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The Western Poultry Guide

Practical Treatise
—on Western—
Poultry Culture

Price
\$1.00

By
Twelve
Practical
Poultrymen

FOR
POULTRY MEN AND POULTRY WOMEN
OF THE GREAT WEST

THE
Western Poultry Guide

BY
Twelve Successful Western
Poultrymen

PRICE \$1.00

EDITED BY
C. F. WILLIAMS
EDITOR
NORTHWEST POULTRY JOURNAL
(OLDEST, LARGEST, BEST IN THE WEST)
SALEM, OREGON

C. F. WILLIAMS
Editor and Manager
Northwest Poultry Journal
SALEM, OREGON

PREFACE

THE only apology we have to offer in submitting this poultry book to the reading public, is that we could not publish a more extensive and complete work and supply one that covers every phase of the poultry industry. To do this would require a book many times the size of this and even then some facts would be omitted. Nearly every man you meet, who is in the poultry business, has an idea of his own, as to how a man should proceed to accomplish certain results. There are so many ideas that any attempt to tell the "all" of how to buy, mate, incubate, breed, cull, house, feed, and market poultry would fail to meet the entire approval of all poultry critics.

In preparing the following chapters, it has been the constant desire of our writers to make the chapters full of common-sense statements and as complete in detail as possible and yet not produce a book that is tiresome to read and understand.

There are many theoretical books on the market, which tell in their way how to realize a success in the poultry business. There is quite a difference between theory and practice. Someone has correctly stated: "You do not know that you can do a thing until you have actually done it." For this reason, we have divided this book into chapters, taking up the most important subjects connected with poultry. Each subject was assigned to a man who has actually made a success and can write from experience. Such advice is the only advice that is worth heeding. When assigning the subjects, we emphatically requested that only conservative statements be given.

The last thought we desire to leave with you is this: If you are now making a success in the poultry business, do not be too anxious to try out new ideas.

C. F. WILLIAMS, *Editor.*

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CHAPTER I

IN THE BEGINNING

By CHARLES MCALISTER, Seattle, Washington.

MOST people have an idea that poultry culture is a simple matter, an occupation that requires no particular preparation, and one that affords much pleasure and profit with very little work, care and attention. It will be our earnest endeavor to dispel this idea of the poultry business, in this chapter, by presenting the facts with relation to poultry culture, as they are and as they exist today, that the beginner who may perchance read the pages of this book, may not be misled by what he may read, but on the contrary, when he shall have absorbed what is herein written, he may have a more correct idea of what poultry culture really is; a more extended conception of what is required to equip him with the knowledge and experience that is so essential to insure final success.

Charles McAlister

A general knowledge of the fundamental principles of poultry culture may be acquired by study of the methods of others, and by reading treatise upon the subject. Experience cannot be so acquired, and only comes by a gradual mastery of the art of poultry culture by careful and studious application as we go along.

There are two elements that enter largely into the successful culture of poultry. An aptitude for the occupation. In other words, a love for the feathered tribe. Especial training, that can be acquired only by association with the business in a manner that its smallest

detail is observed and understood. The first can never be acquired, and without the first, the second becomes a task that is difficult to master.

These facts are already so well known, and have so often been the subject of articles in the poultry press of the country, that it seems almost superfluous to mention them, but it is for the reason that they are so continually disregarded, put aside or disbelieved, that it becomes imperative as an introduction to this chapter to call attention to the uselessness of, without some practical knowledge of the business, trying to do that for which they are thus unfitted, regardless of, and utterly neglecting the ever-increasing warning daily given by the many absolute failures in the business.

As all knowledge is gained by observation, reflection and experience, and as a knowledge of the business is absolutely necessary, it is suggested that a person desiring to take up practical poultry culture, should commence in a modest manner, with a few birds at the first, and as experience is gained, to gradually add to the stock if it is found to be a paying investment. In other words, go slow. Be willing to start from the ground and gradually work up. Mind this, the man who starts at the top, generally, if not always, strikes the ground with a dull and sickening thud. The keynote to success is taking up the business in a small way, mastering its first principles and then branching out gradually as one's experience broadens and the demands seem to indicate.

It has been demonstrated time and again, that no amount of capital invested in modern equipment, together with the best stock to be obtained, will make a success of poultry culture. Various things besides inclination and capital must be considered; and not a person, unless they have tried it, can possibly imagine or conceive how many difficulties there are to overcome, and how much knowledge there is to acquire, and numberless things to learn, before one can hope even for moderate success.

Conditions contribute largely, too, in the degree of success that is met in poultry culture. By this we mean location, climatic conditions, character of the soil, and general surroundings. It is always desirable to have the soil of a character that will drain readily, with a slope that will permit of facing the buildings toward the south or east, that they may receive all the benefit possible from the sunshine. Shade also is a very necessary requirement, and if not natural upon the ground used, then trees should be planted to furnish it.

Any variety of fruit trees are good, but preferably cherries or plum, as they grow rapidly. Plum is especially suitable, and it is claimed that poultry keep down the ravages of the curculio. If the yards are extensive, fruit trees in variety should be the rule.

In this coast country, buildings are not of so great importance as in colder climates. Any building that is without draughts, no matter

how cheaply constructed, will answer, but they must be well ventilated, well lighted and roomy. We have always advocated scratching shed houses of some character, and we believe them to be very desirable in the Pacific Northwest, where there is so much rain during the winter months. The houses should be constructed in a manner that they may be readily cleaned and fumigated as a preventative against vermin of every character. Especially should the perches, nest-boxes and dropping board be portable, that they may be thoroughly cleansed when desired. The runs should be made to conform to the space to be occupied, and the fences are much more satisfactory if the base is made of two one-foot boards, thus preventing the males of the different pens fighting. With the Asiatic varieties a fence four feet in height is sufficient, but with the Mediterranean varieties a higher fence is preferable. All feed and water receptacles should be of such a character as to be easily cleaned and kept in a sanitary condition, for fresh water and good clean food is half the battle won. Perches should be about two inches in width and rounded on top. We do not believe in flat perches. Nests should be large enough to be comfortable, and sufficient number in each compartment so that there will be no danger of the birds fighting for nest room.

Which is the best breed, is a question that has never been decided, and in the selection of a breed or variety, the beginner should be governed entirely by his taste or fancy. What pleases one does not appeal to another, and so it resolves itself into a matter of choice, in which the individual must be the sole judge.

After selection of the breed or variety has been settled, however, procure the best that your means will permit. If you have not the means to purchase a pen of high-class birds, of well established ancestry, then purchase a trio and work up from that. The natural tendency of the species is to retrograde in breeding, and the idea that so many beginners seem to have, that they can begin with cheap stock and gradually improve it, is a delusion that has sent many, many poultry raisers upon the rocks of failure. It is a *fatal error* in poultry culture, and one that has been the cause of more failures than any other one thing. Just remember, the best is none too good, and govern yourself accordingly.

Now that we have outlined what is really necessary for the beginner to understand as he approaches the study of poultry culture from a practical standpoint, we may perhaps be permitted to offer a few words of caution and advice, based upon the experience gained by the hard school of actual work and practice. We do not wish to discourage any one from entering this pleasant field of employment, or make those who may have already taken up the vocation, imagine they have a more difficult task than it really is, but we would not have anyone imagine that the field of poultry culture offers a simple and easy manner of making a livelihood, which one may take up and thereby

avoid the tiresome duties that are a portion of every line of business, vocation or profession. To make a success of it, requires the same close application and attention that any other business requires, and as we have advised, the keynote of success is in commencing in a small way and gradually branching out and enlarging as the circumstances may demand and require. Nearly all of the successful poultry breeders of today have grown from a small beginning, and gradually advanced to the prominence they occupy today, and could we know the story of their success, it would tell us of many a hard struggle during their early years in poultry culture. Many a time they have been discouraged in their efforts to solve the problems that came to them, and to overcome the obstacles that presented themselves from time to time, but they have put them all aside, and today stand upon the summit of success. We see the venture at the crowning point of its success, but we do not understand what it has taken to bring it to this very attractive and alluring position, and we are apt to become over-enthusiastic and imagine the field of poultry culture is an easy and charming occupation. We cannot conceive the time, the energy, the study, the work, that it has taken to arrive at such a state of proficiency in poultry culture, nor can we understand that the way has been a series of disappointments and much discouragement. We read the glowing accounts of these great poultry plants and of the returns they are bringing to their owners, and it looks so simple and easy that we become dissatisfied with our own occupation, for when the "hen fever" comes it generally comes with a vengeance, and for a time all other considerations are subordinated to it. When we are under the spell we are apt to figure a little too, and those figures are so alluring, and figures don't lie, and the proposition works out so nicely and so advantageously, that in our mind we imagine our fortune as good as made. We never think of failure, and our mind seems unable to grasp the idea that perhaps it might not be so great a success as we have anticipated, this chicken business, for our enthusiasm has caused us to see ourselves in possession of a great poultry plant, with long lines of brooder houses, properly heated, with automatic devices that are working to perfection, with our incubator cellars equipped with up-to-date machines, hatching chicks by the hundreds, and the demand for our product in broilers greater than the supply. We can see these new hatched chicks start at one end of our brooder house, and in ten weeks come out the other end, and the dollars rolling into our bank account.

It is an alluring picture, and it is not strange that people lose their heads over it, and allow their imagination to get the better of their judgment. The picture is drawn for a purpose, and that is to warn the enthusiastic person, with a bad case of "hen fever," that as a rule he entirely overlooks the distance between the start, and the plant that he has allowed his imagination to anticipate, for in the interval there are years of toil and study and care and attention, that

has gone to make the success of the poultryman who stands at the top.

Many a man, under the charm of a desire to be where the experienced poultryman stands, but without his knowledge and experience, has gone into the poultry business only to make a failure, give up in disgust, condemn the vocation as a snare and delusion, and thereby keep some other person from entering the field who is endowed with qualities that would make a success of it. On the other hand, if they had started in a modest manner, and by study, care and application, learned the business, the result might have been very different.

So in conclusion, we again say to any person contemplating entering the field of poultry culture, go slow. Be as enthusiastic as you please, but be patient and careful. Give close attention to detail, and study the business as you would any other business proposition, for in the poultry business, like every other business or vocation, you will get out of it just what you put into it, and if you are adapted to it, and are patient and careful, and are willing to commence at the bottom, and to learn the business as you go along, sooner or later success will crown your efforts.

CHAPTER II

COMPARISON OF THE BREEDS AND VARIETIES

By G. W. GREBE, Boise, Idaho, *Veteran Poultry Breeder and Manufacturer of Incubators and Brooders.*

HERE is a best breed or variety for each man and for each location and climate. The question, "Which is the best breed?" is generally always answered in a way that would lead the beginner to believe that all varieties were alike and it simply remained to put the right care and feed before them to make them all do equally well.

This is not true. The different breeds and varieties are as different in habits and temperament as they are in color and form.

Some markets pay more for large, well-fattened table fowls than they do for eggs. Some markets pay the better price for two-pound fries. Some climates are more suitable to light, active fowls and some climates are more adapted to the heavy varieties.

Every breed and every variety has its proper place, and while some poultrymen will make a success with any variety, still they will always make a greater success with the particular variety that is adapted to that particular location.

Every successful poultryman, whether he breeds one or a dozen varieties, has his favorite, and that favorite is generally the one that brings him the greatest cash return on the amount of feed and labor invested.

In making a strict comparison of the breeds a writer is always at a great disadvantage owing to the fact that he is writing to and for those who breed all varieties and he cannot generally give the weak points of certain breeds in certain locations without treading heavily on some breeder's toes. Each breed has a weak point as well as many good ones, and in order to be fair with all and give full value of information to the beginner these weak points should be fearlessly mentioned.

The space and time forbids taking up all the varieties in the American Standard. Furthermore, the writer in this instance has not handled quite all of them. Consequently we can only take up those

G. W. Grebe

most popular breeds and those with which the writer is most familiar.

However, the comparison will give a good idea of what to look for in selecting a variety and how to get the right breed for the right place.

THE IDEAL FOWL.

The ideal bird would be one that could be depended on to—

1. Lay in winter.
2. Lay in the fall, summer, and spring.
3. Lay eggs that would hatch in all seasons.
4. Grow rapidly to the two-pound weight.
5. Mature early.
6. Fatten easily.
7. Dress and finish with small amount of waste.
8. Weigh heavy when fattened and dressed.
9. Be hardy; live and thrive well as chick and fowl.
10. Range, hustle, forage for its own if necessary.
11. Be gentle and easily handled.
12. Have beauty of shape and color.
13. Stand confinement without loss of vigor.
14. Cause the attendant a minimum amount of labor.

If there were such a bird as I have outlined there would be no necessity of comparing breeds. Everyone would have that one ideal kind of fowl and the others would be out of existence.

But it is entirely out of harmony with nature to produce such an animal, insect or bird or plant.

Man is not perfect and those things which man calls ideal may not be ideal for the animal, bird or plant, and consequently we can never hope to produce the ideal bird that will conform to all our requirements exactly as we would like in all climates and under all conditions.

We can strive to attain perfection and by using good judgment attain a very high degree toward it. Some of the breeds we now have will, if placed in the proper environment and given ideal care and attention, come so near to perfection in all points that man should not ask for anything better.

BREED CHARACTERISTICS.

We will now take up the strong and weak points of the different breeds and varieties, always bearing in mind that those things which are called weak points in some climates are the strongest ones in other climates.

Many people have the idea that the most profitable bird is the one that lays in the winter when eggs are high. This is not always the case. The profits must be figured on the year, or on several years, and many times the summer layer will bring the highest cash return in a year. Price of eggs and the market conditions must be studied in order to determine which breed or variety is best.

Those breeds that lay heavily in winter, always lay less in spring and summer and the winter laying bird sometimes produces eggs the following spring that are weak in fertility and do not hatch a large percentage of strong chicks.

The breed that fattens easily will be more apt to put on a certain amount of fat in the winter, which keeps the body warm and helps to fill the egg basket. On the other hand the fat bird will not lay at all when the weather turns warm.

White Leghorns—(Conclusions drawn from eleven years of breeding in writer's own yards. Experiments with seven different strains. Reports from 104 breeders in the Northwest. Writer's experiments made in Nebraska and Idaho)—Extra good spring and summer layers. Poor winter layers unless the climate is mild or unless housed warm. Fair fall layers. Extra good hatches may be expected from the eggs. Grow fairly rapid to the fry size. Mature early. Fatten poorly. Dress and finish poor. Weigh poor. Hardiness and livability of chicks extra good. Range and forage extra good. Not very gentle. Stand confinement fairly well.

