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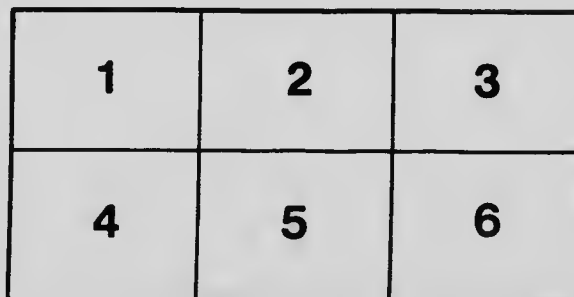
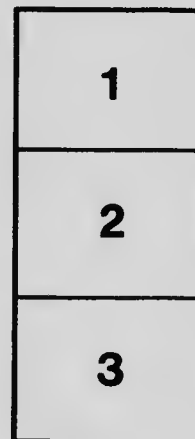
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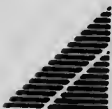
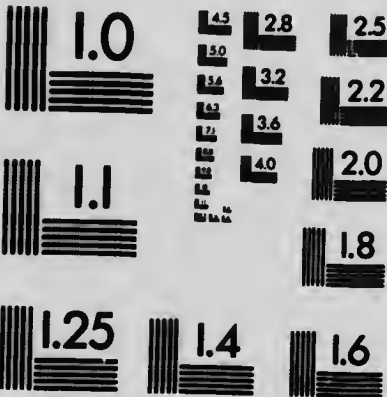
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BULLETIN No. 15.

DEPARTMENT OF AGRICULTURE

—OF—

BRITISH COLUMBIA.

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POULTRY-RAISING IN BRITISH COLUMBIA.

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The following Bulletin on the raising of Poultry in British Columbia, by H. P. Johnson, Victoria, is published by direction of the Honourable Frederick J. Fulton, Acting Minister of Agriculture, for distribution amongst members of Farmers' Institutes and for general information.

J. R. ANDERSON,

*Deputy Minister of Agriculture.*

*Department of Agriculture,*

*Victoria, B. C., 16th November, 1904.*

## POULTRY-RAISING IN BRITISH COLUMBIA.

—o—  
By H. P. JOHNSON.

The climate of British Columbia is, for the most part, better suited to the successful carrying on of this industry than almost any part of the United States or Canada, the Lower Mainland and Vancouver Island offering exceptional advantages.

The Upper Mainland, or Dry Belt, as it is often designated, is subject to longer and more severe winters, but not at any time as bad as in the Eastern Provinces and some of the Eastern States, where the poultry-raising industry is successfully and profitably carried on. Assuming the importance of the climatic influences on this matter, we find that the whole of this Province is on the average better adapted to this industry than the localities where it has grown to the largest proportions. The mild winters of the Lower Mainland and Vancouver Island, the continuous supply of green food out of doors all the year round, place these sections at a great advantage when compared with that famous poultry country, California, for they have all its advantages and have not the dry, intense heat to contend with that is prevalent in the summer in that country.

It is then established that British Columbia is, in so far as the climate is concerned, a suitable and desirable country for poultry-raising. Never have the prospects been brighter for the poultry industry than at present. The high prices will no doubt continue, and the man who uses common sense in taking care of his stock will have a good investment on his hens. I believe that the poultry industry is one of the best fields for a young man to enter who is not afraid to work, and who is willing to learn 'he business from the bottom up; but for the one who wishes to start from the top I can see nothing but failure. The man who starts from a small beginning, with one breed, and works his way to the top, is the man who is bound to succeed.

The poultry industry has passed the point of being looked down upon, and is now regarded with favour by even the wealthier class, who have taken up the industry as a hobby. We need never fear that the market for poultry will be glutted, but, on the contrary, I do not believe that the present generation will see the supply meet the demand.

We are often asked by those unacquainted with poultry-raising or by the ambitious beginner, whether or not there is money in poultry. To such our experience gives a direct yes, but attaches one essential condition, namely, that poultry-raising be managed with the same care and knowledge that is needed to make a success of any other legitimate business.

### THE BREEDS BEST ADAPTED TO DIFFERENT PURPOSES.

In starting with poultry, this is a question that should be given the most serious attention, for it is an established fact, from the experience of thousands, that where one breed will thrive and prosper others will only be a source of annoyance and loss. The question of the requirements of the birds—that is, whether for eggs, broilers, or a general-purpose fowl—is also a matter to be carefully looked into, so the following brief description of the characteristics of the leading breeds may aid some in making a selection:—

#### *Plymouth Rocks.*

These birds may be safely said to be the most popular general-purpose fowl. In colour we have the barred, white and buff, with little or no difference in the general characteristics of each. They are good-sized, hardy birds, maturing rapidly; good layers, and, taken all round, the most satisfactory bird for the farmer.

#### *Wyandottes.*

These we have in white, buff, silver and golden laced and pencilled and partridge, and all possessing much the same general qualities. These birds, on account of their rapid maturing, are much valued for early broilers. They lay a good-sized brown egg, are a good all-round fowl, but I do not think some varieties are quite as hardy as the Plymouth Rocks, and they will not stand dampness as well as the Rocks. This is, however, greatly a matter of the strain, and the vitality in the breeding of the birds themselves.

#### *Buff Orpingtons.*

These birds have come into great favour on account of their many good points. They are bred for the most part in the solid colours, buff, white and black, and there are other varieties of this breed, but they do not appear to have come into public use, but are bred chiefly for fancy. The buff variety is at present the favourite, and is in all respects a good all-round fowl. They are good winter layers, and make exceptionally fine table fowls. The one fault, if it can be classed as such, which is found with this bird is that the pullets are apt to be broody, but I have it from many breeders of this variety that this is only a trait of the pullets, and that the second year they are just the reverse; in fact, I think it may be safely said that the pullets do the most of the sitting for this breed.

