been dressed the head and feet should be washed with a stiff brush. The vent should be squeezed, and if any food remains in the crop an opening should be made just above the shoulder and the food taken out.

The head should be wrapped in parchment paper. Then the bird should be placed where it will cool properly, because it is necessary that the heat pass out of the body as soon as possible after the fowl has been killed. Proper cooling prevents bacteria from developing and tends to keep the fowls much longer.

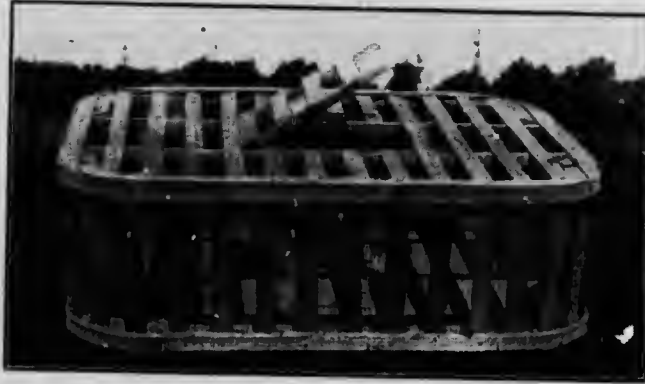
MARKETING POULTRY

In the marketing of poultry the producer should take into consideration prices for live and dressed poultry. Although it is usually more profitable for the producer to market his poultry dressed there are times, particularly in the late Winter and early Spring, when prices for live poultry may be in excess of prices for dressed poultry.

In shipping fowls alive it is very important to ship them in strong crates which provide plenty of air. The shipping-crate should have the sides, ends and tops

slatted. The top slats should not be more than $1\frac{1}{2}$ inches apart. The crate should be between 12 and 16 inches high, not more than 30 inches high and not more than 48 inches long.

Boxes of various sizes are used for shipping the different classes of dressed fowls. Usually each box is made to hold twelve fowls. A box for roasters is made 19 inches long, 16 inches wide and 8 inches high, all inside measurements. For small roasters the box measures on the inside $17\frac{1}{2}$



A suitable crate for shipping live poultry to market

inches long, 15 inches wide and 7 inches high. Large fowls require a box measuring on the inside 18 inches long, 17 inches wide and 9 inches high. A box for medium fowls measures, on the inside, 16 inches long, 15 inches wide and 7½ inches high.

In shipping poultry to market it is well to grade the birds according to weight and quality. The following standard classification, adopted by the Canadian Produce Association, is given as a guide to those having live or dressed poultry to market.

LIVE POULTRY CLASSES

The classes for live poultry shall be: *Chickens, Fowl and Cocks.*

Sub-classes for Chickens—

Broilers	Birds weighing under	2½ lbs.
Roasters, medium	“ “ “	4½ lbs.
heavy	“ “	over 4½ lbs.
Capons, light	“ “	under 6 lbs.
heavy	“ “	over 6 lbs.

Sub-classes for Fowl—

Light	Birds weighing under	3½ lbs.
Medium	“ “	from 3½ to 5 lbs.
Heavy	“ “	over 5 lbs.

Sub-classes for Cocks—

Light	Birds weighing under	4½ lbs.
Heavy	“ “	4½ lbs and over.

LIVE POULTRY GRADES

Grades and Sub-grades—

Milk Fed Poultry.....	No. 1 quality.
	No. 2 quality.
Range Fed Poultry.....	No. 1 quality.
	No. 2 quality.

DEFINITIONS OF GRADES AND SUB-GRADES

Milk fed—

Birds which have been systematically finished in crates where milk has been a portion of the ration. The birds must be healthy specimens with well muscled breasts, and show deposits of fat on the pin bones and back, also the flesh must be soft.

Range feed—

Birds which have been allowed the full run of the farm and have received no special attention as to finishing.

No. 1 Quality—

Birds must be healthy specimens with well muscled breasts, streight breast bones, and well finished in flesh.

No. 2 Quality—

All other birds fit for food.

DRESSED POULTRY CLASSES

The classes for dressed poultry shall be: *Chickens, Fowl and Cocks.*

In the weight classes of dressed poultry, specimens in the container must not vary more than half a pound in weight in the case of Chickens and Fowl, and one pound in the case of Cocks. The container must be clearly marked stating the number of birds packed therein and the net weight

DRESSED POULTRY GRADES

There shall be five grades for all classes of dressed poultry: *Specials, No. 1, No. 2, No. 3 and Culls.*

All poultry to grade Specials, No. 1, No. 2 and No. 3, must be well bled through the mouth, dry picked, undrawn, clean of feathers, dry cooled, head and feet left on.