This variety is very active and is not heavily feathered. This is ideal for warm climates, as they seldom get too fat and are active enough to keep the blood circulating when the weather is not too cold. In extremely cold weather they are not likely to turn out a yield of eggs, but the large hatches the following spring, and the hardiness of the chicks will make up for the lack of eggs in the winter. They are rather wild and hard to handle but this wildness and activity has its use and for those who have large range where they can make use of their foraging ability will gain by the wildness which to others is a weak point. They make poor roaster fowls and the market that pays well for frys and broilers is better for the White Leghorn than where roasters or heavy table fowls are desired, because all young cockerels in this variety should be disposed of at less than two and one-half pound weight. After six months the cockerels are almost unfit to eat. The hens should be carried over through the second year of laying, because they do not bring much on the market when killed and so we must get as many eggs as possible out of the bird before it is sold. The White Leghorn is easy on the attendant, as they can be housed in large numbers and seldom have to be broken up from setting.

Brown Leghorns—(Conclusions drawn from three years in writer's own yards. Two strains. Reports from twenty-eight Western breeders. Writer's experience in Nebraska and Idaho)—Same as White.

Buff Leghorns—(Conclusions drawn from ten years in writer's own yards. Eight strains. Reports from forty-two Western breeders. Experience mostly in Idaho)—As winter layers, good. As summer and fall layers, fair. As spring layers, fair. The eggs hatch only fair, and sometimes poor unless extra attention is given to the breeding stock. They grow to the fry size rapidly and mature early. Fatten

fairly well and dress fairly good for table use, but do not weigh over four pounds on the average. The chicks and mature birds are hardy. Range and foragers, good. Not very gentle but more so than the other Leghorns. Stand confinement fairly well. Can be housed in large numbers, but will cause the attendant some trouble in breaking up setters during the summer.

This variety of Leghorns is a trifle larger and more heavily feathered than any of the others. They are also somewhat less active and will fatten better. This, of course, makes them better as winter layers and poorer as summer layers, but better as table fowls. They have a tendency to set more than any other Leghorn, and coops for breaking up the broody hens should be in convenient places, so the attendant does not have to carry them a great distance to and from the houses.

The Buff Leghorn comes near being in the all-purpose class, but great care must be taken of the breeding stock to make the eggs hatchable. The birds from which hatching eggs are to be taken in the spring should not be allowed to lay too heavily during the winter and should be kept active and scratching all the time. Green grass in abundance should be given the breeders and when grass cannot be obtained they should have clover or alfalfa hay leaves in addition to beets, mangels or sprouted oats.

White Wyandottes—(Conclusions from eight years in writer's yards. Four strains. Reports from ninety-two Western breeders. Experiments in Idaho)—As winter layers they are good. As spring layers, fair. Summer and fall layers, fair. Eggs hatch very poorly but can be made to hatch fairly well by giving careful attention to the breeders. Grow to the fry size rapidly and make extra good broilers. Mature fairly early. Fatten easily. Dress and finish for table use good. Average weight, fairly good. Hardiness fair. As foragers fair. Gentle and easily handled. Stand confinement well. Cannot be housed in very large numbers and must be broken from setting quite often during the spring and summer.

The White Wyandotte makes the ideal bird for a quick broiler and is of a neat size and shape for table use. They also make very good winter layers, but the eggs are the most difficult to hatch of any variety in the writer's experience. The eggs do not run as uniform in size and shape and color and this of course makes some difference in the heat applied to the eggs. To obtain fairly good results in hatching the eggs from this variety one should follow the directions for feeding breeders given in the article above on Buff Leghorns. Also one should select only those eggs that are smooth of shell and even in size.

Buff Wyandottes—(Conclusions from eight years in writer's own yards. Three strains. Reports from five Western breeders. Experiments in Idaho)—Almost the same as White, except that the eggs are a little heavier shelled and harder to hatch. They are also a little

better as winter layers and poorer as summer layers, owing to a heavier feathering in most strains which carry the Cochin cross.

Barred Plymouth Rocks—(Conclusions from five years in writer's yards. Four different strains. Reports from fifty-five Western breeders. Experiments in Nebraska and Idaho)—As winter layers, fair. Spring and summer layers, good. Fall layers, poor. The eggs hatch fairly well. Growth and maturity is fairly good but not quite as rapid as the Wyandotte. Extra good as table fowls. Weight is good. Chicks and mature birds hardy. As foragers, fair. Gentle and easily handled. Stand confinement well. Cannot be housed in very large numbers and are inclined to set quite often in the summer.

This variety is a good all-purpose fowl, but the young stock must be watched carefully and forced to maturity or they are apt to pass over the winter and not begin laying until the following spring. A bran-mash every day, with plenty of grass range, wheat and oats, shade and plenty of fresh water are the essentials for young Barred Rocks.

White Plymouth Rocks—(Conclusions from eight years in writer's yards. Three strains. Reports from ten Western breeders. Experiments in Idaho)—Same as Barred.

Rhode Island Reds—(Conclusions from two years in writer's yards. Two strains. Reports from ninety-five Western breeders. Experiments in Idaho)—As winter layers good. Summer layers fair. Fall layers poor. Eggs hatch fairly well but breeders must be given extra care or the fertility and strength of germs will be poor. Growth to fry size fair. Early maturity fair. Fatten easily. Dress a nice yellow table fowl and weigh fairly well. Chicks and mature birds are hardy. As foragers fair. Gentle and easily handled. Stand confinement well. Inclined to be very broody in the spring and will cause the attendant much work.

This variety, like the Rock and Wyandotte, is a good all-purpose fowl, but the eggs are rather difficult to hatch and the breeders must be allowed to rest during the winter in order to get good hatches from them the following spring.

Light Brahmas—(Conclusions from three years of breeding. Three strains. Reports from eight Western breeders. Experiments in Nebraska)—As winter layers, good. Spring layers, fair. Summer and fall layers, poor. The eggs are rather hard to hatch, owing to the thickness of the shell and the tendency to inactivity on the part of the fowls. Growth and maturity is slow. Fatten very easily. Dress the largest and heaviest as table fowls. Chicks and mature birds are hardy. Not good foragers. Very gentle. Stand confinement in a three-foot fence. Cannot be housed in large numbers and are inclined to set quite often in the spring and summer.

This breed is an ideal table bird for roaster purpose. They are the largest birds in the American Standard and the meat is tender

and juicy even in the old birds, but they are not great egg producers and do not range far. This breed should be used in place of turkeys where one has limited quarters and cannot allow turkeys to range. The turkey would not stand close confinement, while the Brahma could be kept in small pens and would dress as large and bring about as much on the Thanksgiving market as the turkey. The Brahma does not grow as rapidly as the turkey and therefore should be hatched as early as possible in the months of January, February and March, so as to attain the size desired before the holidays. The breeders in this variety should have the same attention regarding rest in winter and the proper feed, etc., so as to produce better hatches in the spring. The eggs should have a trifle higher heat and a little more moisture during the incubating period.

Buff Orpingtons—(Conclusions from three years' breeding. Four strains. Reports from thirty-five Western breeders. Experiments in Idaho)—As winter layers, good. Spring layers, fair. Summer layers, fair. Fall layers, fair. Eggs hatch extra good. Growth and maturity rapid. Fatten easily. Make good large table fowls. Chicks and mature birds hardy. As foragers, fair but must not be allowed to get too fat and lazy. Gentle and easily handled. Stand confinement well. Cannot be housed in very large numbers and cause the attendants considerable work in the spring on account of broodiness.

The Buff Orpington lays very evenly through the four seasons of the year. They do not lay heavily in the spring. In fact, the yield from this variety is about the same in winter and fall as it is in the spring. They are the only heavy variety that has come under the writer's observation that will lay a large percentage of hatchable eggs for incubation. But they must be broken from setting continuously during the spring and summer in order to obtain a good yield of eggs. With this variety one should have broody coops in every house and the broody hens should be taken from the nests as soon as they show the least sign of broodiness. The Buff Orpington is also a rather heavy eater but will forage over a large area if forced to do so. They should not be allowed to get fat in hot weather.

Black Minorcas—(Conclusions from two years breeding in writer's yards. One strain. Reports from fifteen Western Breeders. Experiments mostly in Idaho)—As winter layers, fair. Spring, summer and fall layers, good. Eggs hatch poorly unless breeders are given extra care. Growth to fry size, fair. Mature fairly early. Fatten fairly well and weigh fairly well for market birds but are rather hard to dress on account of the black feathers. Mature birds are fairly hardy but chicks must be given careful attention until nearly mature. Good rangers and foragers. Fairly gentle. Will stand confinement. Can be housed in fairly large numbers and cause the attendant very little trouble with broodiness.

The Black Minorca is a great layer of large eggs and will lay a fairly large percentage of fertile eggs, but the strength of the germ

and vitality of the chick can be improved. I would suggest introducing new blood from a known strain every two years at least and also giving the breeders a winter rest and plenty of greens and range where it is possible. Also, do not attempt to breed the Minorca to such large size until you have the strength and vitality in the strain. In other words, do not look at size and shape before you have considered the hardiness and vitality of the birds you place in your breeding pens.

FEED AND CARE.

(Conclusions from twenty years of poultry experimenting and observation).

In the foregoing the writer has given a general idea of the different breed characteristics. Not on all varieties, but enough of them to give the beginner a good idea of how to select. We will now mention a few of those details of feed and care that will help to make the weak points in a breed stronger and the strong ones still stronger.

Winter Eggs—Hatch the pullets early enough in the spring so they begin to lay before cold weather. House them warm but give plenty of fresh air. The egg is formed and layed by circulation of blood. If you can keep the bird's body warm and the bird active the blood will circulate rapidly and you will get eggs. The birds that are to lay the winter eggs should be fed enough to fatten them a little. The thin, hungry bird will not keep warm enough to keep the blood in rapid circulation. If you can get the birds to fatten up and keep active and scratching at the same time, you will get winter eggs. Plenty of green feed in the form of alfalfa leaves, mangels, sprouted oats, etc., should be before the birds every day. Wheat and oats in the morning, one handful to each bird; bran mash at noon, one pint to five birds; wheat and corn at night, one handful to each bird. This is a fairly good standard ration. It can be varied according to market price of grains, etc., but must never be fed without the addition of plenty of roughage or green feed as stated above. The oats may form one-third of the morning ration and the corn one-third of the evening ration, or we may use wheat alone for a few days, but always give some variety. The bran mash may be mixed, eight parts bran to one part meat meal or bean meal, or where skim milk is obtainable the meat will not be needed. A small amount of fresh meat or green bone once a week is permissible, but must be sparingly fed.

Spring and Summer Eggs—Feed the same as for winter eggs but give more green feed and less grain. Give plenty of cool water, plenty of shade and see that the birds have a cool place to dust themselves in the loose soil so as to keep down lice. Spade up the ground on the shady side of the house, and wherever the birds lay in the heat of the day.

Fall Eggs—These are often desirable in order to hatch winter broilers and to hatch fall chickens for the early spring market. Feed

the same as for winter eggs. Allow the birds to brood for several weeks during the early spring and feed rather heavily during the early fall. This will cause a very early molt and those that have been broody and not laying during the spring will give a good yield in the fall. Do not allow them to get too fat or the eggs will not be as good for hatching and they will not lay as many.

Hatchable Eggs—Keep the breeders active. Do not let the male get too fat and heavy. Give grass, alfalfa or clover leaves, some form of meat, if bugs and worms cannot be obtained by the birds, and do not force them for too many eggs at any one time. Do not allow the eggs to get cold as ice and stay that way for a long time before setting. Never set eggs that have been chilled by being in the nests when the weather is at or below the freezing point. Do not save eggs more than ten days. Do not set odd shaped, over-sized or under-sized eggs.

Rapid Growth and Early Maturity—Feed the chicks the commercial chick feed the first three days. Then begin feeding a little bran mash in addition to the chick feed. Keep them warm but allow plenty of fresh air all the time in the brooders and brooder houses. Gradually increase the quantity of chick feed and mash until they go to the colony houses or coops, then feed the same ration as given for winter eggs. Do not be afraid of overfeeding chicks. Give them all they can eat of dry grain and all they will clean up in ten minutes of the mash. Allow free range on grass. Feed finely chopped grass or sprouts to the chicks in the brooders after the first day. Give all the green feed in the form of tender grass or sprouts they will eat. For early laying, house the pullets in their regular quarters at least a month before they are expected to lay.

Fattening—Feed plenty of corn and bran mash. Put chopped greens in the mash. Keep the birds closely confined and darken the coop so they will roost. Raise curtains and admit light when feeding. Feed four or five times a day.

CONCLUSION.

Select your breed and variety with the same care and study that you would use in selecting a farm or home or a business location.

Study the market and place your product on sale at the time it will bring you the largest return on the investment.

Feed and care for your birds in such a way that they will produce at the time you want the product.

Do not waste anything. Allow the birds to find all the free feed possible and introduce new blood every year if necessary to keep up the stamina and vigor of your flock.

CHAPTER III

COMMERCIAL POULTRY RAISING IN THE
NORTHWEST

By CAPTAIN A. WALDWICK, Tacoma, Washington, *Breeder of White Leghorns, and Manufacturer of Fireless Brooders.*

TO SUCCEED in profitably producing poultry and eggs for the markets, there are many things which are of great importance if the poultryman is to be successful in the highest sense of the word. The most important are: good location, low first cost, economy of operation, good stock, incubation, brooding, inexpensive but comfortable housing of the birds, proper feeding, cleanliness and care, convenient to a good market and shipping point, business ability, honesty, willingness, and ability for any kind of work required.

LOCATION.

The best location is on a sandy loam, or gravelly soil where natural drainage is obtained so there will be no pools of water standing near the poultry houses. It is also important that this soil is productive enough to raise green feed for all stock handled, and the plentiful supply the year around. Without green feed, real success is never obtained.

It is of importance to be located near a shipping point so as to save time in bringing the produce from the farm to the station. It is of much less importance, if the market is some distance away, than to have the shipping point several miles away from the farm. The loss of time in shipping is much more than the extra freight would be on a long distance shipment. If the best market is nearby, so much better.

ECONOMY IN CONSTRUCTION AND OPERATION.

The first cost in buildings and equipment should be carefully noted. Many failures have resulted from too much money spent in the construction of too expensive houses and fixtures, also from impractical methods. Inconvenience in operation has also caused the downfall of many.

A poultry house may be built very cheaply and at the same time be comfortable for the birds the year around. A house fourteen by

Capt. A. Waldwick

fourteen is ample room for fifty layers, and will be most economically constructed by using the shed roof style. The back should be five feet six inches from sill to plate; the front, seven feet 6 inches. This will give ample slope to the roof for the water to run off, if paper is used. If shingled, the front should be at least two feet higher. The shed roof style is by far the cheapest and easiest to construct, and the beginner should look as much to the first cost as to anything else. It should, however, be borne in mind that cheapness should not be the only reason for doing anything. Practicability, convenience in doing the every-day work, coupled with comfort of the birds, winter and summer, should be the guides for constructing the poultry house.

A house as formerly described, with open front, about four by five feet for every fourteen feet of house front, answers the purpose better than anything known at the present time. This open front side should face away from the prevailing winds, always. In the Puget Sound Country and all along the Pacific Coast, and for some distance inland, this wind is from the southeast, to west, and southwest. The prevailing wind during the rainy and stormy season of the year is from the southwest. The house, therefore, if facing due east, will afford protection from the elements on the east side (the open front). It will be found that even in very stormy weather the house will be comfortable inside with wire fronts all open.