#### *Rhode Island Reds*

Have come into great favour lately, and very justly so, as they are good, useful, general-purpose fowls, good winter layers, and, on the whole, birds much to be recommended to the farmer.

#### *Silver-gray Dorkings*

Have been bred with a great deal of success in this country, and are a good, serviceable variety.



*Light Brahmas, Langshaus, Cochins.*

The Asiatic class does not appear to be very popular, judging from the few that breed them, although they all have many good qualities to recommend them, but being all feathered on the legs, the locality for them must be dry.

*Mediterranean Breeds—Leghorns.*

The Leghorns are in this class easily the leaders, and the three varieties, white, brown and buff, seem to stand in public favour in the order named. The White Leghorn has been justly named the "Queen of Layers," and given the proper care and good, warm, dry housing, they will lay just as well in winter as in summer. I think the fact of this breed producing the most eggs for the least money is too well known to need any comment. Should the reader be in doubt on this point, I would ask him to enquire what all the large egg farms in the United States are stocked with, and I think he will then be satisfied that I am correct. There are other breeds that have done better as individual layers and in competition, but taken all the year round, there has not yet been any breed which produces a like quantity of eggs at the same cost of feeding. The White Leghorns are, of course, small as a table bird, but the young cockerels mature rapidly and have a fine full breast. The Brown Leghorn is practically the same as the white and produces as many eggs; in fact, but for the colour, is practically the same bird. The eggs will, I think, on the average, run a little smaller. The buff comes under the same heading and is a slightly heavier bird than the brown.

*Minorcas*

Are bred black or white, the black being the popular variety, and they are one of the best breeds that a farmer can keep. Fair-sized birds, layers of very large eggs, extremely hardy, in fact, for general purposes to be highly recommended. The white is not much known, but will become a greater favourite very shortly, as it has all the good qualities of the other varieties.

*Audalusians*

Are good layers and nice plump table birds. Of course, like all Mediterranean breeds, the carcase is small.

*Hamburgs, Polish, etc.,*

Are bred more for fancy than utility, and are, therefore, not under this heading. This practically closes the utility classes, the games, bantams, etc., all coming under the head of fancy.

It is for the prospective poultry man to arrive at a decision what the bird is required for, eggs or table, as it will be seen that they do not go together; that is, the breed that is suited for an egg farm is not the thing to satisfactorily supply a broiler plant. The general-purpose birds will meet both ends, but there will be a sacrifice of egg production to meet the increased size and value as a market bird. The ideal bird for both purposes, combined in the one bird, has not yet arrived.

## STANDARD WEIGHTS OF DIFFERENT BREEDS.

**Plymouth Rocks, all varieties :—**

Cock,  $9\frac{1}{2}$  lbs.; cockerel, 8 lbs.; hen,  $7\frac{1}{2}$  lbs.; pullet,  $6\frac{1}{2}$  lbs.

**Wyandottes, all varieties :—**

Cock,  $8\frac{1}{2}$  lbs.; cockerel,  $7\frac{1}{2}$  lbs.; hen,  $6\frac{1}{2}$  lbs.; pullet,  $5\frac{1}{2}$  lbs.

**Light Brahmas :—**

Cock, 12 lbs.; cockerel, 10 lbs.; hen,  $9\frac{1}{2}$  lbs.; pullet, 8 lbs.

**Dark Brahmas :—**

Cock, 11 lbs.; cockerel, 9 lbs.; hen,  $8\frac{1}{2}$  lbs.; pullet, 7 lbs.

**Langshans :—**

Cock, 10 lbs.; cockerel, 8 lbs.; hen, 7 lbs.; pullet, 6 lbs.

**Leghorns, no standard weight adopted.**

**Andalusians :—**

Cock,  $6\frac{1}{2}$  lbs.; cockerel,  $5\frac{1}{2}$  lbs.; hen,  $5\frac{1}{2}$  lbs.; pullet,  $4\frac{1}{2}$  lbs.

**Minorcas :—**

Cock, 8 lbs.; cockerel,  $6\frac{1}{2}$  lbs.; hen,  $6\frac{1}{2}$  lbs.; pullet,  $5\frac{1}{2}$  lbs.

**Black spanish :—**

Cock, 8 lbs.; cockerel,  $6\frac{1}{2}$  lbs.; hen,  $6\frac{1}{2}$  lbs.; pullet,  $5\frac{1}{2}$  lbs.

**Houdans :—**

Cock 7 lbs.; cockerel, 6 lbs.; hen, 6 lbs.; pullet, 5 lbs.

**Silver-grey Dorkings :—**

Cock, 8 lbs.; cockerel, 7 lbs.; hen,  $6\frac{1}{2}$  lbs.; pullet,  $5\frac{1}{2}$  lbs.

**Buff Orphingtons :—**

Cock, 10 lbs.; cockerel, 9 lbs.; hen,  $8\frac{1}{2}$  lbs.; pullet, 7 lbs.

**Rhode Island Reds :—**

Cock,  $8\frac{1}{2}$  lbs.; cockerel,  $7\frac{1}{2}$  lbs.; hen, 7 lbs.; pullet,  $5\frac{1}{2}$  lbs.

**Bronze Turkeys :—**

Adult cock, 36 lbs.; yearling cock, 33 lbs.; cockerel, 25 lbs.; hen, 20 lbs.; pullet, 16 lbs.

**Pekin Ducks :—**

Adult drake, 8 lbs.; adult duck, 7 lbs.

**Indian runner ducks :—**

Drake,  $4\frac{1}{2}$  lbs.; duck, 4 lbs.

**Toulouse Geese :—**

Adult gander, 20 lbs.; young gander, 18 lbs.; adult goose, 18 lbs.; young goose, 15 lbs.

**Emden Geese :—**

Adult gander, 20 lbs.; young gander, 18 lbs.; adult goose, 18 lbs.; young goose, 16 lbs.