Birds that are killed by other methods, scalded, drawn or wet cooled, cannot be so graded unless the outside of the package is very plainly and conspicuously marked indicating the method of killing, dressing, cooling or the fact that they are drawn.

DEFINITIONS OF GRADES



A dressed roaster grading as a Special



A dressed roaster grading as No. 3, being fairly well fleshed but with a crooked breast-bone and with food in the crop.

Specials—

Birds in this class are particularly good specimens both as to conformation, quality and flesh. No pin feathers, bruises, breaks or tears in the skin or flesh or evidence of food in the crop, are allowable. They are choicest specimens.

Chickens and Fowl—

Where more than one bird is placed in a package, they must not vary more than one-quarter of a pound in weight; the colour of the corresponding sections such as skin and shanks must be uniform.

Cocks—

When more than one bird is placed in a package, they must not vary more than one pound in weight: the colour of the corresponding sections must be uniform.

No. 1—

Birds in this class must show no pin feathers, must be well fattened and fleshed. No deformities in conformation of any kind are allowable. Abrasions in the skin are not to exceed more than half an inch in length and there shall be no more than two abrasions on each specimen.

Chickens and Fowl—

Where there is more than one bird placed in a package, the colour of the corresponding sections must be uniform and the birds must not vary more than one-quarter of a pound each in weight.

Cocks—

When more than one bird is placed in a package, they must not vary more than one pound each in weight: the colour of the corresponding sections must be uniform.

No. 2—

Birds must be well fleshed and fattened. No deformities are allowable, except slightly crooked breast-bones. The birds must be cleanly picked and may show tears in the skin not to exceed one and one-half inches in the total length and not more than five small abrasions.

Chickens and Fowl—

When more than one bird is placed in a package, they must not vary more than one-quarter of a pound each in weight in those classes weighing more than 3 lbs, each; the corresponding sections must be uniform in colour.

Cocks—

When more than one bird is placed in a package, they must not vary more than one pound each in weight. The colour of the corresponding sections must be uniform.

No. 3—

Poorly fleshed birds. Birds well fleshed but badly torn, bruised or poorly dressed.

Chickens and Fowl—

When more than one bird is placed in a package, they must not vary more than one-half pound each in weight.



A dressed roaster grading as a Cull, although being well fleshed has been scalded instead of being dry-plucked.



A dressed roaster, grading as No. 3, being poorly fleshed and with torn skin.

Cocks—

When more than one bird is placed in a package, they must not vary more than one pound each in weight.

Culls—

All other birds fit for food.

STANDARD DRESSED POULTRY PACKING WEIGHTS

Sub-classes for Chickens—

Broilers.....	Birds weighing from	$\frac{3}{4}$ to $2\frac{1}{2}$ lbs.
Fryers (light Roasters)	" " "	$2\frac{1}{2}$ to $3\frac{1}{2}$ lbs.
Roasters, medium.....	" " "	$3\frac{1}{2}$ to $4\frac{1}{2}$ lbs.
heavy.....	" " "	$4\frac{1}{2}$ and over.
Capons, light.....	" " "	$6\frac{1}{2}$ and under.
heavy.....	" " "	$6\frac{1}{2}$ and over.

Sub-classes for Fowl—

Small.....	Birds weighing under	3 lbs.
Light.....	" " "	from 3 lbs. to $3\frac{1}{2}$.
Medium.....	" " "	$3\frac{1}{2}$ lbs. to $4\frac{1}{2}$.
Heavy.....	" " "	$4\frac{1}{2}$ lbs. and over

Sub-classes for Cocks—

Light.....	Birds weighing under	4 lbs.
Heavy.....	" " "	4 lbs. and over.

MARKETING EGGS

Fresh eggs differ in size, shape, colour and quality. They are perishable products and, consequently, they should be transported from the producer to the consumer as quickly as possible. Furthermore, the means of transportation should be such as to ensure the eggs reaching the consumers in as good condition as possible.