Interior of Waldwick's Incubator House—Turning the Eggs.

Some protection should be provided for the open fronts to be used at night in very cold and stormy weather. Some use burlap curtains, others muslin. There is considerable difficulty in operating these curtains, and much time is spent unnecessarily in adjusting them. The best and most satisfactory way is to have board shutters, two for each opening, hinged one on each side of the opening. On very cold nights the two may be closed. On very stormy nights, with a moderate temperature, one shutter on each opening may be closed if it is considered best for the health of the birds. With shutters properly arranged very little time is required in opening and closing. It can be done about as fast as one can walk past the openings. This method is inexpensive, durable and the most economical of operation, of any manner of handling the open front problem that we know of.

In addition to the board doors at the ends, there should be a door made from wire netting to admit more ventilation on warm days.

Besides facing away from the prevailing winds, there are other advantages in facing the laying house east. One is that in the winter when we have an occasional cold spell we get the sun's rays early in the morning, directly on the entire front, and through the open fronts directly into the house. An hour or two of sunshine, direct into the house on a cold morning, does an immense amount of good, as it is generally the coldest of the twenty-four hours. It warms up the interior of the house, makes the birds sing, and they enjoy basking in the sunshine and dusting in the fresh, clean earth—if an earth floor—and there should never be any other kind in a poultry house, but it should be filled in or raised at least six inches above the outside ground, so as to make it dry at all seasons of the year. Houses with earth floors have been found by experiment stations to be warmer and more practical than board or cement floors.

GOOD STOCK.

Good stock is as important as its housing. It is not necessary for the market egg producer to start with premium winners at the shows. What is needed is strong, hardy birds that have been selected for their egg-laying qualities, rather than their markings as fancy birds, for on their ability to produce eggs, depends mainly the success or failure of their owner. He must have birds that have been well hatched and raised, otherwise they will not possess the vigor and vitality necessary for heavy egg production, no difference if the parent stock is of the very best producers.

FEEDING.

Proper and systematic feeding should always be practiced for growing stock, layers and those to be sent to market. No "slip shod" methods will do. For the layers and growing stock after they are about a month old, a dry mash may be kept before them in hoppers

all the time, also beef scraps and protein meal equal parts,—also shells. Grain may be fed only once each day, in the evening before gathering the eggs, but in that case a moist mash should be fed in the morning. Feed a variety for all stock. To produce eggs in large quantities in winter, feed in deep litter three times a day. Feed oats steeped at least twenty-four hours. It is a great egg producer, and

Incubation has been somewhat difficult until late years. There

Interior of Waldwick's Incubator House—Testing Out the Eggs.

if prices are running high gives as good returns for the money as costlier grains.

INCUBATION.

are now many excellent incubators on the market. The beginner will do best by following strictly the directions of the different makes.

Heat, ventilation and moisture properly balanced are the essentials for a good hatch, and when those are properly adjusted, good hatches will always be the result.

BROODING.

The most difficult part of the poultry raising business—for some people—seems to be the brooding or raising the chicks. If space would permit I could write a very long chapter on this subject alone. I will merely say that the best and largest percentage of good strong

chicks is raised the most economically both for fuel, time and labor, in lampless, or fireless brooders, in a house heated to anywhere from 50 to 70 degrees during the day. The cheapest kind of wood obtainable may be used. It eliminates the cost of oil and attending to oil lamps. It allows the poultry raiser to retire for the night and secure a sound rest after a long day's work. He need have no fear of fire, as there need be none at night. It enables him to weed out all weak chicks as they are brooded in lots of 100 or less, and this advantage alone is of great importance, for on chicks, while small, depends the future money-maker as a breeder. When brooding chicks in flocks of 1,000 to 1500 (room brooding method) this weeding out of the weaker ones is an impossibility, as the space is too large, which makes it difficult to observe the individual bird.

I have brooded chicks in fireless brooders exclusively for the last five years, and am thoroughly convinced from what I have noted this year that *there is no method equal to it in any way whatever*. Great claims have been made for other methods, but unfortunately for those who have tried them, they have come very far below expectations.

The individual lamp brooder is the thing for those raising a few chicks, for those raising chicks in large numbers, the indoor lampless will prove the best and most economical.

With proper arrangement of brooders, one person can comfortably take care of 5,000 chicks. Half this number would be about the limit with any other method of brooding.

CLEANLINESS.

Cleanliness should always be observed. There has never been anything that has done more to put the otherwise successful poultry raiser out of business than neglect in keeping houses, goods and premises clean. An ever watchful eye for vermin is needed, and even if none are seen, spray and clean regularly just the same—remember the value of prevention.

RELIABILITY.

It is necessary to be convenient to a good market so one can call occasionally on the customer and thus become better acquainted, and if good goods have been shipped, the top prices may always be obtained. By coming in contact with the customer, the shipper will, if practicing the "square deal," produce that confidence and feeling of reliability so desirable between buyer and seller. It also gives the shipper a chance to learn if *he* is getting a "square deal." If he is not, he should drop the customer. There are always others to be found. When a reliable customer is found, do your utmost to give satisfaction, without giving anything away, for eggs of the best grade always command the top prices, and the honest shipper has no difficulty in obtaining them.

Waldwick and His Auto Delivery.

WHO SHOULD ENGAGE IN THE BUSINESS.

It used to be that poultry raising was looked upon as only fit for the "wimmen" folks, or as an occupation for some old decrepit person and even invalids, also regarded as something that any one could make a success at, even if he had failed at everything else he had tried. I want to tell you most emphatically that never was anything more incorrect. To succeed, there must be first a willingness to work; second, ability for business, as well as for any kind of work that comes along, from digging a ditch to running an incubator. Personal manual labor is not absolutely necessary to be done if the owner has the means and feels inclined to hire the work done. Neither is it necessary to do any work, if he has *plenty* of money and has the experience. In that case the experience will be worth much more than the labor hired. But for the beginner, with small means, and perhaps less experience, I will say, be prepared to do the work yourself, until you have gained sufficient knowledge of the business to know when you are right or wrong. When you know you are right and have the means, then go ahead and let nothing stop you. Push ahead to the limit and you will in time be reaping a continual harvest. The beginner will do best by adopting the methods of some

one who has made a success and follow them step by step as he goes along, or he may adopt a combination of several successful men's methods, but usually that does not work as well as sticking closely to one man's ideas. Much time, money, and worry may be saved by so doing.

DOES IT PAY?

Some prospective poultry raisers seem more interested in "what are the profits" rather than the expense. I will here give a short outline of both.

Land, houses, stock and equipment for an egg farm will be about \$3 per hen. This will vary according to the price of the land, also the number of hens kept, for the larger the number of birds, the less will be the average cost per fowl.

Feed for a layer per year, \$1.50; 12 dozen eggs at an average of 30 cents, \$3.60; balance for labor, interest, etc., \$2.10.

The above is a low average for the number of eggs laid if good stock is kept, also a low average price on eggs, especially if one manages to get many winter eggs, which is not difficult with proper housing, feed and care. It has been my experience to take in more money for market eggs during the winter than in the spring and summer. My eggs have averaged from 36 cents to 41 cents per dozen for the last six years.

Will the poultry business be overdone? Not so long as the people of this country continue to eat eggs. I remember about two years ago I read in an Eastern farm journal, that the way large poultry farms were starting up in certain sections of the country, there would in a few years be so many chickens that one could not sell either chickens or eggs. How that prophesy has worked out we all know. It is a sure thing. The poultry business is at a higher standard than ever before, and I predict that it will continue to grow. Of course there are, and always will be, those who never can make it pay. To the intelligent, painstaking person, who practices common-sense methods, who is willing to give as much time and attention to the management and care of his poultry as he would necessarily be compelled to do to any other business he may be engaged in, will find that for the same amount of money, the same energy, time and labor spent, he will receive larger returns, and be more independent than he would in any other business or line of endeavor. To reach this point, however, there must be time for learning how, and knowing how, permitting of no leaks, no escaped steam, in short, *no waste*.

The Pacific Northwest offers exceptionally good opportunities for the egg farmer. Building material is the cheapest here of any place on the coast. Feed is as low as elsewhere, but the most important fact lies in the markets, for they are the best of any part of the country.

CHAPTER IV

PROGRESSIVE POULTRY CULTURE—SOMETHING ABOUT POULTRY HOUSES AND FEEDING

By J. H. DAVIS, Dinuba, California, *Thirty Years a Poultryman and Writer.*

THE world moves apace. The fashions of today are the follies of tomorrow. It is not far to tallow candles and stage coaches. Not so far back. Today the tallow candles are superseded by kerosene, gas and electricity. The stage coaches of yesterday are superseded by the palace cars of the present.

We travel fast. Fifty years ago poultry culture scarcely had a name. Then came the new breeds of fowls from over the seas and Americans began making new breeds themselves, and with the advent of the breeds of fancy feathers have come all sorts of poultry appliances and inventions, including incubators, brooders and so on, until now, we have the big hatcheries which turn out day-old chicks "while you wait." I could go on and write chapters on the beginning, progress and present of poultry culture, but as this book is an educational one, I shall waste no time in "glittering generalities," but begin at once on the task assigned me.

Poultry house construction depends much on climate, but I am an advocate of the open front house for any climate. In the North where the winters are cold, a heavy curtain can be let down over the open front when occasion requires. In climates like California, and much of Oregon, Western Washington, and in all the Southern States, the entire open front is the thing, and curtains will only be required in some sections where heavy wind storms with rain are periodical annoyances.

The poultry house should be built as plain as possible, even with people having plenty of money, there is no use for elaborate displays of cornices, windows and other ornaments which cost money, do no good and which harbor insects. In building a house or houses, the

J. H. Davis

builder must decide on the size he needs. I can't do that for him, but I can give him some pointers.

The average poultry house should be twelve feet deep, six feet high in front and five feet at the rear. It should have a shed roof, because it is cheaper than shingles, yet the shingle roof may be put on by those who prefer it. The roof should be absolutely unbreakable and the back of the house and three sides should be tight. Thus, while the house is filled with fresh air all the time, there can be no draughts. A fowl in the tree *is not* exposed to draughts, but a fowl in a house where there are holes and cracks *is* exposed to draughts. If you raise your window a few inches and allow the wind to blow on you from a door and through the window, you will likely wake up in the morning with a sore throat and a catarrhal affection of the head. Just so with fowls—those exposed to draughts get a cold in the head, then catarrh, and then roup—after which, the bone yard.

The chicken house should have as few contraptions inside as possible, and everything therein should be movable. The roosts should be laid on trestles so that these can be taken out in the yard, painted over with kerosene and set on fire, when all insect life will be destroyed as well as the eggs. Nest boxes and all should be movable and should receive the same treatment when it comes to a "clean-up." Thus, you see, there is nothing in the house but the bare walls, and where there are only bare walls you can go over them with a torch and destroy every living thing. Care must be taken that there is no straw about, or anything to burn the house. The careful man will succeed with the torch; the careless man may have a conflagration, but there is no risk whatever if these directions are followed.

Now about nests; there are various methods of building them. They may be put in the house proper; they may be on the outside, on a small platform, or shelf just wide enough for the nest boxes, which should have covers on them—then the eggs may be gathered from the outside—or a partition of wire might be run through the house, leaving an alleyway, at the back, of three or four feet, so that the eggs could be gathered inside the house while the nest boxes would not be in the roosting quarters. A door at the end of the house would be necessary to get into this sort of a hall-way; this is handy in rainy weather. It is also good in the case of setting hens, as the nest boxes may be drawn into the alley-way, but in case the nests are constructed this way, there can be no going over the inside of the house with a lighted torch. With the nests completely on the outside on a platform, all danger from a torch is obviated.

Where a person keeps a large number of fowls the house should be made in accordance therewith as regards length, and while some keep several hundred in one flock, my experience is that for best results, fowls should be put in flocks of fifty and not more than one hundred. If a thousand fowls are kept, the poultry house may be

made of the above dimensions as to height and width, when it can be made as long as necessary with wire partitions, the rooms being fifteen feet wide for one hundred fowls and eight feet wide for fifty fowls. Thus, with a thousand fowls divided into flocks of one hundred each, ten runs would be required—divided into flocks of fifty, twenty runs would be necessary.

The length of the runs are left to the option of the breeder, who may make them longer or shorter as he elects. He may have double yards for each flock, where green feed may be kept growing in one of the yards all the time, but this cannot be done unless water is at hand all the time. The breeder must be where he may obtain city water, and with the use of a hose, wet the growing vegetation, or he must have a windmill or some means of irrigation where the water supply is permanent. If he does not have a double yard, he must have an acre or two on which green stuff must be kept growing the year 'round for the fowls, otherwise the egg supply will be shorter, as it is impossible to get a full supply of eggs unless the fowls have plenty of green feed. This green feed should be cabbage, kale, lettuce, swiss chard, mustard and so on. The greater the variety the better for the birds.

There are no definite rules about poultry houses. I am of the opinion that breeders, as a rule, have intelligence enough to build their houses according to the size of their flock, the length of their purses and as convenient as possible. I repeat that different climates and different locations in the same climate, especially where climate depends altogether on topography, as on this coast, require different construction and different facing, either to the north, south, east or west, as the case may be. The house built so that the sun may shine in it a portion of the day is the healthiest for the fowls, just as living rooms where the sun can shine the most is the healthiest for a family.

A poultry house should never be built in a clump of trees or in a shaded place. It is all right to have shade for fowls, but that shade should be away from the house entirely and this applies to dwelling houses as well as chicken houses. There is nothing so bleak and gloomy as a dwelling hid in perpetual shade, and it is just so with poultry houses.

There are colony houses which are scattered over a field and moved when occasion demands—one of the best places for colony houses is along a corn field. The corn furnishes shade for the birds, and they have the run of the field to pick up hoppers, bugs, worms and various insects. Colony houses are cheap things and can be built by anyone. Then, there are houses for the setting hens, brooder houses and so on, that cannot be described in a brief article like this, as it would take a book larger than this to describe the various kinds of houses and appliances. The main object of this chapter is to impress on the minds of beginners the necessity of having the poultry house

plain and modest, so that it can be readily cleaned and kept free from mites, ticks and other insects.

In this progressive age, poultry culture is progressive. It must be. The old time fowls used to roost on trees, on the fences, on the stalls in the stable, on the buggy, on the harness and in every conceivable place; some are allowed to do this today, where the slouchy poultry keeping exists. But the rule is, good chicken houses, kept well cleaned and free from insects. There are a number of books devoted entirely to poultry architecture—I have several, but have never had use for any of them, as they give plans too elaborate. In this century we have evolved from the elaborate poultry house to the plain, common-sense house, which is cheap and which can and must be kept clean, because an unclean house, full of mites and ticks and flees, cuts down the egg yield and reduces the vitality of the birds.