This practically covers the weights of all the popular breeds in use to-day. Of course, there are still a great many fancy fowls that we have not dealt with, and in a paper of this kind it is not intended to supply detailed information on such breeds. It is solely for the purpose of giving farmers and others the useful side of poultry and to assist and encourage this industry from a financial point.

#### FEEDING AND RAISING.

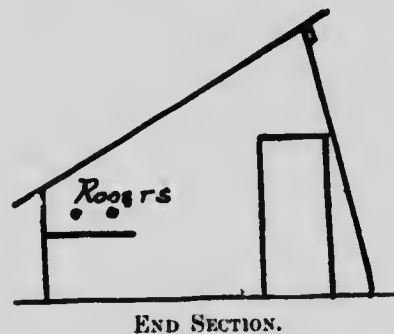
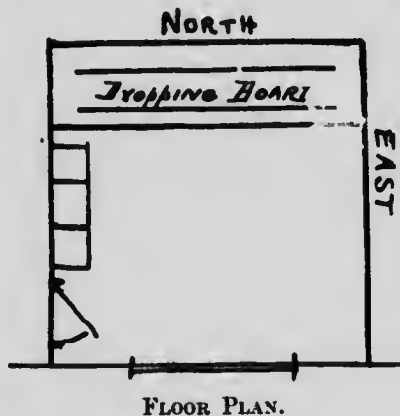
I have endeavoured to get some reliable figures from breeders as to the cost of feeding and raising, but cannot get anything in accurate enough form for publication; but the information that I gathered leads me to the conclusion that hens for egg production can be made to pay from \$1 to \$2 per head per year, and that the amount depends entirely upon the care given and the strain of birds, but \$1 per head over the cost of keep is a perfectly safe figure to count on.

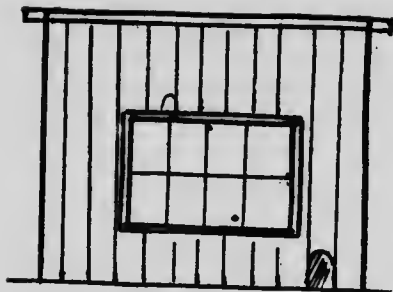
#### HOUSES AND FITTINGS.

Having decided on the question of the breed, we must arrange proper houses for them, and there are several essential features in such. The aspect should, as far as possible, be south or south-west, and if on a hillside sloping in that direction, you have then the ideal spot for such a building as you may settle upon. There must be no opening on the north or east sides, and if the situation is dry, an earth floor is the best that can be used, and should be raised six inches or a foot above the surrounding ground.

The open front scratching shed-houses illustrated herewith are very popular, and the writer gives drawings of what he considers the most useful and practical, as well as inexpensive, house that can be built.

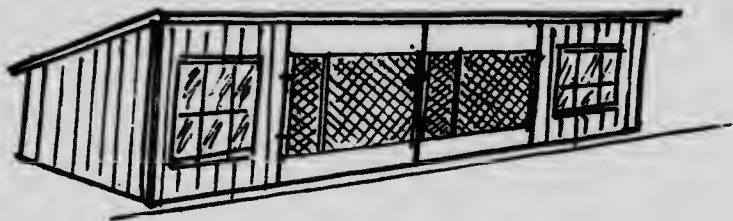
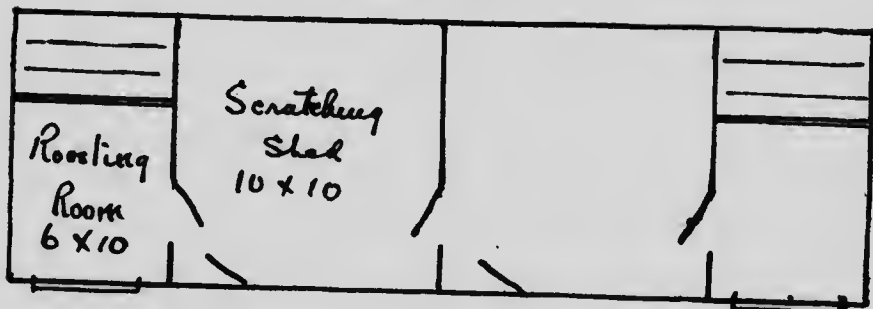
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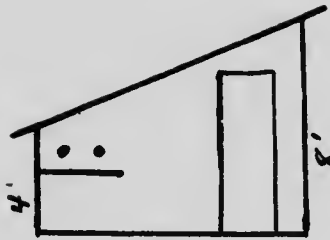


FRONT.

This is a plan of house that the writer has had the best results from. The north and east sides must be without any openings and the low back makes it very warm, and the high front is also very desirable when a run is put up from the front of the building. The sloping front gives the sun access to the whole floor, and if the floor is filled up a foot above the ground level with dry sandy soil, it will be found an ideal dusting place. This house can be built entirely from rough boards, and if covered with a good roofing material will last for years and be a source of comfort to the birds and a pleasure to its owner. It can be built on the continuous plan, any number of 12-foot sections being built side by side, with doors between.

 $\frac{1}{8}$ " TO 1 FOOT.

PLAN.



END ELEVATION.

The above plan is for the popular scratching shed-house that has so much to recommend it. It may be built any size to suit the owner, but about four feet high at the back and eight feet in front will give a good pitch, and as the droppings board will extend three feet from the wall, it will leave plenty of head room. The length may be extended in sections on the same lines for as many pens as are wanted. Ten feet will be found a good serviceable width. The window should be made to slide and should be opened on every possible opportunity. The wire front to the scratching shed may have a curtain of oiled cotton to drop on stormy days.

The best material to cover the house and roof with is one of the well-known and tested brands of roofing material, which comes done up in rolls with cement to fasten it. This is easily applied by any one and can be put on over rough board siding, and is absolute protection against draughts, which must be avoided, as much of the sickness and roup in poultry is directly traced to some small knot-hole or crack. Of course, at a little more cost, ship-lap will make a better finish to the siding and shingles a more lasting roof; but I cannot too strongly emphasise the necessity of covering the sides of the building with this paper to protect against the small holes and cracks. Provide proper ventilation in the proper place, but remember that a cold draught is the surest starter of roup, which has ended the career of what, with a little care, might have been a fine flock of money-making birds.