The condition under which eggs are produced should be greatly improved; such improvement will result in a higher average annual price to producers, a higher grade product for the consumers and the elimination, to a great extent, of the present enormous annual wastage of the egg crop. Very often the fowls are fed on unwholesome food, which affects the odour and flavour of the eggs. Dirty poultry houses and dirty nests are the cause of dirty eggs. Meat-spots, blood-spots and bloody eggs cannot be avoided but they should not be sold with the rest of the eggs. Blood-rings and rotten eggs are caused by having the males with the females during warm weather, or when broody hens sit upon the eggs. Musty and mouldy eggs result from the storing of eggs in bad places. Hair-splits, checks and leakers are caused by rough handling either at home or after the eggs have been sold.

It will be noted that most of the conditions which give rise to bad eggs can be improved. If the proper improvements are made it will mean

that more good eggs will be sold and much money will be saved, for every egg that is spoiled means a loss of money. There is an enormous amount of money lost every year because so many good eggs are spoiled. Much of this money can be saved if the quality of market eggs is improved.

A simple set of practical rules has been suggested, and, if these rules are followed, much trouble with which the trade has had to contend will be avoided. Producers are strongly advised to keep the hens in comfortable, sanitary houses and give them clean nests at all times. Eggs should be gathered regularly twice daily in warm weather and once daily at other times of the year. The eggs should be stored in a cool, dry room at a temperature not higher than 60° F., and every precaution should be taken to keep the eggs out of the sunlight as much as possible. All mature male birds should be kept out of the laying floor except during the breeding season.

GRADING EGGS

The highest price can only be obtained for any product when it is uniform in quality. Large and small eggs should be sold separately. Eggs sold in one lot should either be all white or all brown, and they should be about of the same age. Fresh eggs should be sold separately because if dirty, stale or rotten eggs are mixed with them, the price is lowered. It pays to grade eggs.

The Canadian Produce Association has adopted regulations made under the provisions of the "Live Stock and Live Stock Products Act" respecting the grading and marking of eggs. Anyone having eggs to market should make a careful study of this classification.

1.—Canadian eggs for export out of Canada and eggs for domestic consumption intended for shipment from one province to another, but not including eggs intended for incubation, shall be classified and graded as follows:

Class (1) FRESH GATHERED—Eggs which have not been held under refrigeration at a temperature of 40° F. or less, except when in transit, or subjected to artificial preservation.

Grade (a) *Specials*—Eggs of uniform size, weighing over 25 ozs. to the dozen or over 47 lbs. net to the 30 dozen case; absolutely clean, strong and sound in shell; air cell not over 3-16 of an inch in depth; white of egg to be firm and clear and yolk dimly visible.

Grade (b) *Extras*—Eggs of good size, weighing at least 24 ozs. to the dozen or 45 lbs. net to the 30 dozen case; clean; sound in shell; air cell less.

than 3-8 inch in depth; white of egg firm and yolk slightly visible; maximum allowance at time of inspection not to exceed 2% variation from the grade stated.

Sub-grade (1) *Pullet Extras*—Eggs which have the quality of extras but which fall short in weight shall be known as "Pullet Extras" providing they weight at least 20 ozs. to the dozen or 37½ lbs. net to the 30 dozen case.

Grade (c) *Firsts*—Eggs weighing at least 23 ozs. to the dozen or 43 lbs. net to the 30 dozen case; clean; sound in shell; air cell less than ½ inch in depth; white of egg firm; yolk may be distinctly visible but mobile, air cell stationary; maximum allowance at time of inspection not to exceed 2% variation from the grade stated.



An egg, grading as a Fresh Gathered Special. Note that the air cell is only ¼" in depth.



An egg, grading as a Fresh Gathered Second. Note that the air cell in ¾" in depth.

Grade (d) *Seconds*—Eggs sound in shell; may contain weak, watery eggs and eggs with heavy yolks, and all other eggs sound in shell and fit for food.

Class (2) STORAGE—Eggs which have been "held" under artificial refrigeration at a temperature of 40° F. or less.

Class (2a) PRESERVED—Eggs which have been subjected to any process, liquid or otherwise, intended to preserve their quality.

Grade (a) *Extras*—Eggs of good size, weighing at least 24 ozs. to the dozen or 45 lbs. net to the 30 dozen case; clean; sound in shell; air cell less

than 3-8 inch in depth; white of egg firm and yolk slightly visible; maximum allowance at time of inspection not to exceed 2% variation from the grade stated.

Grade (b) *Extra Firsts*—Eggs weighing at least 24 ozs. to the dozen or 45 lbs. net to the 30 dozen case; clean; sound in shell; air cell less than 3-8 inch in depth; white of egg firm and yolk slightly visible; maximum allowance at time of inspection not to exceed 2% variation from the grade stated.