Progressive poultry culture has given us the open front house, which doesn't need any windows, and which has reduced afflictions among fowls fully eighty per cent. With the old, tight houses, in some instances supplied with fire in the winter, the mortality among fowls was heavy and many breeders had a room used as a hospital for sick birds. This has been done away with entirely and afflicted fowls are few as a result. In fact, there is no possible excuse now for diseased fowls and any such are the result of wrong housing, roosting and careless attention. With no mites, lice, or other insects to trouble the fowls, and right feeding, there will be no diseases among fowls. Cause produces effect, and when the cause is removed there will be no ailing fowls. This, the open front poultry houses have largely solved, in this age of progressive poultry culture.

FEEDING FOWLS.

There are all sorts of theories about feeding. Books and books have been written on feeding. Some of them are too voluminous and complicated and too "scientific" to be of any real value to anybody, especially amateurs. A breeder does not have to be a chemist to feed fowls, yet, some of these writers on feeding mix up the feed so thoroughly with chemistry that a person, to understand them, would have to understand chemistry.

Feeding may be divided into several sections, as follows: Feeding chicks; feeding grown fowls; feeding for eggs; dry feeding; wet or mash feeding; hopper feeding; feeding to fatten for market; balanced rations.

In feeding chicks I give only bread crumbs for the first three days, corn bread and whole wheat bread. Then I begin to feed pin-head oatmeal (called steel cut oats), fine cracked corn, cracked wheat and plenty of lettuce. Chicks will begin to eat lettuce when but a few days old. This I tie with a string (the heads) so the chicks can pick at it. It is surprising the amount of lettuce they will consume. This is my main feed for chicks until they are a month

old, and can eat whole wheat and larger cracked corn, and with wheat, cracked and whole, cracked corn, occasionally sprouted oats and some fish meat meal, with an occasional loaf of corn bread and table scraps, I rear the chicks to maturity. In hoppers, hung on the chicken house wall, I have bran, shorts, charcoal and fish meat meal mixed in one apartment and grit in another apartment, also charcoal. Occasionally I give the chicks a feed of cornmeal, mixed so as to be just crumbly with milk or water. Sometimes I make a mash of bran, shorts, meat meal, and a little alfalfa meal, but all the time they are supplied with lettuce, swiss chard, cabbage, Chinese mustard, and so on, in rotation. I never feed any of the feeds of commerce, sold by dealers, already mixed, but mix my own feeds, and know just what I am feeding. This is about the extent of my chick feeding and I have the healthiest of chicks; no ailments of any kind. Chicks love boiled potatoes, and any kind of cooked vegetables; and so do old fowls, but the main thing is to keep the birds absolutely free from mites, lice, ticks, flees, and other insect pests. Feeding is very simple, as any farmer's wife will tell you.

In feeding grown fowls I follow the same feeding nearly as for chicks. Wheat, cracked corn, sprouted oats, with a feed of cooked barley at least twice a week; but wheat, oats and corn are my main feeds; these are the stand-bys. The mashes are made the same as described above for the chicks. The composition of the mashes are as follows: Cornmeal, oatmeal, bran, middlings, or shorts, equal parts; alfalfa meal, enough to color the mash slightly green; fish meat meal, one quart to each gallon of mash. Mix so as to be crumbly, with water, or milk, sweet or sour. The fowls have dry mash all the time in hoppers, same as the chicks. The fowls have all the green feed they want, and an occasional feed of green cut bone, which I get at the butchers at three cents per pound.

I never feed for eggs. There is more nonsense written about "feeding for eggs" than any other phase of poultry culture. In the laying season I feed heavily because fowls which are laying heavily need to be fed well, and I want to accentuate the fact, and I want beginners to remember it, that when fowls have layed right along for months they need a rest, and do take a rest to get on a new coat of feathers. During this time if the breeder stimulates his fowls with drugs or any feed warranted to make them lay, he does so at the risk of ruining his birds physically and reducing their vigor so that they soon become unprofitable and have to be replaced by other stock. There is nothing at all in "feeding for eggs;" and fowls which are fed stimulants to force them to lay, will not lay fertile eggs; or, if they be fertile, the germs are weak, and the chicks die not long after being hatched. This will account for so many chicks dying after being shipped from hatcheries. The fowls had been stimulated to force them to lay more eggs, if possible, and these eggs sent to the hatcheries produce weaklings. I have had a score of letters from

people who had purchased chicks from the hatcheries, saying that the most of their chicks had died. One man said he purchased 200 chicks and that 120 had died. This is not against the hatcheries, which I think are a good thing and needed. There are plenty of feeds which are stimulating and may be fed when required.

I have already described mash feeding, dry and wet. Breeders can vary the mash to suit themselves, and breeders should experiment in feeding, as that is the only way we can learn. Practice goes a long way toward perfection. All the breeder is after is "good results," and when he gets good results he is successful, no matter what plan of feeding he adopts.

Fattening fowls does not come under the head of "feeding" but is a different division of feeding. It is quite easy to fatten fowls by keeping them in close confinement and feeding them fattening feeds, and withholding green feed. Indian corn is the chief agent in the process and may be fed in meal, cracked or whole, as the breeder pleases.

I could draw this feeding advice out into pages and pages, but I have some regard for the intelligence of those who read this book. I have given you my plan of feeding. If you are successful, you are on the right road. Do not change your method to adopt some other method. Let well enough alone. Still, as I say, it is all right to experiment, yet it is sound sense, as well as economy, to stick fast to a good thing.

There is much talk about "balanced" rations. You can't balance the ration unless it be in a wet mash. Fowls will unbalance any ration you may make. They do it every time. Mix a ration and watch the birds, and you will watch them pick out the ingredients or grains they like best, and will throw the rest out of the feed trough to be trodden under foot. It is almost impossible to make fowls eat all you fix for them in the so-called "balanced" rations, unless it be cooked together in such a way that the birds must eat the whole or none. I have watched my birds do this many times. Fowls know what they want to eat. How would you, reader, like to sit at a table and be forced to eat of all the food on it, and of things, perhaps, which you particularly disliked? Fowls have likes and dislikes. I have never been able to make my fowls eat alfalfa meal, no difference how nicely I fixed it up. In mashes, the birds pick out the other ingredients and leave the alfalfa.

I give here a good ration for a mash which may be fed wet or dry: Seven pounds of cornmeal; five pounds wheat middlings; four pounds wheat bran; two pounds cut alfalfa or one pound of alfalfa meal; three pounds of beef scrap or fish meat meal; six ounces of charcoal; five pounds of steel cut oats.

There are feeds and feeds, formulas and formulas; but the beginner, for whose benefit I am writing, will find the above formula

as good as the best, and with the other advice contained in this chapter the amateur will be able to feed for best results, and that is all that is necessary. Too much, too voluminous, instruction confuses. A little plain talk, a few plain directions devoid of perplexing terms about "ash," "protein," "carbohydrates," "fat," and so on, will not make a good chicken feeder out of an amateur. He is apt to think, and rightly, that he will have to study chemistry in order to know how to feed fowls, and he will feel like giving the thing up if such is the case. Our grandmothers and grandfathers who raised many fowls and good fowls, knew nothing about these chemical feeding terms, and if you notice the farmer's wife and daughters, who are the ones who raise the fowls on the farms, they never take a thought about protein, carbohydrates, and so on, but just feed good, sound grain, plenty of milk, some corn bread occasionally, and the fowls grow splendidly and the old birds shell out the eggs satisfactorily. This is common sense in the poultry yard. My experience in feeding chicks is that dry feeding is best. Dry feed will never sour, and the chicks will never eat more than they want of it. From the time they are a week old, I cut onions up very fine and give the chicks a good feed three times a week. As a consequence, I never have any ailments among my flocks, never have colds, catarrh, diarrhoea, worms or anything of that nature. I am of the opinion that the onions ward off afflictions.

The amateur will soon learn to feed intelligently, because right feeding is very simple, and I want to expressly warn beginners to beware of drugs, stimulants, tonics, stuff warranted "to make hens lay," stuff guaranteed to make "chicks grow and keep them healthy," and so on. Fowls and chicks never need anything but just good feed. If a bird gets ailing, isolate it from the rest of the flock, and change its feed, giving milk, boiled rice, cooked oatmeal, whole wheat bread or corn bread and milk, and in nine cases out of ten the bird will recover. I have tried it time and again, and know it's the only way. If any one who reads this wants any further information, I will be glad to answer any letters directed to me personally.

CHAPTER V

INCUBATION

By H. F. RAU, Tacoma, Washington, the "Quality Chickman," Breeder of White Leghorns and Rhode Island Reds.

ABOUT thirty years ago I decided to try artificial incubation, and built my first incubator; it is needless to say that it was not a success. Never having seen an incubator, I had to figure out the principles myself, and my first hatch was one chick from one hundred and sixty-six eggs. This did not discourage me and I began experimenting to improve this machine or build one that would hatch a reasonable amount of the eggs set.

H. F. Rau

During the past thirty years I have built and operated a good many different kinds of machines, besides the various kinds I bought and run. This wide experience has given me knowledge that can be gained in no other way. One may buy an incubator, follow instructions, and get a fair hatch, but they never know the "why" of the results. They only know they did as they were told and secured a good hatch. Such work does not teach a person the real system of incubation, one must start at the beginning and learn the effect of heat, ventilation and moisture on the eggs and they will then know why such results were obtained.

TEMPERATURE VERY IMPORTANT.

An incubator, to give good results, must have complete control of the temperature and it must be even in all parts of the egg chamber, on same level, or on a level with the eggs, so that when you read the thermometer you know that is the temperature of *all* the eggs. Fluctuation of the temperature of one degree will do no harm, but this should be equal with all eggs. A change from 98 to 105 degrees or over is harmful and should not occur very often if a good hatch is wanted.

High temperature is far more harmful than low. I would much rather find the temperature of my incubator at 98 than at 105. The correct temperature is a question, because the different makes of machines require different temperatures to obtain the best results. Some machines will give the best hatch at 103 degrees, others at 102. This, I think, is on account of the variation of the degree of heat between top and bottom of the eggs. A machine that is lightly constructed will have a greater variation of temperature from top to bottom of the eggs than one of better construction—also the manner in which the heat is applied will have some effect on this. On account of this variation, a different degree of heat is required at the top of the eggs to get the correct average of heat to the eggs.

We use a well constructed machine and find a temperature of 101 the first week, or rather four or five days, then 101½ for a week; 102 up to a few days before hatching, and 102½ and 103 during hatching will give the best results. Many differ as to the proper temperature to get the best results at hatching time. Up to this season we did not think as we do now, and we came to the conclusion only after a season's experience, when we had an opportunity to get tests that found this to be a fact.

The past season we operated several large machines that held 1600 eggs each, and these machines had four compartments each. These compartments, at hatching time, would vary in degree of temperature from 101 to 105, and over at times. We found that a temperature of 102½ and 103 gave the best hatches in number and quality of chicks. We have even received good results at 101, but not good at 105 or over.

These machines run fine and are well built, using less than one quart of oil for twenty-four hours, during early part of the hatch and less than a pint per day, near hatching time. The temperature runs very even—we could hold it just as we wanted it up to hatching time, and then it would vary some on account of the heat being thrown off from the eggs, varying in the different sections. We did not try to prevent this until we were satisfied which gave us the best results,

*Results of good incubation; 1240
chicks from 1500 eggs*

Another good hatch

and after our season's work we have arrived at the following: Start the eggs at 101 degrees, run them for four or five days at this temperature, run the temperature up to 102 and maintain this up to the seventeenth or eighteenth day, then run it at 102½ to 103, until the hatch is finished. This is the temperature that will give you the best results, if you have a well constructed incubator, if not, then run a half degree higher or even one degree in extreme cases.

VENTILATION SECOND IN IMPORTANCE.

Ventilation has caused more loss, worry and trouble than any one feature of artificial incubation, and yet, it is second in importance in securing good results.

The reason for this is that it is possible to get good results by using several different systems of ventilation—systems that are directly opposite, also by using no ventilation at all. I must admit that I never secured good results with the “no ventilation” system, yet some claim the solution of incubation is no ventilation. The argument that no air passes through eggs in a hen's nest is no argument at all, for when the hen leaves the nest, the eggs and air surrounding them are warm. It rises from the eggs and the cold air outside of the nest will fall in the nest to take the place of this warm air that raises from the nest. This action is equal to air passing down through the eggs in the incubator and the results are the same.

We have experimented with various kinds of ventilation systems, namely, top, bottom and side ventilation, using air brought into the machine from a heater, passing out of the machine at the bottom, through holes or cracks in the bottom; also out through ventilating tubes, taking the air off the bottom, after passing down through the eggs. We have taken this air off through side ventilation, on a level with the top of the eggs, also out above the eggs and have used a ventilation system, where the air enters the machine at the bottom and goes out at the top; also where all outlets and entrances were in the bottom, and with all the different systems, the results are about the same. The one real issue is to apply the system properly. We rather favor bottom ventilation; it is the more simple of all and is as satisfactory as any.

The cry about retaining the carbonic acid gas in the machine is not as necessary as some would have us believe. We find the carbonic acid gas, as it passes through the shell from the eggs, decomposes the shell sufficiently to allow the chick to break through.

We must consider airing the eggs with ventilation. Airing the eggs is important—the expansion and contraction of the egg helps to break down the shell particles so that the shell, at hatching time, is very tender and breaks very easily. The amount of airing that we have found to give good results is to air only while turning, for the first week. The second week, air ten to fifteen minutes, depending

upon the outside temperature. The third week, fifteen to twenty-five minutes. The size of the air cell has but little to do with a hatch. We have had good hatches when the air cell occupied one-fourth to one-fifth of the eggs, and just as good when the air cell was not larger than a five-cent piece.

By keeping tab on the air cell, one can see if the eggs are drying down too fast; if they are, reduce the heat, ventilation and airing; if they are not drying down to suit you, increase this. We find better results can be obtained by not drying the eggs down too much, and then at hatching time, no other moisture will be required.

MOISTURE OF LITTLE IMPORTANCE.

If heat and ventilation is right, the moisture problem is solved, but when they are wrong, then some arrangement must be made to handle the moisture problem. I would much rather run an incubator that does not require moisture applied than one that is not perfectly adjusted. There are moisture cranks who try to build or run an incubator to see how much moisture they can use and yet secure fair hatches, claiming that this is proof that applied moisture is necessary to get a good hatch. I claim an incubator that requires moisture applied during the hatch is not right in heat and ventilation.

The old hen does not use moisture, nature has provided for this in the eggs, in fact, there is more water in the eggs than is required—some must be evaporated, but we don't want to dry down the eggs too much, so some machines must use applied moisture to prevent this.

The air in the machine at the time the hatch is about half over should be well saturated with moisture to prevent the chicks that are late coming out drying up and sticking to the shell. If the temperature was high any time during the hatch—the liquid substance surrounding the chick in the shell will be sticky and if the air is not real moist they will stick in the shell. An over-amount of moisture at hatching time is detrimental, inasmuch that the chicks will smother or drown in the heavy moisture laden air. We have had this to happen by holding too much moisture in the machine while hatching. This is not liable to occur in small machines, but it is in large ones.