The droppings board should be made of matched lumber, with the dressed side up, so that it may not afford any lodging place for insects. It should be frequently scraped off and sprayed with coal oil or some good insecticide and dry earth sprinkled over it. The roosts are to be put eight inches above the droppings board and all on the level, not one above the other, or the birds will all surely crowd to the top roost. The roosts are best made of two by four dressed lumber set on edge, with the top corners taken off. Roost must also be cleaned and sprayed as directed for the droppings board.

Nest boxes must also be made moveable, so that they can be taken outside, sprayed with coal oil and set fire to, which is surely the most effective way to keep them clean, and if you do not put too much oil on you will do

no harm to the boxes. Nests will vary in size for the different breeds, twelve inches square being a good size for Leghorns and such birds, and fourteen and even sixteen inches square for the Rocks and larger breeds. The nest for setting hens must be first filled with a few inches of dry earth and then well dusted with insect powder, and the nest made of soft hay or straw. If the hen is well dusted with insect powder before setting, and also two or three times during the hatch, little trouble will be experienced in getting her to sit properly. A box three feet square and ten inches deep should be placed on the floor of the house where the sun can shine on it, and filled with dry road dust and a small quantity of insect powder. In this the hens will readily free themselves from vermin.

#### POULTRY AND EGGS FOR MARKET.

This is the practical side of the business and one to which a large percentage of beginners turn their attention. The idea of raising thousands of chickens for the market is a very nice one on paper, but it entails a large amount of experience and the minutest attention to details, and I would caution anyone against trying to start out in a large way. Begin in a small way and let the business grow as your experience grows.

Nearly every man you come across, and woman too, is or has been what is known as a chicken crank, and will proffer you all kinds of advice, but do not, if you would succeed, take any notice of it. Look to those who have made a success in this business and follow closely their methods and profit by their years of experience, rather than being led by every whim and fancy of those who in reality do not perhaps know as much about the matter as you do.

Whatever you breed, let it be thoroughbred stock. It is not necessary for me now to go into details as to why this is better and more profitable; that has been argued out and settled in favour of the thoroughbred by all the best authorities in the land.

#### *Broilers.*

For early broilers there are several breeds highly recommended. The Rocks, all varieties, the Wyandottes and the Brahmas and Rhode Island Reds all make good broilers. Get your eggs strictly fresh and of as much the same size as possible, and if you run an incubator see that the chicks do not get chilled in moving to the brooder, for this is a point on which many lose the profits of broiler raising. The chick, to make a good paying broiler, must grow rapidly with no setbacks, and this cannot be done with a chick that has once chilled. Do not feed your chicks for at least 24 hours after they are hatched. Let me emphasise this, as this undue haste to feed them has been the stumbling-block for so many. Nature has provided for all the requirements of the chick at the start, and they will not hurt if left even 48 hours without food. The first thing given should be coarse sand. If you

have fresh skim milk give it to them in place of water, but it must be fresh and the drinking pans kept absolutely clean. There are so many well balanced and properly prepared feeds on the market now, that it is folly to try and grind grain and mix feed up. These foods are the result of careful study and investigation and are used by all the largest breeders and are obtainable almost everywhere, at a price equal to that of whole grain.

Cleanliness is one of the most important factors in the raising of any variety of poultry, and more essentially so in the case of large lots of broilers in brooders. The brooder floor, covered with chaff or sand, must be kept strictly clean and free from any filth. Broilers must be "forced," that is to say, fed all they can eat and pushed along to get the greatest amount of flesh and weight in the shortest time, for therein lies the profit. Clean quarters, clean food and drinking vessels, wholesome food and plenty of it, and good vigorous stock are the essentials to broiler-raising.

#### EGGS AND EGG FARMS.

As I have pointed out before, the egg producer and the market fowl do not go together; therefore, if we are going in for eggs, we must select the breed best adapted for its most economical production. If the reader will investigate the matter, it will be found that almost all the large egg farms in the Eastern States and California are stocked with one breed, and that is the Single Comb White Leghorn. It is, therefore, just to assume that the men who have in many cases invested thousands of dollars in these egg farms have found this the best and most profitable bird for their purpose.

The Black Minorca is shown by the returns of the different experiment stations to be an equal layer with the White Leghorn, but the same returns show the cost of egg production in the case of the Minorca to be almost double that of the Leghorn.

The Andalusian is also a heavy layer, but, for some reason, does not appear to have the popularity that is due to it.

It is due to the Minorca to say that the dressed carcass is heavier than the Leghorn and, therefore, more valuable for market.

The question of strain is a very important one in starting an egg farm, as there are, even amongst the best of reputed laying breeds, strains that have been inbred and allowed to run down and are no use for egg production. There are also strains that have been carefully bred for years with a view to increased egg production, and it is from these that we should draw the foundation of our egg farm, even if we start with but two birds.

The number of eggs that may be expected per annum from a flock is governed, to a great extent, by the breeding and ancestry of that flock; the use of the trap-nest has done so much to show us that there is the widest difference in the egg-producing qualities of hens of the same breed. I would, therefore, advise the prospective egg farmer to secure stock or eggs to start with from one of the many breeders who have for years given their attention

to the systematic use of the trap-nest, whereby the non-layers have been culled out and the records on large flocks greatly increased. I would also point out that the sending East for stock and eggs is a useless risk, and is merely sending away for what can be got just as cheaply and as good in the western country. It is a fact that of late some of the western breeders have been taking the best prizes in the Eastern shows, and now the Eastern breeders are coming to this great western country to look for stock.