A standard size thirty dozen egg case, packed with Fresh Gathered Specials in cartons.

Grade (c) *Firsts*—Eggs weighing at least 23 ozs. to the dozen or 43 lbs. net to the 30 dozen case; clean; sound in shell; air cell less than $\frac{1}{2}$ inch in depth; white of egg to be reasonably firm; yolk may be quite visible but mobile, not stuck to the shell or seriously out of place; air cell not necessarily stationary.

Grade (d) *Seconds*—Eggs clean; sound in shell; may contain weak watery eggs and eggs with heavy yolks, and all other eggs sound in shell and fit for food.

Class (3) CRACKED AND DIRTY—Eggs, shells of which have been checked, broken, smeared or damaged in shell but fit for food.

2.—Every case containing Canadian eggs intended for export out of Canada shall be marked on both sides in a legible and indelible manner, with the class and grade of eggs contained therein and the words "Canadian Eggs", and every case containing eggs that are to be shipped from one province to any other province in shipments of 100 cases or more, shall be marked on both sides with the class and grade of the eggs contained therein and with the name of the county of origin when other than domestic product. The Minister may from time to time prescribe the form and the sign of the letters that are to be used in such marking. Such marks may be accompanied by other trade designations or brands providing such designations or brands are not, in the opinion of the Minister, inconsistent with or marked more conspicuously than the marks prescribed in these regulations.

3.—Canadian eggs for export shall be tightly packed in Canadian standard cases, in new white fillers and flats, with kiln dried excelsior or corrugated cushions at top and bottom, or one-third fillers on bottom with flats over top and under bottom fillers.

4.—Canadian standard cases shall be made to contain thirty dozen eggs. They shall be made of clean, dry and odourless wood. The ends and centre partitions shall be not less than five-eighths of an inch thick, and the sides, top and bottom not less than three-eighths of an inch thick.

5.—Cases containing Canadian eggs in lots of twenty-five cases or more intended for export out of Canada, and eggs intended for shipment from one province to another province in shipments of 100 cases or more, shall not be shipped until they have been marked by an Inspector.

6.—The mark of approval to be placed on each case hereinafter called the "Government Mark" shall consist of the Maple Leaf and the words "Canadian Eggs" and "Government Inspected", together with the Inspector's number, the device to be in such form as the Minister may approve.

7.—Before the "Government Mark" is placed upon any case the Inspector shall draw samples of at least five per cent of the cases to be marked and shall examine at least one-half of the eggs in each case. The Inspector shall satisfy himself that the samples taken are representative, and may take any further samples and make any further examination that he deems necessary.

8.—No cases containing eggs shall be marked with the "Government Mark" unless the warehouse or rooms in which the eggs are held are in a clean and sanitary condition, and further, no cases shall be marked unless suitable accommodation is provided for the Inspectors to make the neces-

sary examination, such accommodation to include a dark room, facilities for candling, and such fittings as may be required to insure a proper examination.

9.—No person other than a duly appointed Inspector shall apply any "Government Mark" to any cases containing eggs.

10.—After the contents of any case bearing the "Government Mark" have been removed such mark shall be whitewashed. This shall be done by the person or persons removing the eggs from the case.

11.—Collectors of Customs throughout Canada shall not allow any Canadian eggs to be shipped for export out of Canada that are not marked in accordance with these regulations.

12.—These regulations, in so far as they affect export shipments, shall come into force as soon as they are published in the *Canada Gazette* and insofar as they affect shipments from one province to another province, shall come into force on May 1st, 1918.

HOUSING THE LAYING STOCK



A very poor poultry house. Hens cannot lay well in such a house.

Anyone intending to build a poultry house should study conditions before deciding upon any definite style of structure, for local conditions

determine, to a large extent, the exact type which will give good results. At the same time, there are general principles which apply in all cases of poultry house construction.

The first essential feature in housing is that the house provides comfort for the birds; unless the birds have comfortable quarters they cannot be expected to lay well. A comfortable house implies that it provides plenty of room for the birds, is well supplied with fresh air and, at the same time, is always dry. The condition of dryness in a house depends upon the circulation of fresh air. While an abundant supply of fresh air at all times is essential, it is very important that no draughts be allowed to sweep through the house.



Another poor poultry house. The windows are too low, causing the floor to be cold and draughty during the winter months.