Less moisture need be applied during warm weather than cold, for less air passes through the machine, and the warm air entering the machine carries more moisture than cooler air, during cold weather. The results show that with the same ventilation, eggs will dry down more in cold weather than warm. This must be taken into consideration during incubation.

TURNING THE EGGS.

We set our machines at night and set the flame of the lamp so the heat will be less than 106 in the morning, then we have all day to get the temperature settled down to 101 degrees before night. At the end of twenty-four hours we change trays in the machine, then every twelve hours until forty eight or sixty hours, when we turn the eggs:

for the first time, doing it as quickly as possible without rough handling. After this we turn the eggs every twelve hours until the end of the eighteenth day.

We do not open the machine until the hatch is over. Our experience with machines we have purchased convinces us that some manufacturers do not understand their own machines, sending out instructions for operating them that are not right, and fail to give good results, yet when the machine is run as it should be, it would give satisfactory hatches.

Many of the so-called improvements on incubators are more for advertising than real work. We have found that incubation is a very simple operation and the machine that is simple, with no unnecessary ventilation and valves for controlling ventilation and moisture is the machine to buy. There is too much fuss made of incubation—it is simply giving correct heat, air enough to furnish oxygen to the growing germ and the problem is solved.

THE LAMP.

The bowl should be well made and large enough to hold two days' supply. Use good oil and you will only be required to fill and clean the lamp every other day, this reduces labor one-half. Use good wicks and a new one every other hatch. It is also well to empty the lamp bowl some times to clean out the water and dirt that collects in the bowl. If you use a trip-burner, be sure to clean well every time you fill the lamp, and see that the sleeve works freely, to prevent trouble by sticking. Adjust the flame right, do not run it too high so the sleeve will be above the tube very much—if so, it will heat and gasify the oil and cause the flame to flutter, and further trouble.

CHAPTER VI

ROOM BROODING AND THE BEST WAY TO START IN THE POULTRY BUSINESS

By D. TANCRED, Kent, Wash., Breeder Trap-nested White Leghorns

A MAN who takes up poultry raising with the intent of making his living by it, and who expects to get his business on a fairly paying basis within a reasonable time, and with the investment of a moderate amount of capital, should begin with the day-old chicks and with as many as he can properly care for in the growing stage, and afterward when they have matured as layers. Heretofore the stumbling block in this business has been the brooding of the chicks. Incubation, as a separate division of the business, pays after the necessary knowledge of the process has been obtained by experience, and with the modern houses and equipment one man could properly care for a sufficient number of layers to net him a very good profit.

But raising the chicks! That was the rub. Brooders—whether of the lamp, hot water pipe, or fireless type—were a great improvement over the natural hen mother and it was possible to rear chicks in large numbers by their use; but the best possible results by those means did not adequately repay the value of the labor involved in operating them. By the use of incubators or the large hatchers a man could hatch ten times as many chicks as he could care for in individual brooders and this was too great a disproportion altogether. And a great disproportion existed between the number of layers that he could care for and the number that he could raise by any brooding method known before room brooding was devised. Now let such a difference in efficiency exist in the branches of any business and we may be sure that strenuous efforts will be made to bring the least efficient branch to the standard of efficiency attained by the others. So with chick rearing. The efforts of intelligent poultry raisers to improve upon inadequate methods of brooding resulted finally in the evolution of the room brooder—a device at once so simple, natural and efficient that the wonder is that it was not the first thing thought of when men first began to try to improve upon and supersede the old hen mother.

The room brooder originated in Petaluma, California, and so quiet was its advent that it is not easy to determine who first used it with success. Mr. Thomas Vestal was the first one whom I heard of as operating them with success, he having placed 6000 chicks in six rooms, in the fall of 1908, and reared 93 per cent. of them to the

broiler age. When I visited Petaluma early in January, 1909, for the purpose of investigating their best methods of brooding I had heard nothing of this method and, in fact, not many of the poultry raisers there themselves had heard of it, and still fewer had paid it the least attention. Nothing was known of it at the Petaluma Experiment

Flashlight of thirteen hundred chicks asleep in Room Brooder

Station, and one of the most prominent breeders and egg ranchers of the district, whom I visited, scoffed at the notion, and showed me a string of sectional hot water brooders (with a capacity of 250 chicks each) that he was then constructing, with the remark that there was not likely ever to be any better way than that discovered. But seven months later this very man was selling pullets raised by the new method, and had himself advertised and put on the market an improved distillate burner for use in the room brooders.

At the time I mention none of the experiment stations had heard of the new way, nor any poultry paper; and, excepting for a casual reference to it by a Petaluma paper, nothing was printed concerning it until I published an account of it in *The Ranch*, November 1, 1909. I continued to give it publicity in later issues of that paper and think I may, with reason, claim to be mainly responsible for the installation of the room brooder in large numbers in the Northwest. But I am by no means a rabid advocate of this method. By no means. I have always been at pains to state that great care was necessary in raising chicks by this means and I have personally discouraged from using it people whom I knew to be careless in the operation of lamp brooders;

and who could not, therefore, be expected to exercise the needed care with the distillate houses. By this method a man's efficiency is multiplied four-fold and, as the cost of equipment is but one-fourth that of the individual brooders, brooder house, pens and yards needed to raise the same number of chicks, the efficiency of his capital is increased four-fold also. And if handled to the best advantage a better lot of chicks can be reared; at any rate such is the belief and experience of many of us. But more than that cannot be said for the room brooder; and it seems to me that is enough: that it is unreasonable to expect more. Raising young chicks—no matter by what method—is not an indolent man's job. Constant watchfulness is necessary, and there is always something to be done. During the brooding season a man should be on the job all day long. His absences from his chicks should be of the briefest possible. The use of the room brooder gives a man a chance to achieve an adequate return for his work. He can feel at the end that he has a satisfactory showing for a man's day's work. But he has to keep fairly busy all day, because the chicks require frequent attention and continual watchfulness.

There is a good deal of difference in the efficiency of the distillate burners (or stoves, we use the two words indiscriminately) on the market. I have investigated those most widely advertised and am convinced that the one I am now using is the best one made. For obvious reasons I refrain from giving the maker's name here, but I will gladly furnish my customers with that information, as it is to my interest that they should have complete success in brooding. The best dimensions for the brood rooms are fourteen feet in width, four and one-half feet height of walls at side, with a quarter pitch roof, making the height of center of roof (or ridge) just eight feet. These dimensions are perfectly in accord with one another and with the stove's capacity, and should not be varied; but the length, which is generally twenty-six feet, may be increased a few more feet if desired. I found houses of the dimensions given above to be ideal in shape and size for the brooding of from 1000 to 1300 chicks. I have not space to go into the technical reasons of the superiority of this shaped house over the square house advocated by some makers of burners, but will say that I had plenty of opportunity to compare this house with square ones operated by neighbors and am thoroughly convinced that it is much the best. The stove is placed in the center of the room—pipe goes straight up, no bends—and the ventilation is supplied by two box shafts, one at either end, on the principle of a dry kiln. The fresh air enters by one shaft and the heated air escapes by the other. (Plans for all this construction are furnished by the maker of the stove). The stove man recommends that these air shafts be made twelve inches square, but I believe that shafts twelve by twenty-four inches will be better, and will make them that size in all the rooms I operate next season. Two single sash windows are placed in each

side of room, hinged at bottom, and opening inward into room from the top. The window opening should be covered on outside with one inch mesh wire netting and a strip of thin muslin drawn across the opening when window is open to prevent cold air from plunking down too hard on chicks. When the stove is in use the air shafts furnish perfect ventilation; but when the use of the stove is discontinued there is no longer a current of air through the shafts, and the windows must be relied on for ventilation. I should have said that the opening of the air shafts into the room should be provided with a slide to regulate size of opening.

A quarter inch feed pipe supplies the stove with its fuel. This pipe is run from the twenty gallon distillate tank placed outside of room at a height of from three to four feet above floor, and has a needle valve which controls the amount fed. Stove, valve, tank, one length of stove pipe and the amount of feed pipe needed, are all furnished by the stove manufacturer. It is advisable to cap the stove pipe with a movable bonnet which, as it always faces away from the wind, does away with any possibility of the flame of the burner being blown out in a high wind. An eight inch board set in around the base of the walls on a bevel and a further rounding or beveling off of the corners of the room, prevent chicks from smothering in case they start to pile up against the wall.

From 1000 to 1500 chicks may be reared successfully in the above described room. Some California poultrymen have had good luck with as many as 1750 to each room; but others have found this to be rather too large a bunch, and have reduced the number, with better results. I operated three rooms last spring, with 990, 1200 and 1300 chicks respectively, and had equal success with them all; and next season I will place about 1250 in each room. The chicks may be placed in the brood room as soon as they are dry but should not receive their first feed until forty-eight hours after the hatch is over. If the chicks are shipped to you, ask the seller their exact age, so that you will begin feeding at the proper time. Do not give them a drink first. Feed them first and give them a drink an hour afterwards. And I have found that for the first few weeks it is best not to let them drink in the morning before they have the first feed of the day.

When the chicks are first placed in the room a circular enclosure made of thin muslin, and twelve to fifteen inches high and twelve feet in diameter should be staked around the stove, in order to keep the chicks near the stove until they have learned to go to it for heat. Three days, or at most four, is as long as this is needed and it should then be removed. They must be watched at first and spread out with a broom if they show a tendency to pile up. They do not give much trouble this way, but should be frequently visited. The windows should be furnished with good roller shades so that the room may be thoroughly darkened at will. In this way the chicks' time of going to bed

and getting up is under control. When the muslin fence is removed watch chicks for awhile and herd them back to stove occasionally until they learn to go there themselves. They soon learn. It is the same with letting them out doors. When four days old, if the weather is fine, they may be allowed out doors; but for the first two days watch them and herd them back into the house occasionally. For the first few days I only allow them outside for a few hours in the middle of the day. I use a temporary fence at first, enclosing only a small space, as that reduces the trouble of herding them indoors. Until the chicks are well feathered do not let them out too early in the morning or allow them to stay out too late in the afternoon. As soon as they learn to go inside to get warm I increase their yard room, allowing space about sixty feet square to each brood; and when three weeks old I remove fence and give them the range of as much ground as possible. By that time they have the homing instinct very strongly developed and if several broods are allowed the run of the same enclosure very few will fail to return to their own house. The more range they have the better and I advocate placing the rooms 200 feet apart if possible.

At first the chicks should be fed every two hours, beginning at daylight. A cardinal rule to be observed is to be careful not to overfeed during the first two weeks, nor to underfeed after that. Thousands of chicks suffer through too generous feeding at first, and too scant feeding afterwards. The feed first used had better be a good brand of prepared chick food and the chicks fed only what they will scratch up quickly and eat with relish. No hard and fast rule can be given but I generally found two quarts sufficient to a feed for 1200, when starting. It should be scattered carefully and thinly over the whole floor space so all will have an equal chance. Once a day I feed them eggs, boiled from one to two hours, and ground up shells and all in a food chopper. This I feed on tin pie plates, a dozen or more to each room. The proper way is to keep making the rounds of the plates, not dishing out too much at a time, for they eat this voraciously and, if allowed, some of the huskiest will gorge themselves at the expense of the others. On my place thousands of eggs are set every week, and the infertile eggs tested out on the third day of incubation furnish enough eggs for the youngsters until they are old enough to eat beef scraps; and where this is not the case it will pay to buy fresh eggs at the low price that prevails during the brooding season. When a week old I give them two light feeds a week of fresh lean beef, boiled and ground in food chopper, or else liver or beef hearts. From the beginning I keep coarse bran before them all the time in troughs made of eave spout stuff, with a lip made of a thin strip of wood to prevent waste. When two weeks old I add a little beef scrap to this, but the greatest care must be taken that only a good grade of meat scrap be fed to young chicks. I am quite willing to tell my customers what

brands of meat scrap and chick food I prefer to use myself, but I cannot afford to incur needless antagonism by recommending one brand above another in this article, or to casual inquirers.

At two weeks of age the chicks may be fed some cracked wheat and when three weeks old the greater part of their ration is wheat and cracked corn. A little later I add oats to their ration, softening them by scalding. At ten days I begin reducing the number of daily feeds gradually and when three weeks old they are fed only four times a day and when a month old three times is often enough; but they have always the bran before them and as they grow I add some rolled oats, corn meal and soy bean meal, strengthening the mash gradually until, when three months of age it is about the same as that furnished the laying hens. During this middle period of growth a good deal of oats should be added to the ration, until it constitutes a third of their total food. Lots of green stuff should be furnished the chicks from the start. Early in the season chickweed and fine lawn clippings can be had and later lettuce, dandelions, etc., are good. When they are very small I throw green sods in to them and they enjoy pulling them apart.

Fine grit should be furnished them with their first feed, and this with fine wood charcoal and dried (commercial) bone, (and later on oyster shell) should always be accessible to them. The supply of water should be clean and plentiful. A good drinking vessel for use at first is made of a quart bottle, with a groove one-fourth inch deep in side of cork, placed upside down in a Mason jar cap and held in place by an upright stick. The whole thing should be mounted on a small block of wood three inches high. About eight of these are needed in each room. Later on coal oil cans, rigged in much the same way, may be used outside the room.

Most poultry raisers have trouble through toe picking and other forms of cannibalism developed by their chicks. The superintendent of poultry at a large state institution, who visited me lately, says he believes it is a matter of heredity. I do not know as to that, but I have very little trouble of that nature and when it has shown I have soon checked it. I salt the semi-weekly meat feed—using only as much salt as I would in seasoning to my own taste, and sometimes add a few grains of black pepper. And I keep the chicks as busy as possible, and that keeps them out of mischief. When I find them resting I always scatter them a handful of chick food and that gets them busy and I continue to feed them some chick food daily, until they are a good size, just for the exercise they get scratching for it. I have observed that it is almost invariably a dwarfed or runty chick that starts the practice, and is most vicious at it; and as I promptly kill all backward chicks I have but little trouble.

The chicks show by their actions if the right temperature is maintained, but I always use a good, tested thermometer as a check on

them. I suspend it by a wire about twenty-seven inches from side of stove and just clear of the chicks' heads, and I find it registers 92 or 93 degrees when everything is going right at the beginning of the brooding. During the first week of the process the chicks may need a little smoothing out with a broom at bed time; and you should always be on hand at that time, in case of trouble. They should be visited an hour afterward to see if the heat is right, and again in the course of the evening, so that when you pay a final visit before retiring you can be sure that the temperature is settled. After you become used to the care of the burner you will seldom find it necessary to visit the brood room more than once during the night, one o'clock A. M. being the best time, usually, at which time it will generally be found necessary to strengthen the heat to offset the considerable drop in outside temperature between that hour and five o'clock. But it is best to err on the side of over caution and visit oftener than necessary until thoroughly accustomed to the business.