I cannot do better than advise the egg farmer in regard to feeding to adopt the methods which have proved most successful with one of the greatest Eastern breeders. The morning meal consists of a mash of corn, oats and bran, ground together and mixed with skim milk or buttermilk. To this is added a proportion of prepared beef scraps, which is obtainable at feed stores, and this is fed in clean troughs, all that they will eat up clean, early in the morning, and any that is left is immediately removed. At noon-time, mangels, beets, turnips or cabbage, that is, if the birds have not green grass to range on. To provide good green food in localities where there is no grass range in the winter there is nothing to equal kale, as you can keep picking the leaves and it keeps growing.

I cannot leave this subject without calling attention to the great value of green cut bone as winter food. A bone mill can be purchased cheaply now, and the bones can be obtained almost everywhere—I mean fresh, raw bones with the meat on—and the food is of the highest value as an egg producer. In winter when the birds cannot get the natural meat supply this green bone takes its place, and as it is as cheap as wheat, it should be liberally used if winter eggs are an object.

#### THE FEEDING OF YOUNG CHICKS.

This is a matter on which there is much difference of opinion, some favouring baked foods, some a very stiff dry mash, and others dry grain feeding. Now, this is a point on which I must emphatically express my opinion, which has been gained by years of experience and experiments with all the above foods, and I am, as the result of this experience, convinced that the dry grain food is the proper and natural method of feeding young stock.

While on the subject of feeding I am compelled to treat both sides of the question fairly, and while my own experience has been in favour of dry food, there are also a great many who favour a properly proportioned mash food. One of the largest—in fact, I think I am right in saying the largest poultry plant in America, the Puritan Poultry Farms of Stamford, Conn.—feeds a meal preparation of their own, moistened with water, and have done so for years, with the greatest success. So it will be seen that both methods have about an equal following, but having tried both, I find my best results have been with the dry feed, although others claim entirely the opposite.



The first meal should consist of a mixture of grains, ground about the size of a pinhead and all the meal taken out, with a proper proportion of charcoal, grit, heef scrap, etc. These properly balanced foods can now be bought so cheaply that it is a waste of time and money to try and mix them.

This method of feeding, I am convinced, is the only successful way to raise the largest proportion of young stock, and it has everything to recommend it. It saves food, saves work, is cleaner, you will have no bowel trouble, and, above all, it is nature's food. Of course, for the fattening and forcing of broilers a mash food is more easily converted into fat and flesh, but this forced growth must be avoided if the stock is for breeding or for egg production. In any event, let the first few weeks' feeding be the dry grain method, and after that the destiny of the birds must settle the question of feeding. Above all things, whatever you feed, never let them be hungry and never leave stale food before them, and observe the strictest cleanliness in all things connected with the feeding and cooping or brooding, and success will be yours.

#### ARTIFICIAL INCUBATING AND BROODING.

This is the modern method of raising chickens in any quantity, and the poultryman who tries to do it in any other way can not hope to compete with those who adopt up-to-date methods. There are so many good makes of incubators on the market, and also so many useless ones, that it is a hard matter to make any recommendation at all. The best thing is to follow the example of the large breeders in the Eastern States who are making a financial success of this business and adopt the machines in use by these people, as you may rest assured that the best obtainable, regardless of cost, is put into these places, where so much is at stake.

This brings me to the point on this subject, do not buy an incubator because it is cheap or because you get long terms to pay for it; rather buy the machine that costs a little more and that carries the maker's guarantee with it, and one that you know is in satisfactory use by the leading poultry-raisers of the day. The market is so full of cheap, trashy machines that are really nothing but toys, and so many are deluded into buying them every year and throwing them away in disgust and so giving the poultry industry a black eye, that I am compelled to impress this upon the buyer: Whatever you do, get a good standard machine, if you have to pay more for it, it is cheaper in the end and will be in business long after the other has fallen to pieces. The same remarks will apply to the brooder, for whereas anything will hatch a certain percentage of chicks, it is only the properly constructed, scientifically ventilated, brooder that will raise those chicks after they are hatched. There is also the great danger from fire with these cheaply-constructed machines, while, on the other hand, you never hear of accidents with the more expensive and, consequently, better makes; or if such accidents do occur, they are directly traceable to negligence of the operator.

There are, from my experience, a few golden rules that must be observed by those who would have success in the operating of incubators, and they are as follows: Run the machine strictly in accordance with the maker's printed instructions; for it is a reasonable supposition that he has made every experiment and investigation necessary to the success of his machine, and he is as much interested in the thing doing the work properly as you are, and more so, as it means increased sales for his machine; therefore, I say, follow his directions to the letter. Air your eggs at a regular time every day and also have a set time for filling and trimming your lamp, and do it then, so that you will not have the misfortune to find your machine cold and the hatch ruined. Do not be in a hurry to open the machine at the end of the hatch; your chicks will not die of starvation; nature has provided for all their requirements for at least forty-eight hours after exclusion, and more chicks are killed by opening the machine, perhaps with a view to saving some chick which it is thought cannot get out by itself, than by any other means. The chick that has to be assisted out of the shell is never any good, and in saving, or trying to save, the one you may kill fifty others. Let me then make a strong point of this; do not allow any one, by any excuse whatever, to open your machine during the hatching or until it is all over and you are ready then to remove the chicks to the brooder. This is also a critical time, as they must be quickly removed to the brooder without a chance of a chill, which is almost sure to be fatal, and if not so will give them a great setback, and they never will quite recover from it.

A most important point to be observed is the keeping of an equal temperature and the proper supply of pure, fresh air. In the matter of temperature it is a good plan to err on the side of too much than too little. What I mean is, that if your machine is such that it cannot be regulated to a fine point, it is better to be on the high side than to have the machine at 102°. 103° is conceded to be the correct incubating temperature, and the nearer the temperature is kept at that the more satisfactory the result. All good makes of incubators are now provided with reliable automatic regulators, so that if the maker's directions are followed there will be no variations of temperature. In fact I have run a machine for 18 days and the regulator was never moved or altered by anyone, and the temperature did not vary half a degree in that time. Follow the directions and keep heat as regular as possible, providing plenty of fresh air by proper airing of the eggs daily. Do not be afraid to give the eggs plenty of air, as this is essential above all things, to the proper and timely exclusion of the chick and to the natural drying out of the egg. But do not get the eggs where they will be chilled or you will err on the other side. What is wanted is fresh, not cold air.