One of the surest indications of an improperly ventilated poultry house is the condensation of moisture on the walls and ceilings. Moisture is given off by the fowls in breathing and this foul air, which contains carbon dioxide as well as other injurious gases, falls to the floor and if it is not carried off regularly the atmosphere of the house becomes excessively damp and during cold weather this dampness collects upon the walls and ceilings in the form of rime.

The position of windows is a very important matter, since they are employed not only to provide an abundance of light but also to provide fresh air. An excessive amount of glass tends to make the house too warm

in the day time and too cold at night, for this reason it has been found most satisfactory to use cotton cloth in place of some of the glass, using about two-thirds of the window in cotton and one-third in glass. During the warmer seasons of the year the windows should be left open as much as possible.

The second essential feature in housing is that the house is convenient. The house should be of such size and shape that any work required to be done in the house can be done with ease. It should be an easy matter to clean the house and keep it sanitary. The fixtures in the house should provide for every convenience; windows and cotton curtains should be easily adjustable, hoppers should be of sufficient size to hold a quantity of grain and nests should be easily accessible.



A good poultry house. The "Macdonald" House on the farm of Edgar B. Standish, Rougemont, Que. It provides fresh air and sunlight at all times.

The third essential feature in housing is that the house is economical. A new poultry house need not be expensive but it should be durable; the more durable the house the less the per annum cost of construction per bird.

The size of a poultry house is determined by the number of birds to be housed. Small flocks require more floor space per bird than large flocks, but it is not good commercial practice to keep too many birds in one flock, 100 being about the maximum. A safe working rule is to allow about four to six square feet floor space per bird.

The nearer square a house is, other thing being equal, the less lumber required. A long narrow house is colder than a short deep one, because it has a larger area of exposed surface and it is more inclined to be draughty.

The shape of the roof influences the cost of construction. The steeper the pitch the greater the cost of building, particularly with a shed-roof house as compared with a gable, or combination-roof house. On the other hand, the steeper the pitch the longer it will last. Most roofs are made one-fourth pitch, but shingle roofs should be one-third pitch. A gable roof will allow a false ceiling to be put in the house, which is an advantage, since straw can be packed in the gable and the house will always keep dry.

Permanent poultry houses should be built upon good foundations. Concrete is usually preferable to brick or stone; a good foundation is made by mixing together one part cement, three parts sand and five parts gravel. The foundation should be built deep enough to prevent heaving by frost and to keep out water.



Another good poultry house. Cotton curtains only are used in the front of the house, thus ensuring an adequate supply of fresh air.

The floors of all poultry houses should be dry, smooth and economical. Since durable and sanitary floors are necessary, a concrete mixture of one part cement, two and one-half parts sand and five parts gravel is the best material to use.

For plans and specifications of poultry houses and for instructions in building communicate with: The Poultry Service, Dept. of Agriculture, Quebec, Que., or The Poultry Department, Macdonald College, Que.

SANITATION

The health of poultry is of paramount importance in its relation to results secured in poultry raising, and the maintaining of health is dependent upon the constitutional vigor of the stock and sanitary methods employed in management.

The first rule of good poultry keeping is to have healthy and vigorous stock. Every bird in the flock should possess a sound constitution, otherwise it is impossible to breed good stock. The constitutional vigor of a bird should be the first test to which it is submitted in selecting it for the breeding pen and poultry breeders should develop the ability of selecting a good from a poor bird.

There are several external evidences of good vigor. A healthy appearance, combined with a bright red comb, a full, bright eye and a glossy plumage are strong evidences of a sound, vigorous constitution. In a good breeder the head is short and broad and the neck is of fair length, not snake-like in appearance, and is well attached to the shoulders, which are broad. The back is fairly long and the body is deep and well meated. The legs are short and strong and are well placed under the body.

The proper feeding of the fowls is important to keep them in the best possible condition. The food given to poultry should always be wholesome. An abundant supply of green food is always necessary. It is wise to avoid overfeeding at all times, but more particularly when the chicks are young; overfeeding affects the digestion and lowers the vitality.

Clean and fresh drinking water should always be provided. The drinking vessel is the most effective means of spreading disease among the birds, for this reason it is very necessary to take every precaution in keeping the vessels clean. It is a good practice to put in the drinking water some antiseptic, such as potassium permanganate, which can be bought at any drug store. Make a stock solution by putting the potassium permanganate one inch thick in a jar and filling the jar with water. The water will dissolve most of the permanganate but more of the crystals should be added from time to time. Whenever the poultry is watered add enough of the stock solution to give the drinking water a deep purple color. In addition to this the drinking vessels should be cleaned and disinfected regularly.