During the coldest weather of last March my highest consumption of distillate was seven gallons in twenty-four hours. The usual consumption early in the hatch was six gallons every twenty-four hours, gradually decreasing as the hatch progressed. About 180 gallons were used for the early hatches. Sometimes a little more is consumed if much rainy weather occurs late in hatch. The present cost of No. 1 distillate is seven cents per gallon f. o. b. Seattle.

During the first ten days the chicks, if comfortable, will form an almost perfect circle around the stove and from fifteen to eighteen inches away from it. At a very slight drop in the heat they move nearer and if too hot they back away. You can drive them four feet back by running up the temperature ten or more degrees. When the chicks are in the right position I never look at the thermometer; but when they are not I do, so as to see how much of an error I have to correct. The stove that I use runs very evenly and a few degrees variation is not a serious matter anyway, but it is best to be careful.

When ten days old they generally break formation and divide into bunches a little further away from stove. The temperature has been gradually lowered three to five degrees meanwhile. It is still necessary to superintend their going to bed, and perhaps regulate it a little with the broom; but chicks that are trained right at the start soon cease to give trouble in this manner. When six weeks old, roosts should be placed in the room, and in two weeks' time most of them will be roosting. I place roosts fifteen inches from floor and a foot apart. The cockerels should be removed and marketed at the very earliest possible age, and at three months of age all the pullets should be removed to other quarters excepting 200, which may be allowed to remain in the room until full grown; unless the rainy weather sets in before that time, in which case it is best to remove another hundred.

It is best to cover the floor of the room with a slight coating of sand, or with loam if sand is not to be had. After the first week strew

an inch of chopped straw on top of this for litter. That part of floor nearest stove should be cleaned daily; all the sand and litter removed, and the whole thing should be cleaned out and renewed every day. Later when the chicks are larger the cleaning should occur every day. Absolute cleanliness in all particulars is indispensable. No feature of the whole business is of more importance than this.

I hope I have succeeded in showing that chick rearing is a busy job and one requiring continual attention. But it is very interesting work indeed, and after the chicks are three weeks of age it is not necessary to spend so much time with them, and more attention can be given to other things. At the busiest time a good man can take care of four of these room brooders properly, but I do not advise inexperienced persons to attempt to care for more than two during their first season. That will give them lots of time to attend to everything in the very best manner and without getting rattled. After the first month considerable time can be spent at other work, building laying houses for instance; for it is not necessary to have any of the equipment of the place, except the brood rooms, ready when starting in. Everything else can be constructed long before it is needed. The brood rooms themselves contain about \$30 worth of material, exclusive of the heating apparatus, which costs \$22 more; and a carpenter can build one in four days, and a handy amateur can do it in a week. Starting with 1250 chicks to the room, at three months of age there will probably be (on an average) 550 pullets and other quarters must then be ready for 350 of them. I find a cheaply built open front colony house eight by forty feet, with a shed roof, affords ample accommodation for 200 of them until they are fully grown. One hundred of them may be left there for the winter if financial conditions render it necessary, but I prefer a different type of laying house. For egg ranches I recommend as large a laying house as possible and, if the house is sufficiently large, the fowls may with advantage be kept closed in and not allowed outside runs during the whole of the rainy season.

Starting with 2500 chicks in two brood rooms it is reasonable to expect to bring 1000 good pullets to maturity. When seven months old they will—if of a good laying strain—be paying their way and will rapidly increase in earning capacity. Just how well they will do depends a good deal on their owner, but I do not hesitate to say that the man who is capable of making any other form of agriculture pay, will do still better with poultry.

CHAPTER VII

FROM EIGHT-WEEK OLD PULLETS TO EGGS

By I. D. CASEY, Waitsburg, Wash., *Proprietor Casey Poultry Plant*

IN VIEW of the fact that the time is fast approaching when eight week old pullets will be the popular method of purchasing, it will be of great importance for the buyer to know how to care for them to make a profit.

There are two distinct methods of management which may be adopted, depending entirely whether the buyer intends to supply the market with eggs or meat, or whether he expects to use the pullets for breeders.

First, we will consider the care of the stock for breeders, supposing that your pullets have had proper care to the eight week old stage. Right here is where the care must be exercised. If she be a March or April hatched Leghorn, she should have no form of animal food, and we give as a reason for this, that it will hold down development, until late winter, which is desirable. Here is the way to feed and care for her: Fresh air, grit, cracked wheat, sprouted oats, oyster shell and plenty of shade; plenty of range is also necessary, as is clean roosting quarters. Let them take the weather as it comes—let them wade in the snow and run in the wet grass; it means vitality to those very chicks next spring.

The cockerels should be kept in more limited quarters, but given about the same feed and care otherwise, and not allowed with the pullets until two weeks before you wish to start incubation.

You may secure hens that will lay two hundred and fifty eggs by using hens for breeders that have made a one hundred and fifty egg record during their breeding year, but you *cannot* expect even a one hundred and fifty egg hen from the hen that has made the two hundred and fifty egg record during the breeding year. Therefore you must give the pullet ample time to mature, if you wish to use her for a breeder and obtain the best of results. Let her have her own way through the early winter months, thus allowing her to build up vitality and put herself in condition for breeding purposes.

You have heard the amateur say that a pullet is worthless as a breeder. The reason for this is plainly understood, if thought is given the above statements. The man who sells you chicks from a high record hen during the season that she is making her record, with a view of starting you on a firm foundation, is either a fake or he is a fool. Many are the times we have received letters from our customers, asking, "How is it that the chicks we buy of you develop

into such good layers and the pullets we hatch from their eggs are poor layers?" Bear with us a moment, kind reader, and your reason will tell you why this is true.

When the time arrives for you to obtain eggs for the incubator, we advise feeding as wide a ration of grain feed as it is possible for you to obtain, and about ten pounds of green bone (or its equivalent in protein) to each one hundred pullets, twice a week. Be sure and give these pullets all the free range that your farm will allow, thus promoting much exercise.

If the pullets were hatched in June or later, we find it positively necessary to feed animal matter to get them to development properly for the breeding season. In fact, you will find that the more regularly you feed animal matter, the faster they will develop, providing they have plenty of range and a variety of grain feed. We find that late hatched pullets mope and die, simply for the lack of animal food. It may be, if they have plenty of range and there is running water and there are not too many in a flock, they will find insects enough to supply the animal food, but when there is quite a number on the same range, even though it be a good range, the insects become scarce and you must substitute this animal matter.

It is not necessary to tell the man who has only fifty pullets how to care for them to produce good breeders. Ninety-five per cent of the people who keep fifty fowls make a success in their small way, but when a man attempts to breed from one thousand or two thousand and upwards, it is a different story, and herein lies the reason for the failures.

FOR MARKET EGGS.

These pullets, which we are about to consider, must be hatched from the eggs produced by the pullets considered above, as they make the best market egg producers. These pullets can be fed, in addition to grain ration, an abundance of animal matter, until you have succeeded to bring them to laying in five or six months—perhaps six months is plenty early to have any pullets begin laying and for best results they should be hatched in late April or May and kept growing. While there are many secrets claimed, the principal secret of having a good supply of market eggs in the fall months is good feed, free range, a good supply of animal food and good judgment in caring for your fowls. The secret does not lie in a can or package of a preparation placed on the market, by a man behind a "get rich quick" scheme. Don't forget this.

Here is something else for you to store away for future reference, "Don't attempt to reproduce your flock by using these egg-producers as breeders, unless you have given the hens a good winter's rest, and even by doing this she is never as good as a breeder." Instead of feeding prepared "egg makers" as advertised by firms who have never had experience in the poultry business, prepare some one of

the following feeds, which are really egg-makers. It is useless to try to feed with the idea of forcing a pullet to lay, if the fowl is not receiving the proper food, from which she may produce eggs. Milk, in any form, green cut bone, soy bean meal, fresh meat of any kind in connection with green feed and a variety of grain, will produce eggs and will assist in early development.

We are giving you this advice, which is based on our fourteen years of experience on the Pacific Coast, and while several of our first attempts at poultry raising were failures, we have accepted them as lessons, and, as we have nibbled at the bait of failure we wish to guard you from the unnecessary stumbles, if we can. We find that if the pullets are placed in their laying houses they should never be allowed out in the mud or snow, for if they are laying, such a change from their "comfy" house to the cold rain and snow will check their laying and it will be several days before you can get them in laying condition again.

Be careful not to over-feed with animal matter, for ten pounds of green bone to fifty hens, three times a week, is sufficient and will force eggs, if fed with sprouted oats, cracked corn and wheat, with plenty of oyster shell and sand for grit. We think the greatest mistake made by poultrymen is not providing a variety of feed. Fowls desire a change the same as you or I, and table scraps, milk, cabbage, kale, potatoes, etc., are all valuable; don't feed them twice a day, then go into the house and perch your feet upon the mantle with the stem of your briar pipe between your teeth and through the smoke from your pipe, dream of a case of 60-cent eggs. Let the hen know that you are on the job and they will soon let you know that they are with you.

As a parting thought, let us suggest that you should not wait until eggs are fifty or sixty cents the dozen before you begin to look toward building up a more convenient poultry plant, for you will find it will take several months to get everything ship-shape and it will take even longer to bring your stock up to the highest efficiency. Treat the poultry business as a business and like a good business it will pay you.

CHAPTER VIII

THE MARKET MAN AND THE POULTRY MAN

By C. G. SHAWEN, Pomeroy, Washington, Breeder of R. C. Rhode Island Reds

OUR real aim in raising poultry should be to make the venture pay. Poultry on the farm pays because the fowls harvest a large crop of shattered grains that otherwise would be wasted. The eggs from the flock and the increase furnish a variety to the table and the surplus to supply the table with other articles needful from the grocer. Very few grocers buy live poultry and here is where the market man comes in with the cash.

My long experience in dealing in poultry has taught me many things. Nearly every farmer will have a few fowls to sell during the course of a year, and nearly all of them will sell to some dealer, hence, the dealer will know the general character of every one of his clientele. If I want to find out the real makeup of a man, I buy a few chickens of him. A dealer will go out of his way or give a fancy price to a customer who is honest and strictly on the square, and who does not assume that the marketman is crooked in his dealings. There is no reason why their business relations should be anything else but pleasant. People will accuse the dealer of being dishonest in his weights and dealings when the dealer will be absolutely on the square and the seller putting up the shady deal. The dealer realizes that he must give his customers satisfaction or they won't come back, so how foolish it is for the shady producer to get on a "high horse" because he was found out. The dealer is not going to be bilked, for he is in the business to make some money.

Many producers assume the dealer is getting too large a profit so they proceed to use some scheme to get ahead of him. He may bilk him once, but he don't do it a second time. The dealer spots this man and makes a character-reading, and stores it away in his mind for further use. As a rule a dealer bids as closely as he dares—

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quite frequently too close, as I know to my sorrow. He will know within a fraction of a cent how much he can pay and the wise dealer and successful buyer pays very little attention to published quotations in the papers and no attention at all to the extravagant bids from the "get-rich-quick," "fly-by-night" concerns who are looking for suckers (and they get the suckers in producers who imagine the local dealer is not paying them enough for their stuff). The frequent use of the telephone or telegraph is the only sure way of keeping posted.

The producer will get a square deal from the buyers if they deal square with him. The trouble is, so large a number don't deal square. They will catch their fowls with dogs, and hence the birds are scratched and torn and the buyers lose. They feed their birds all they can stuff before bringing them in—to make them weigh heavy—wheat at ten cents per pound. Some people will feed just a little and think the buyer won't notice it. Their excuse is that it is not humane to let them go without their breakfast. Some people have sick chickens—afflicted with roup, wens, waterbag, tuberculosis, cholera, frozen feet, etc., and attempt to work them off on an unsuspecting buyer and quite frequently they do, and if the dealer is looking for a shady reputation all he needs to do to get it, is to cull out these sick ones; and straightway this arbiter of all that is good(?) and true(?) will start something. The itinerant buyer understands these schemes and he is on hand with his short weights and "does" the saint as well as the sinner because they are all strangers to him.

The most unjust of all schemes used is the practice of weighing a fowl or two out of a large bunch (and the biggest birds are the ones usually weighed because easily caught) on a little "two-bit" spring scale which is made to weigh a pound heavy and then expect the whole bunch to hold up to this average when the whole lot is weighed at one time on a scale that cost the marketman forty or fifty dollars. However, most producers who use these scales when convinced of their inaccuracy are quite liberal in their expectations. The dealers as a class are absolutely honest and times without number give a square deal when they get a "rotten" one in return.

I was in business two or more years before I became wise enough and experienced enough to be able to break over from the wholesaler to the retailer. If it took me that length of time to get in touch with the higher prices, how does the average producer of a few fowls expect to break in? As soon as I obtained the better prices I passed them along and now my clientele get them and I make no more money than I did formerly.

When the producer markets his stuff and he takes pains to see that his fowls are fat, crops empty of feed, perfectly healthy, not scarred or torn, he will be perfectly satisfied with the treatment received.

I want to express my thanks to the large majority of my patrons who trust me and I know I have the greatest confidence in them. This is probably true of all marketmen.

For the benefit of all, and especially the marketmen in embryo, I would say that I have always sold for cash and never consigned on commission. A concern that purchases outright can usually be relied upon. However, before you trust your shipments to a new firm, do a little investigating and ascertain from Dunn or Bradstreet whether such concern has a commercial rating.

If the man you ship to overpays you on error, call his attention to the matter in a gentlemanly way. Trust to his honesty just the same as you want your clientele to trust to yours. If shrinkage is excessive at times, don't "holler" too loud, remember your customers, for you yourself may be to blame. In shipping alive, use good, solid, but light coops. Count the fowls when shipping and make arrangements with your buyer to do the same. Sometimes fowls have a strange way of breaking out, getting away, hence the excessive shrinkage at times.

I ship alive in warm weather and dressed in cold weather. The weather is cool enough to ship one hundred and fifty to two hundred miles when frost comes. There is much more profit in shipping dressed. I pick turkeys dry and scald all other fowls.

Dealing in poultry is only a part of my line of business, but I keep a complete record of every buy and sale—person's name, kind of fowls, pounds and price per pound, and amount paid or received, as the case may be. Also, all expenditures for feed, telephone and telegraph tolls, advertising, etc. Keeping record serves three purposes: you get a mailing list which is invaluable; you know whether or no you are getting ahead, and how much; protection in case of stolen poultry. Don't buy from small boys.

Shipping alive long distances is not profitable. The shrinkage on live stuff will run about six per cent—sometimes as low as three per cent and again as much as fifteen per cent; whenever shipments shrink, on empty coop, ten per cent and over, something is wrong. In shipping alive you can put one hundred and twenty pounds of fowls in a thirty-pound coop, which equals one hundred and fifty pounds—the express limit. You pay express on fowls, shrinkage, coop and pay to get your coop back. In shipping dressed, you put two and a half times as much in a barrel, that weighs one half as much as a coop, and costs perhaps ten cents more than it does to get your coop back. The shrinkage is about three per cent more and you get two cents more per pound. Six hundred pounds of fowls require five coops or two barrels of dressed; express rate \$1.50 per hundred weight—price per pound paid, ten cents.