Most beginners are too timid about airing the eggs; especially during the last week, and more chicks are lost from this cause than any other; they are practically smothered in the shell. Did you ever notice the way a hen will leave her eggs, often for half an hour each day, and even an hour if the weather is warm, and then hatch every one? More air should be the motto

of the incubator operators and there would be more chicks. These same remarks apply also to the brooders and brooder houses. Fresh air is the life of the chick, both before and after hatching.

#### MOISTURE AND VENTILATION IN INCUBATORS.

All know that varying conditions demand varying forms of treatment. This applies to artificial incubation, and especially to "moisture" and "ventilation." Experience has taught us that it is impracticable to build an incubator with a positive fixed ventilation (self-ventilation); also, with no provision for supplying moisture; for a machine must be so made as to give uniformly large hatches whether operated in a cold, badly ventilated cellar or in an overheated chamber, and whether operated under the exacting conditions in the dry atmosphere of Colorado, the damp air of the Atlantic coast, the heat of Florida, or the chilly air of Maine. Not to provide for these varied conditions would be impractical and unreasonable. Provision must, therefore, be made to govern at all times, in nature's way, the proper supply of fresh air and the lack or excess of moisture, under any and all conditions of atmosphere and temperature, and at different seasons of the year.

The operator will have to use a great deal of judgment and common sense in this important matter, as the conditions at the time of hatching have so much influence on the matter that it is impossible to lay down any set rules.

There are times when the so-called non-moisture machines have been proved to give infinitely better results by having a pan of moisture placed in the machine.

#### THE GENERAL-PURPOSE FOWL ON THE FARM.

The best bird for this purpose is a matter open to considerable difference of opinion, but it must be presumed that the desire is to get the most eggs and at the same time the largest bird when dressed for market purposes. This would leave us several varieties to choose from, as follows:—The Plymouth Rocks, all varieties; the Wyandottes, also several varieties; the Rhode Island Reds; the Orpingtons. These are the breeds that combine the desired features in the largest degree with the least sacrifice of the one quality to the other. That is, they will give as great a number of eggs as is obtainable from birds of good market size. We then have the Brahmas, but they will fall off in the egg production slightly and increase in weight.

The Minorcas are also very popular with farmers, and they increase the egg production as against the heavier breeds, but they are less in weight, so that it must be left to the individual discretion of the breeder which he chooses.

Of course, it is hardly necessary to say that the Leghorns are not general-purpose fowls; they are egg producers; and for that purpose have no equals, but the dressed carcass is small.

Whatever bird is chosen, let me emphasise the importance of keeping the one breed alone and that they are pure-bred, as they not only do better, but will be a source of more profit in the sale of eggs for hatching and of birds for breeding, and they cost no more to feed than the worst bred mongrel.

The following reasons are given by Mr. Gilbert, of the Poultry Department at Ottawa, why poultry should be taken up by farmers:—

“1st. Because the farmer ought, by their means, to convert a great deal of the waste of his farm into money in the shape of eggs and chickens for market.

“2nd. Because, with intelligent management, they ought to be all-year revenue producers, with the exception of perhaps two months during the moulting season.

“3rd. Because poultry will yield him a quicker return for the capital invested than any of the other departments of agriculture.

“4th. Because the manure from the poultry house will make a valuable compost for use in either vegetable garden or orchard. The birds themselves, if allowed to run in plum or apple orchard, will destroy all injurious insect life.

“5th. Because, while cereals and fruit can only be successfully grown in certain sections, poultry can be raised for table use or layers of eggs in all parts of the country.

“6th. Because poultry-raising is an employment in which the farmer's wife and daughters can engage, and leave him free to attend to other departments.

“7th. Because it will bring him the best results in the shape of new-laid eggs during the winter season, when the farmer has the most time on his hands.

“8th. Because to start poultry-raising on the farm requires little or no capital. By good management poultry can be made with little cost a valuable adjunct to the farm.”

A little careful study on the part of farmers will enable them to make poultry pay, but it must be gone at in the right manner. Without wishing to in any way offend the farmers, for whose benefit this bulletin is mainly intended: I would ask, what is the state of affairs in the poultry yards on most farms? One finds male birds, all shapes, colours and sizes, running with a lot of hens of the same style. Probably no hen-house, and if there is one it has not been cleaned out for possibly years. The writer has even seen a sow and litter and hen and brood of chicks all in the same filthy coop. It is little wonder that we are told by such people that “poultry does not pay.” No farmer would leave his horses or cows in the same condition and expect them to be profitable; but it is the opinion of so many that the hens should care for themselves, take what they can get to eat and still be money-makers. Try the new methods for a time and you will find the poultry just as good a paying business as any other farm industry.

## DUCKS.

Referring to the profits in duck-raising, I would quote one of the very foremost duck-raisers, Mr. Jas. Rankin, who says: "Our ducks are all hatched and raised artificially and are put upon the market at a cost not exceeding five cents per pound." I do not say that this can be done in this country, or even in small quantities, but it is the open confession of a man who has raised thousands annually.

The hatching and raising of ducks is comparatively easy. Almost every fertile egg placed in a good incubator will hatch; in fact, a higher percentage of fertile ducks' eggs will hatch than of hens. In the brooder, ducklings are easy to raise; they require plenty of heat at first, but as they grow rapidly this is soon lessened, and they can often do without any at four weeks. This, of course, depends upon the time of year and individual surroundings.

No food at all should be given till they are twenty-four hours old, and then a mash of mashed potatoes, ground grains, cornmeal and middlings. Meat, raw or cooked, may be mixed with the mash when they are a few days old, and grass, cabbage, vegetable tops, etc., may be given. The secret of profit in duck-raising is rapid growth, and they must be pushed right along.