Where poultry is kept on the same soil year after year, and if the soil is not cultivated regularly, it soon becomes tainted and unsuitable for

poultry keeping. For this reason it is very necessary to give the fowls new areas of land as frequently as possible and cultivate the areas on which they have been raised. The cultivation of the soil and growing green food does much to keep the soil sweet and clean. A good run may be made for a poultry yard by using a mixture of: 5 lbs. Kentucky Blue Grass, 5 lbs. Canadian Blue Grass, 7 lbs. Perennial Rye Grass and 3 lbs. White Clover.

In the matter of housing it has been pointed out previously that the house must provide plenty of light and fresh air and that it must be dry and draught-proof. Aside from this it must also be clean. Every poultry house and coop should be cleaned thoroughly at least once every year. To clean the poultry house remove the litter and scrape the floor thoroughly. Then wash the floor, roosting quarters, nesting quarters and all other parts of the building, using a scrubbing brush if necessary to remove all of the dirt. To make sure that the house is cleaned thoroughly give it another washing over all parts of the interior. After the second washing, if done properly, the house is ready to be disinfected.

To disinfect the house it is necessary to spray or apply with a scrubbing brush a good disinfectant. The disinfectant should be applied twice, allowing time between for it to dry. Some good disinfectants include zenoleum, izal, formaldehyde and carbolic acid. Use the first two in strengths of ten per cent solutions; that is to nine quarts of water add one quart of zenoleum or izal. A five per cent solution of commercial formalin makes an excellent disinfectant; use a liberal amount and in applying formalin protect the hands with gloves. After the house is thoroughly disinfected then apply a mixture of one part crude carbolic acid with three parts kerosene. The house should now be clean and ready for use again.

EXTERNAL PARASITES

It is not enough to clean and disinfect the house but once a year, the house should be disinfected regularly throughout the year. Unless disinfection is done regularly the lice and mites will increase very rapidly. Poultry infested with lice or mites are not profitable because these parasites live on the blood and tissues of the poultry. The lice stay on the poultry most of the time while the mites visit the poultry at night and remain under the roosts or in other secluded places during the day. Desinfection should be done once a month during the colder seasons of the year and twice a month during the warmer seasons.

A good method of ridding fowls of lice is to treat them with mercurial ointment U. S. P., made with a lard base. On each fowl rub three small pieces of ointment, each piece about the size of a pea, one beneath the vent and one under each wing. Rub the ointment on thoroughly and the fowls should be practically free of lice.

VICES

There are two vices, egg eating and feather pulling, which flocks often contract, particularly among confined flocks kept under unsanitary conditions. When once started either of these vices usually spreads rapidly; therefore, every effort should be made to keep the flocks under the most sanitary conditions and to provide means for the birds taking plenty of exercise.

To prevent the egg eating vice from developing provide dark nests. Feed the scratch grain in the litter which should be six or eight inches deep. The mash mixture should contain meat food of some kind, such as beef or fish scraps. Feed plenty of green food and keep oyster shells or some other source of lime supply before the birds at all times. If sour milk or buttermilk is available provide it regularly. As soon as the vice is commenced remove the worst offenders and improve the conditions of feeding and management.

The vice of feather pulling can be prevented by keeping birds in sanitary conditions, providing plenty of exercise, green food, an abundant supply of meat food in the mash mixtures, and sour milk or buttermilk as drink.

DISEASES

When purchasing birds always procure them from uninfected flocks. Keep the new birds isolated from the flock for a few days to make sure they are not diseased. Frequently during shipment birds catch colds and if introduced to the flock immediately upon arrival may cause the spread of colds throughout the entire flock.

Immediately separate from the flock any bird that shows symptoms of disease. When it is desired to determine the nature of the disease ship by express live affected birds to the Biological Laboratory, Ottawa, Canada.

The express charges are paid by the Laboratory. It is important to send complete information with the material; care should be taken to have the name and address written plainly.

POULTRY CONSERVATION

The greatest preventable loss in eggs occurs on the farms.

It costs Quebec several thousand dollars to hear the roosters crow throughout the Summer.

Produce infertile eggs for market—keep the males away from the females except during the breeding season.

Always fatten chickens before marketing them, whether selling them alive or dressed. You lose money in marketing a thin bird and the consumer gets a poor product.

Eggs and poultry meat of the highest quality command highest prices and yield largest profits.

Efficiency in production is the only excuse for existence under present conditions.