An illustration on a four cent margin basis:

LIVE.

600 pounds of fowls at 10c per pound	\$60.00
600 pounds of fowls plus 150 lbs. coops (5) at \$1.50 cwt., express	11.25
Return of five coops	.75
Cost	\$72.90
Assuming shrinkage at 6 per cent.	
600 lbs. less 6 per cent shrinkage—564 pounds at 14c.....	78.96
Profit	6.06

DRESSED.

600 pounds of fowls at 10c per pound	\$60.00
Cost of two barrels at 25c each	.50
Shrinkage on dressing, 10 per cent.	
600 lbs. less 10 per cent—540 lbs. plus 30 lbs. (two bbls)—570 lbs. at \$1.50 express	8.55
Cost	\$69.05
540 pounds dressed fowls at 16c	86.40
Profit	\$17.35

Deduct from this the cost of feed and labor if you hire the work done. Do the work yourself. Fowls dress away from nine and a half to ten and a half per cent. Suppose the shrinkage on the live shipment was ten per cent instead of six per cent, the profits would be cut \$2.40 or down to \$3.46. About all a shipper can figure on, on a margin of 4 cents, is ten per cent on the investment. On the same margin and same investment he can figure on a twenty-five per cent profit by shipping dressed. The wholesaler wants you to ship alive because he does the dressing and takes the extra profit. The shrinkage on the dressed shipment, when there is one, and there ought not to be any, is from one-half a per cent to one per cent. All dressed shipments should be thoroughly cooled before packing.

How I dress poultry. I kill chickens by placing the wings between my knees with their feet out, take hold of their head and slit their throats through the ear lobes from one side to the other, and with a quick wrench dislocate the head from the neck. (Don't cut the throat—slit it). I kill about a dozen at a time and toss them in a barrel to do their kicking. I have always scalded chickens, ducks and geese. Have the water at a little less than boiling—about one hundred and five degrees is about right. Take the chicken by the head and feet and dip, back downward. Don't scald too much. Turn fowl over and scald the feet and tail while picking the neck. Keep the head out of the water. Have a pan of cold water on your picking bench. Cool your hands in this water. You should do a first-class job in two or three minutes, counting time used in killing. I kill thirty an hour. Peel off the feet; the carcass looks better and sells better and brings you more money. Don't bear down too heavy on the fowls when

picking; if you rub too hard you will take off too much of the thin outside skin (and in case of young ones, will tear the fowl). Keep as much of the outside skin on as possible. It makes the chicken look better and preserves it from germs. Have a large oak barrel ready, two-thirds or more full of cold water, and put the dressed stock in this water to cool off.

Ducks and geese I hang up by the feet with a weight in their mouth and stick from side to side. This keeps the feathers clean. Bloody feathers won't scald evenly. I kill one at a time and have one dying while picking one. I pick a duck in about seven minutes and a goose in ten minutes. Scalding ducks and geese is the whole secret. Water must be hot, nearly to the boiling point. Pull their feet backward over the back and grasp the head and dip, breast down. The hot water will take hold of the feathers and open them, and the fowls scald evenly. Dipping this way does not scald the wings too much. Don't scald too much; five or six dips are enough. Try feathers at the base of the neck on the back, if scalded enough, hold up by the head and dip feet and tail several times. Throw on bench, back down and head towards you, and get busy, quick. Take down, and all as you go. Don't rub too heavy; work your hand along and grasp the feathers—work from the front towards the tail, except on the neck. In short, in picking ducks and geese remember these points: Keep blood off feathers; kill one at a time; have water hot; dip breast downward, and don't scald too much; if not scalded enough, dip again; cool off in water. I do nearly all my killing in the morning. The fowls are in this cold water until evening, when I take them out and spread them, or hang them to dry and let the water run out of their mouths. I ship next morning. The object of putting them in water is primarily to cool them, also the water prevents excessive shrinkage and the fowls look nice and fresh, otherwise they would look brown where the white outside skin was rubbed off in dressing.

Turkeys are strung up, feet apart, with a weight in the mouth. I never could see any advantage to be gained by sticking turkeys in the mouth. Too frequently it is a poor stick and then you sure have trouble. I slit through the neck at the base of the jaws from side to side—hold the wings until the bird gives up and flaps his tail down between his legs. He has let loose of his feathers then and one may work as fast as he pleases. Remember this: Don't pull out a single feather until he flaps his tail, or you will very likely have a job on your hands. Hang up to cool—water is not used in cooling.

About drawing poultry—I never draw the fowls. The birds have to fast at least twenty-four hours before butchering and they must be empty, hence there is nothing in them to spoil. Any fowl should not be prepared for eating until a day and night after killing. Vast numbers of well-meaning people knock the undrawn fowl from sheer ignorance. They will go out and get a hen that is full from top to

bottom with food, that is in various stages of digestion, and of course the carcas smells. Sure it would stink if the birds were undrawn and shipped in that condition. These people judge the shippers and the stock by themselves and their way of preparing the bird.

Why these people jump to the conclusion that infection takes place first in the entrails, beats me. The Creator so ordered things that infection takes place *first* in the death wound or injury. Hence if the forward and afterward parts of a fowl are opened to take the inside out the whole of the raw surface of the interior is exposed to the action of bacteria from the air. That clear, lymph covering of the interior flesh sours as quickly as milk when exposed to the air. The entrails were made to withstand infection and are the last parts to become tainted. Of course, if they are full (as the average person assumes, because they know no better) the contents become sour, but the entrails do not. Therefore is the reason why undrawn fowls keep better and are better than drawn fowls.

I have tried several schemes and ways to handle poultry but the above outlines are my conclusions as actually practiced, and a result of actual experience to attain the three results—profit, speed, efficiency.

CHAPTER IX

SUCCESSFUL POULTRY RAISING—COMMON
SENSE AND FRESH AIR

By B. S. KENNEDY, McMinnville, Oregon, *Proprietor of Fresh Air Hatchery*

IF YOU are not a land owner and are intending to buy a suitable place, select a sandy, gravelly, rolling place near good markets and shipping facilities. If you already have a place, make the best of it. Should it be flat, cold, damp land, make all your buildings with floors, four or five feet from the ground, using the under room for the chickens' rest room during the summer months, and closing it in winter if it becomes damp.

Be moderate in every turn you make, do not overdo your means, chicken knowledge or grounds. Subscribe for one or two good poultry papers published in the locality in which you live. If you have a position or way by which you are earning reasonable wages, do not give it up; you can make a small start by caring for your birds morning, noon and night. Hold on to your job until you are forced by the increase of your chickens to give up one or the other, by this time you can decide at which end to let loose.

There are three popular ways of starting in the business—buying baby chicks, buying pullets, and buying eggs and hatching your own chicks. If you prefer to make a start with baby chicks, you must make preparations for them in due time so that when you get them you will be ready. You must have a good brooder house first, and while the chicks are growing to maturity you can build other necessary buildings at odd times. I wish I could have a talk with every one who is puzzled over this brooder proposition, and tell them how to prevent their chicks from crowding, and piling up in the brooder and suffering for pure, fresh air, for I consider this the most vital part of the whole business, it matters not how strong and vigorous the little fellows

B. S. Kennedy

are when placed in the brooder, and how well you water and feed them, unless your brooder is properly built, warmed and ventilated you will fail.

Build your brooder house twenty-four feet wide as long as desired, with five foot walls, little less than one-third pitch, double roof with rafters well tied together with one-by-six, seven feet from the floor and sealed overhead with good shiplap or matched lumber; eight and one-half feet on each side of the building floored with good matched lumber, leaving seven feet the entire length of the building without floor. On each side of this dirt walk-way build a pipe box seven inches deep and wide enough to allow two pipes running from the heaters at one end of the building.

These heaters are advertised and recommended in the leading poultry journals. They cause a constant circulation of hot water through these pipes and regulate their heat, enabling the poultryman to keep the right temperature in his brooders at all times, and are indispensable in the brooder house; full directions of installing and operating accompany each heater.

After the heaters are installed and pipes arranged, the covering is tightly placed over the top of the box and round holes five inches in diameter are cut in the center of the top, four feet apart; over these holes invert a galvanized iron can, nine inches deep, and have the holes just large enough for the cans to fit in tightly and not work any farther down than one inch. Before the cans are placed, punch three-eighth inch holes in the side of the can all around, not farther from the bottom than two inches—this is very important as it allows the heat to pass out over the heads of the chicks.

Then build a cool air chamber two inches high, directly over the pipe box by laying a matched lumber floor, on sills, two inches high, cross ways on the pipe box; a five inch hole must be cut for them to project through; be sure these cans fit very closely to prevent litter from falling into the cool air chamber. Now make a false floor, two by two feet, with a hole cut in the center of it, so it will fit over the can; this floor is intended to be taken out and cleaned at will. Build sides around these two by two floors to keep chicks from running about. Also build a hover of light lumber, say twenty inches square, with a leg at each corner just high enough to clear the inverted can. Fringe around the edge of this hover to partially retain the heat.

Between these two rows of continuous brooders, make a concrete walk, the floors on each side of the building are intended for runs for the chicks, and are about sixteen inches from the bottom to allow cats and small dogs to run for rats, and the brooders are built high enough for the false floor in each brooder to be on a level with the runs. This will cause the brooders and runs to be about eighteen inches higher than the concrete walk which makes it convenient for feeding and cleaning.

Now bore one inch holes, four inches from the concrete walk, into the side of the pipe box. These holes must be about six inches apart, which allows the fresh air to pass into the pipe box, and is heated by the hot pipes and passes up through the inverted cans out through the holes over the backs of the chicks. This gives top warmth, as the cool air chamber is full of cool air and keeps the floor of the brooder from getting very warm. The rest of the fixtures about the building are arranged to suit your convenience, but this is undoubtedly the most successful brooder I have ever used.

When it is completed, and about a day before you get your chicks, fill the boiler of the heater, start your fire and heat gradually up to ninety degrees under the hovers and regulate the heater to keep this temperature. Place one-fourth inch of sand on the floors of each brooder and cover this with fine cut clover or alfalfa—this will all be warmed by the heat and will be in nice shape for the reception of your baby chicks.

Do not feed the little chicks until they are at least fifty hours of age—then have little pans about one and a half inches deep for charcoal, grit and fine ground oyster shells. Be sure the grit, charcoal and shells are ground fine—have a pan for each, do not mix them together. Have one-half gallon earthen fountains and give them pure water and the grit, charcoal and shells for the first feed. After they have eaten and pecked about fifteen minutes, tuck them back in the brooders to rest and take a little nap for two hours. At that time, allow them to come out into the run, where you have the floor sprinkled heavily with sand and fine cut straw or clover hay. Sprinkle a little prepared chick feed about in places where they can easily find it and induce them to scratch. It will surprise you how early they will begin to scratch for their feed and it should be the aim of every poultryman to encourage them to scratch from the start. After they get to scratching, never feed grains only in deep litter and let them dig it out. Keep the grit, charcoal and shells before them at all times, and about the third day, mix up a dry mash, consisting of equal parts corn meal, bran and middlings, one-tenth part gluten meal and one-tenth part best beef scraps finely sifted. Keep this in shallow boxes before them all the time, if any signs of diarrhoea is discovered, or if you notice at any time any signs of indigestion—get, at the drug store, eight ounces of sulphate of iron, one-half ounce of sulphuric acid. Place the sulphate of iron in one gallon of very hot water and let it remain over night or several hours—then when it is cool, pour in the sulphuric acid and use one teaspoonful of this in every gallon of drinking water and be sure to keep your drinking fountains clean, by washing them well every evening and airing over night. For white diarrhoea this is also good: One teaspoonful of five per cent carbolic acid in ten quarts of fresh water.

Be sure the water is renewed twice daily, and keep fountains clean. But if you follow these directions of feeding, force the chicks to scratch for the chick feed, keep them warm and happy, after each meal, of twenty minutes, see that they go back in their brooder and rest, for the first three days, you will have no occasion to need these remedies—they will grow like weeds. Be sure to have little outside runs for them and when you first let them out, be sure they are able to stand it and that it is a warm sunny day. Spread straw over most of the runs for them to play on, as it keeps their feet warm. Prepare a place to sprout oats and as soon as they are a week old begin to give them sprouted oats. Place it in a wire rack so they will not run over it. They will pick it out of the rack and run with it and this gives good exercise. This is what you must keep constantly in your mind: To give the chicks ways and means of exercising, rustling and digging for their living.

Now it is very hard to convey on paper one-tenth of what is in my mind that I would have you understand in a way that would be plain to you, and I find that my time and space is limited, so I will have to merely give an outline of these things and pass on to some other important points. But before I leave this subject, I want to say: Be sure the chicks you buy are from good laying stock, stock that you know is vigorous, healthy and has never had any diseases, but have been well developed and properly bred and kept. For if they are not, failure will be your experience.

BUYING PULLETS.

The next way to start is to buy pullets about two to four months of age. Be just as careful in doing this as when you buy baby chicks—go to the breeder of whom you are to get your stock, get a history of the stock from which the pullets were bred; know that they are as good layers and have always been healthy and well kept. Be on the job when the pullets are cooped and see that you get good, smooth, healthy pullets of uniform size, type and color and free from lice.

The houses must be in readiness and built as follows: If you own a farm of not less than thirty acres, the colony plan is recommended best for profitable poultry culture; this requires less investments, gives the chickens free and healthy range, and the most fertile eggs. No fences or gates to bother with, and the feeding and watering is a simple problem. It is done by using a horse to a low truck or sled, making a trip every night and morning. The houses are built with one-sided roof, and are about ten by fourteen feet, with rear walls four feet high, open fronts seven feet high. In dry districts no floors are needed, simply use the ground; have the perches about three feet from the ground, but if it becomes damp and creates a dampness inside the house at night, better have a good matched floor one foot from the ground and keep sand and deep litter on the floors all the time; these

houses are built on runners and are moved easily with a team of horses, to any part of the farm. Keep them scattered out about two hundred yards apart all over the place, for best results.

If your space is limited, and you want to raise chickens on an extensive scale you must use the intensive methods, which means many chickens on small space.

Build your houses either on the continuous plan or many small ones close together. The continuous house is about sixteen feet wide and as long as you desire. It is open front, facing away from prevailing winds and storms; in flat land and wet, cold climates, build the floors four or five feet from the ground. The under room can be used to much advantage in warm, dry weather as a cool resting place and in winter it may be closed, but the idea is to keep your floors dry and keep them covered with deep litter for scratching rooms.

The dropping boards are about two feet from the floor, with perches hinged to the rear wall ten inches above the boards. These perches can be raised to give easy cleaning of the boards.

Build a rear and front yard to each house, whether small or long, so they may be kept sown in "greens" for the poultry at all times; while one yard is being pastured off by the chickens, the other may be cultivated and sown to barley, oats or rape and in dry weather can be watered and grown quickly.