Dampness is fatal to young ducks. They require a dry, clean house at night with a board floor. Cold drinking water is also liable to cause trouble and give them cramps; just take the chill off it.

The manner in which they have been bred of late years has taken the desire for a pond and swimming from them, and in some cases the young have been known to require driving into a pond to get them to swim, and while they require plenty of good clean water at all times, for drinking purposes, they will do better if it is kept in troughs in such a manner that they cannot get at it to slop it round and make mud holes.

The following formula are given by Mr. Jas. Rankin for feeding different sizes of ducks:—

*"For Breeding Birds (old and young) during the fall.*—Feed three parts wheat bran, one part Quaker oat food, one part cornmeal, five per cent. beef scraps, alluded to before, five per cent. grit, and all the green food they will eat in the shape of corn fodder cut fine, clover or oat fodder. Feed the mixture twice a day all they will eat.

*"For Laying Birds.*—Equal parts of wheat bran and cornmeal, twenty per cent. of Quaker oat food, ten per cent. of boiled turnips or potatoes, fifteen per cent. of clover rowen, green rye or refuse cabbage, chopped fine, five per cent. of grit. Feed twice a day all they will eat, with a lunch of corn and oats at noon. Keep grit and oyster shells constantly by them.

*"For Feeding at Different Stages of Growth.*—The first four days feed equal parts of rolled oats and cracker or bread crumbs, ten per cent. of hard-boiled eggs chopped fine, five per cent. coarse sand. Feed four times a day, what they will eat clean. Brooder heat, ninety degrees.

"When four days to three weeks old, feed equal parts of rolled oats and wheat bran, ten per cent. corn meal, five per cent. coarse sand, five per cent. of fine ground beef scraps, soaked finely cut clover, hay, rye or cabbage. Feed four times a day. Brooder heat from eighty-five to seventy-five degrees.

"When from three to six weeks old, feed equal parts of corn meal, wheat bran and Quaker oat food, five per cent. of fine grit, five per cent. of beef scraps. Mix in green food. Feed four times a day.

"When from six to eight weeks old, feed three parts corn meal, two parts wheat bran, one part Quaker oat food, ten per cent. of beef scraps, five per cent. of grit. Feed three times a day.

"When from eight to ten weeks old, feed two-thirds corn meal, one-third equal parts of wheat bran and oat food, ten per cent. of beef scraps, five per cent. of grit, oyster shells and less green food. Feed three times a day. They should now be ready for market.

"We never cook the food for our ducks after they are a week old, but mix it with cold water.

"I wish to emphasise several points again. Do not forget the grit; it is absolutely essential. Never feed more than a little bird will eat clean. Keep them a little hungry. See that pens and yards are sweet and clean, for though ducklings may stand more neglect than chicks, remember that they will not thrive in filth. If anyone fails in this business, it must be through his own incompetency and neglect."

#### GEESE.

The great trouble with the hatching of geese has been the tough skin that is found on the eggs, and many goslings are unable to extricate themselves without assistance. This trouble is found both with incubators and also when the old goose does the hatching. But there is less danger in helping them from the shell than any other chick. Large numbers of fully matured goslings die in the shell, being unable even to pip the shell. This state of affairs can be discovered by the noise made by the efforts of the bird to break through, and if you cannot tell just where to open the shell, lay the egg in a pan of warm water, and open it in the centre of the part that floats up.

The young goslings must be kept dry and warm and given the first feed thirty-six hours after hatching, and the same food as would be given young ducks. They may also then have water to drink but none to swim in. When three days old give them all the green food they will eat, green clover and onion tops being excellent. There is no bird that will grow as rapidly as a gosling after it is three weeks old. After they are fully feathered they should have water to swim and wash in, running water preferred. Geese are, as a rule, very hardy, but they cannot be kept in runs, and when fully feathered they need only a shed for shelter. After a goose has once laid her egg in a particular nest she is not likely to leave it, but will keep going to the same place.



## TURKEYS.

The general impression appears to be that turkeys are very hard to raise, and it is caused for the most part by the improper methods that are followed. In the first place, they will not stand close confinement, but if given proper range they are easily raised. Though they are tender while young they are very hardy after six weeks old. Their eggs hatch even stronger and better than hens eggs in an incubator, and it is during the first two or three days of their lives that the greatest care is necessary. They must be taught to eat, and the easiest way to do this is to make little pills of some mash such as is fed young chicks, and put one in the mouth of each bird that will not take it of its own accord. They will most likely take the second themselves. Keep them housed in dry, comfortable quarters and do not allow them out till the dew is off the grass. Dampness is almost sure to check the growth and probably cause death at any time before they are six weeks old.

For full instructions re raising turkeys, I would suggest the taking of one of the good poultry papers, in which will be found lengthy articles on the subject by the best men of the day, and space forbids the details being given here that the subject merits.

## POULTRY IN RELATION TO THE ORCHARD.

British Columbia fruit is now coming so much to the front that it is attracting the attention of the whole world, and the thanks of the farming community are due to the Government and their representative for the way they have encouraged this industry. The combination of poultry and small fruits, in fact, any fruits, is one that should also call for the same care and encouragement, as the two go hand in hand, the one assisting the other.

Poultry in the apple, pear or peach orchard are of the greatest benefit to the trees, as they destroy noxious insects and weeds; and in addition to keeping the weeds under, they scratch and loosen the surface of the soil in a manner that is most beneficial. The droppings are also less valued than they should be, as they are a very rich fertiliser; in fact, apple-growers state that their crops have been doubled since the poultry have been allowed the run of the orchard, and that the crops are of a much better quality, owing to destruction of insects. One authority says:—"There is no need of there being any off-year with apple trees, as they will bear every year and a bigger crop if the poultry is given a chance to assist them."

Blackberries, raspberries, currants and gooseberries are excellent for chicken runs. The young chicks turned loose amongst these plants will not injure the fruit; in fact, it is very rarely they will touch even the ripe fruit. No two branches of farm industry go so well together as poultry and fruits; they can be worked on the same ground with decided advantage to each other.

## FANCY POULTRY.

As I have urged the breeding of the thoroughbred stock in preference to mongrels, it is in order to say a word about fancy stock for show purposes. Here let me ask the farmer to assist this industry by patronising the poultry shows. If you have any good birds, enter them and send them to the shows. You need have no hesitation about sending them if you cannot go yourself; for the shows are conducted by good, reliable men, who will care for your birds as they would for their own, and will return them to you at the close. If you do not win anything, you will have the opportunity of getting your birds scored by one of the best judges, and you will find out then exactly what the merits of your birds are, and by comparing the birds with the score card you will be able to tell where the bird is defective. This knowledge alone will be well worth the little cost that the entering will entail.

In the various poultry journals you will find many articles on the subject of preparing chickens for exhibition, and it is too lengthy a matter to deal with here. Do not think your birds are not good enough; if your stock is thoroughbred, you cannot tell what they may be worth. The Eastern breeders are now looking to this western country for stock; in fact, many good prizes in the large Eastern shows have lately gone to Western breeders, and among your flocks may be birds worth a great deal of money.

Some people are inclined to think one is joking when \$50 and \$100 each for birds are mentioned, but these are only everyday prices for big breeders to get for good stock, and \$200, \$500 and even \$1,000 have been recently paid for single specimens—the latter price being obtained for a Black Minorca cock which a New York breeder sent to Germany.

## DISEASES OF POULTRY.

Prevention is better than cure and the breeder who keeps the house clean, warm and properly ventilated, and has the water and feed vessels always clean, need have little to fear from diseases.

*Roup.*

This is the most to be dreaded of any of the troubles that the poultryman will have to encounter, as if it once gets a start the whole flock may go with it. This affection, if taken at the start, is easily checked, and the bird that shows any signs must be immediately isolated from the rest of the flock. The symptoms are: Eyes watering, nostrils closed, breathing deep and frequently swelling round the eyes.

As soon as it is detected take the bird and after dissolving a teaspoonful of boracic acid in a small tin or cup of warm water, plunge the bird's head under and hold it there till it seems to choke, which action will draw the solution into all the cavities of the nose and throat, and I have found it a most effective remedy. Do not use any tins or cups that are wanted for any other purpose, as the disease is very infectious. Put the bird in a dry, warm



place and repeat the treatment in a few hours. Zinc ointment or carbolated vaseline is also good to apply to the swelling round the eyes.

#### *Cholera.*

The fowl affected with cholera is dejected, sleepy and droopy, is very thirsty, has a slow, stalling gait, and gapes often. They often stagger and fall from weakness. The wattles turn pale or sometimes dark and they have diarrhœa. At once remove all affected birds to a warm, light place with plenty of clean straw. Give no water except with "Douglas Mixture" in same, formula for which is given herewith. The droppings should be drenched with a solution of carbolic acid, to prevent the spread of the disease. Nothing but cooked food should be fed. Prevention is the only sure cure for this disease, but if anything will do any good the above treatment is most likely to be effective.

#### *Crop Bound.*

This complaint is liable to affect birds in confinement more than those on a large range. It is caused mostly by overfeeding, and unless relieved promptly death is sure to follow. Relief may be quickly given by opening the crop on the side with a sharp knife, cutting a slit sufficiently long to remove the contents. Clean the crop with warm water and sew up again, taking care not to sew the skin of the bird to the sack of the crop. Close the crop with white linen thread first, having the knot on the inside, then put a few stitches in the skin. Put in a warm place and give no water for twenty-four hours and only soft food, and it will soon recover.

#### *Gapes.*

**CAUSES.**—Foul water, exposure to wet, damp places, particularly at night, want of nourishing food, etc.

**SYMPTOMS.**—The general symptoms, as the name implies, consist in constant gaping, coughing and sneezing, together with inactivity and loss of appetite.

**TREATMENT.**—Give the bird daily, until it recovers, a small piece of camphor about as large as a grain of wheat, and add a few drops of camphor or turpentine to the drinking water, or mix with the food, about ten drops to the pint.

#### *Leg Weakness.*

**CAUSE.**—It often arises from the inbreeding of the same strain of fowls for too long a period, but is usually caused by too high feeding, which increases the weight of the body out of proportion to the muscular strength of the legs; it more generally occurs in the large breeds, such as Cochins and Brahmas, particularly in the cockerels.

**SYMPTOMS.**—Squatting around on their hocks, after standing for a short time, as if tired; in bad cases they are unable to stand on their feet at all.

**TREATMENT.**—In an early stage give the following pill twice or three times a day: One grain of sulphate of iron, five grains of phosphate of lime and half a grain of quinine.

#### DOUGLAS MIXTURE.

“Douglas Mixture” is made thus:—Take of sulphate of iron (common copperas), 8 ounces; sulphuric acid,  $\frac{1}{2}$  fluid ounce. Put into a bottle or jug one gallon of water, into this put the sulphate of iron. As soon as the iron is dissolved add the acid, and when it is clear, the “mixture” is ready for use.

In hot weather, or when the flock is small, less may be prepared at once, but the above proportion should be observed. This “mixture” or tonic should be given in the drinking water every other day—a gill for every twenty-five head is not too much—and where there is infection it must be used every day, but where there is no disease, not so often, or in small quantities if it be used every day.

This preparation, simple as it is, is one of the best tonics for poultry known. It is alternative as well as tonic, and possesses, besides, antiseptic properties which make it a *remedy* as well as a *tonic*.

There are many other diseases that poultry are liable to, but the above are most prevalent and most likely to be met with.

H. P. JOHNSON.

*Victoria, B. C., 15th November, 1904.*

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