Before I leave this part of the business, I want to especially impress upon your minds the importance of cleanliness. If you use the intensive method and do not keep your plant perfectly clean, you will wish you never had heard of the chicken business. While there are many commendable features in the intensive methods, and many great and prosperous yards in operation today under this plan, unless strict sanitary conditions are kept, the whole business will be a failure. It must be kept clean and all contaminated yards and grounds prevented. Contagious diseases must be looked after carefully, and the premises cleaned and sprayed often.

BUYING EGGS.

The third and last way mentioned in this article is to buy eggs and hatch your own chicks.

The same careful method must be used as in the other ways of starting. Be sure to know that the eggs you buy are from good laying stock and that they have always been well kept, hearty and without disease. See that they are turned twice a day and kept in a cool place while being saved up for you, and that they are not more than one week old—the fresher the better. Ask the advice of some experienced poultryman and those who have had experience in hatching chickens as to the best kind of incubators to use. I will not presume to suggest what make to use, but do not be influenced by anyone

that some other machine is cheaper and just as good—be influenced by experienced poultrymen.

Follow the instructions with the machine, as the manufacturer knows his own machine best and is capable of telling you the very best way to run it. I will not advise you along these lines, but I must give you my plans of building an incubator house, as it is very important to have the correct amount of moisture and ventilation in the incubator house. Build the floor of concrete with four inch concrete walls; lay the sills on this wall, build a frame building with eight foot double walls. Good shiplap or matched lumber ceiling all over the inside and a rustic outside, with two by four studding; this allows a four inch space between walls. Now comes the ventilation. *Close attention please.* Make ventilators in the comb of the roof to allow the foul air to pass out; cut holes ten by twenty-four inches in the center of the ceiling, about eight feet apart; cut same sized holes in the inside wall at the top of the sills, midway between those in the ceiling; cut same sized holes in the outside wall directly under the eve and over those inside, arrange the outside holes with shutters so that during severe, cold, stormy winds they may be operated if necessary to prevent too much inlet of cold air. After a short time, the operator will become accustomed to the proper conditions of the inside air of the incubator house so that when he steps into it, he can tell instantly whether it is right or not and can operate these shutters accordingly.

You will readily see the great advantage of this method of ventilation. The fresh air passes into these outside ventilators, down between walls, out into the room, gathers up the foul air and passes it up through the ventilators in the ceiling and out through the comb. Of all the different methods of ventilation for anything of this kind, this beats any I have ever used. Your floor is solid, and there is no jar in the room; the walls are double with cool air space between to prevent the room from getting too warm in hot weather. In other words, the outside temperature effects the inside temperature but little and you can run your machine more satisfactorily.

Now my time and space is about up. I hope you have understood me all the way through—as I said before, I have dealt on rather a large scale but the novice or experienced poultryman who desires to keep only a few dozen or a hundred or so can make use of these plans on a small scale. Instead of building a large incubator room, he can use a small building already on the place; tear out the floor, use the ground instead of concrete, make a shaft running from the top ventilator holt to the lower one. If the walls are single, boards battened on the outside, the air will pass in at the top, down the shaft, out in the room near the floor, and if the building is high enough for a ceiling, cut sufficient holes in it for the foul air to pass out. If it is not high enough and has no ceiling, make a hole in the top of the

roof, any old way, to get the foul air out. Instead of building a large brooder house, make a few single brooders on same plan, say have them three feet square, heated with a lamp; first floor of heavy sheet iron, fitting very closely around the edges to prevent the fumes from coming up among the chicks. Just under this iron, in the center, place a very low lamp, this is, with large flat fount, with low chimney. In one end or side of this lower lamp chamber, make a little door and bore a hole in it to allow the fumes to pass out. The door is used for placing the lamp, which heats up all this iron bottom, giving heat to an upper chamber, two inches high—this is the hot chamber, with some inch holes bored on one side to allow the fresh air to pass in and up through the inverted can as in the other plan. These will accommodate one hundred chicks at first, which may be divided up as they grow older. The houses for laying stock can be built on the same plan with double yards, only on small scales.

In conclusion, I will say, that after I have spent the best part of my life in the poultry business, there is no other vocation as pleasant and profitable, if the same careful judgment and caution is exercised that must be practiced in any other business proposition. Success is only secured by honest, persistent efforts on your part. Be a live-wire—be alert to all the good things to be had on all sides. Be a sticker, stay with it through thick and thin and you will reach the goal in the end.

CHAPTER X

POULTRY DISEASES—THEIR CAUSES AND PREVENTION

By G. E. CONKEY, Cleveland, Ohio.

MY BUSINESS for twenty years has been the treatment of poultry diseases.

I have written a book on the subject, as some of you doubtless know. I am writing now on a special phase of the subject—and the most important part of it. I may be able to tell you some things new to you. But let us hope that most of what I tell you now, *you already know!*

For I am going to show you how most diseases of poultry are *preventable*. I am going to point out the *causes* of 99 per cent of common poultry ailments. If you know the cause of a disorder you should then be able to prevent it. It is a fact that most diseases have *preventable causes*, and especially is this true of those diseases which are hardest to cure.

In the first place, there are two classes of ailments of poultry—diseases of stock and diseases of management.

It is plain to see that certain stock have inherited weaknesses and general lack of stamina or resistance to hardship, accident or disease. Such stock is quite liable to disaster, no matter what the poultryman's equipment or care. On the other hand, certain stock, inheriting great vitality and natural strength and resistance, will easily bear up under conditions far from satisfactory. In other words, weak stock under ideal conditions will probably show less favorably than vigorous stock under poor conditions. You can't maintain a state of health when there is no foundation for it. Of course you can improve the health condition but that is not always worth while, in the lower animals. At the same time the most vigorous natural vitality is lessened if the

G. E. Conkey

fowl is subjected to unnatural hardship and strain. And it is always true, that no matter what the degree of success under poor conditions, it would be vastly better if those conditions were made right. The point I wish to make is this: It is never profitable to put up with poor conditions. Your fowls may survive or even show good progress, but you never get the *most possible profit* in the poultry business, unless you make it your business to see that conditions are right.

The difference between the man who keeps chickens and the business poultryman is this: The real poultryman never rests until he feels sure conditions are right. In other words he is basing his success on the law that nature will follow the line of least resistance. He puts as little as possible resistance in the way of nature. Thus he profits by her most favorable results.

Having settled the question of stock, the poultryman can turn all his attention to management. On management will depend his success in battling with the problem of disease.

Let us have a clear idea to begin with as to all that comes under management. Housing and yarding come under management—and housing and yarding have a vast lot to do with disease. Feeding and watering the stock are the next points in management. Mistakes in feeding, or carelessness as regards purity of the water supply are the beginning of many forms of intestinal and digestive diseases.

However suitable the house and yards, remember houses and yards are unnatural restrictions for poultry, and unless carefully looked after they soon become entirely unfit for further use. This brings us to the large class of ailments which are of germ origin and might really be called diseases of domestication, for they follow on the conditions due to overcrowding and close confinement of stock in a restricted space. Against diseases of domestication, in other words infection, we have but one weapon, and that is *sanitation*—a wholesome and wholesale cleaning up and disinfecting of the poultry quarters, not neglecting a single inch of space. In addition to the germ diseases which seem to follow close domestication there are the serious troubles from parasites, especially from lice and mites. While it is natural that the fowl's body should harbor a few lice, the conditions which make it possible for these lice to develop in such numbers as to be really injurious are entirely unnatural. Lice and mites are just another curse of domestication. The poultryman who benefits by this domestication of fowls, should be willing enough to combat this curse of such domestication. But how often does a man look cheerful when he goes out to fight lice and mites?

Stop a minute and line up here what we have and you will see that preventing disease in poultry depends on

(1) Selecting sound stock—that is, good *individuals* from reliable stock, whatever your breed.

(2) Housing and yarding them in a manner best calculated to promote health.

(3) Feeding wholesomely, and wisely, as to quantity, quality and manner of feeding.

(4) Sanitation—reasonable care and cleanliness in all things relating to the flock

(5) Policing the flock—that is, protecting from marauding parasites, including gape-worms, but principally lice and mites, chiggers, stick-tights, fleas, blue-bugs, etc. Policing also includes vigilance in the matter of disease, detecting sick fowls promptly and isolating them from the flock.

We will go back to the statement that most diseases of poultry are preventable, especially those hardest to cure. Some friend at some stage of your life has undoubtedly advised you that a wee ounce of prevention was worth a whole pound of cure; and perhaps the same friend expressed his opinion that it was *easier* to prevent than to cure. You often hear his statement and I agree with it, and preach it. But I want to say right here that there is nothing about the subject of diseases which is “easy”—either to prevent or to cure.

Of the two, prevention is *easier* than curing—but you can see for yourself that with the above five points to cover, prevention has nothing easy about it—it is a full sized job. It means painstaking care in all details of poultry management. It means hard work and unremitting care for little details, not one day, then skip a day, but day in and day out, seven days in the week, and fifty-two weeks in the year.

While it is true you might neglect some one or more important details in management and still never know any serious trouble with your flock, you are making a dangerous experiment every time you take chances and there is more “luck” than management in the results.

On the other hand, many poultrymen seemingly follow every important detail of management and still have occasional outbreaks of disastrous effect. But in every such case when you get right down and study out the problem, you see that somewhere some serious mistake has been made, unconsciously of course, and the disastrous outbreak of disease in the flock was no more than the *natural* result.

It's results, and not intentions, that count.

For fowls do not get sick and die right off just from contrariness, or to spite their owner, or to prove to the pessimist that there's no money in hens. Disease and death are a natural result, not a freak of nature. Every effect has its cause. It is up to science to find each cause and lay down the rule; and then it's up to you to apply it.

There are men who let their chickens shift for themselves—then wonder why they “don't do well.” Or expose their fowls in shadeless yards in summer, or abandon them to swarming lice, yet talk about their lazy, loafing shiftless hens that don't even pay for their keep. Or, a man may leave chinks or knot-holes in his poultry house and then when roup season comes he gets the natural result. Or he may give himself a vacation in summer and marvel to find in early fall that

the poultry quarters are dirty and damp, just suited for incubating "chickenpox." Or maybe it is another type of man who prides himself on really expert management, who pushes his flock to the limit all winter long and has plenty of eggs to sell—and then attempts to use the same over-worked fowls for breeding stock. Or with the best of intentions he may carry the principle of breeding too far and marvel at the degeneration which is the natural result.

The gist of prevention is right breeding, right feeding, right housing. Disease in any form traces back to neglect of some essentials in management of these points.

Let us take up in turn the most serious poultry diseases and study their *causes*. Every poultryman would include in such a list, Roup, Bronchitis, Cholera, White Diarrhoea, Gapes, Poisoning, including Mould (Aspergillosis), and Limberneck (Ptomaine poisoning), Chickenpox or Sorehead, and that all embracing source of poultry afflictions—Lice.

Roup is about the worst disease of the poultry yard. It may occur any time of the year, but commonly in what is known as roup season, late fall, winter and early spring. It generally begins with a cold,

*Early stage of Roup—*establishes a draught through some over-looked chink or crack or knot-hole. Such a draught will strike most naturally on the fowls at roost. The liability of disease is increased if there are any filth accumulations in the poultry house. A fowl with a cold is in just the right low condition to take infection of any sort. Germs which would be resisted by the natural vitality of the body, find a sickly or out-of-condition fowl just the right favorable host, and it quickly succumbs to disease.

Clearly the right system of housing would prevent over-crowding, especially on the roosts at night; prevent danger from over-heating and impure air for breathing, by insuring perfect ventilation for the poultry house. Ventilation and fresh air do not mean draughts of air.

Fresh air is absolutely necessary for the health of your flock; but draughts of air will absolutely bring trouble sometime or other, according to your particular brand of poultryman's "luck." One reason why so many favor the open front and the curtain front style of house is because they settle this vital problem of ventilation without danger of draught. Clearly the right poultry management would guard against accumulations of filth and disease-germ beds. Filth always means risk of disease.

When a poultryman has roup in his flock and has positively guarded against *causes* given above, the trouble must be traced to direct infection by germs brought into flock either by a new bird, or on the feet of visitors from an infected plant, or less often by means of germ-laden air, or polluted water supply. Do not overlook any possible source of infection. Always quarantine new birds for at least fourteen days to give any infection a chance to develop without risk to the flock.

Another common disease, often mistaken for roup, is bronchitis. With most poultrymen anything in the nature of cold is "roup." Like roup, bronchitis is traced to sudden changes in temperature, but instead of affecting the eyes, nose, etc., the irritation extends to the bronchial tubes. Sometimes the irritation is due to breathing a dust-laden atmosphere or irritation from lime, etc. But usually filthy quarters and bad ventilation cause the inflammation. While bronchitis is distinct from roup and should be differently treated, the *cause* is the same, and the disease is subject to the same rules for prevention.

Cholera presents a different class of diseases; for under this one head are grouped a great variety of digestive disorders, bowel trouble, etc. The real Asiatic cholera is practically unknown in this country and is of course a specific germ disease. Cholera as the poultrymen of this country know it is any form of intestinal irritation, or imperfect digestion, ranging all the way from simple diarrhoea from upset digestion, to enteritis. With the exception of white diarrhoea which is now better understood than formerly, and is classed as an entirely distinct disease, all cholera in chicks or grown fowls is due to some fault in feeding, or to some infection allowed to get into feed. The fault in feeding may be too much animal food or too much green food, or it may be from unfit, that is, spoiled, food. A common cause is feeding sloppy food, and then allowing it to lie around before the flock until soured. Sometime the trouble is with dirty or undisinfected feeding and drinking utensils, or stale and polluted water. Sometimes the infection is direct from filth accumulations, or from droppings from a neglected case of cholera. Of course, no matter what the sickness, prompt isolation of the sick bird from the rest is the only reasonable course—for infection spreads quickly among all classes of domesticated animals. Not only must the carcass of a dead bird be removed, but all droppings must be cleared away and the quarters disinfected thoroughly. In most contagious diseases the body discharges are the principal source of infection.

Right feeding—that is, right selection of foods, right condition as to quality and careful cleaning of feeding utensils—combined with sanitary care, will *prevent* cholera diseases.

White diarrhoea—so long mistaken as a digestive malady of little chicks—is now recognized as a bacillary disease due to direct infection in the body of the chick itself, from infected parent stock; or in the shell from which the chick is hatched. The disease may be spread from the droppings of affected birds. But the common cause is direct infection in the eggs used for hatching. The best prevention is to treat the parent stock. As the principal infection is in the egg, most often on the shell—which takes up the germ while the egg is passing through the diseased cloaca of the hen—one of the most practical means of preventing is to disinfect all eggs used for incubation. For this 95 per cent grain alcohol is usually recommended, but a reliable disinfectant solution can be used as well. Of course the egg trays should be thoroughly scalded and disinfected, and burlap parts in the nursery and elsewhere should be replaced with fresh pieces. A considerable number of proprietary remedies are on the market which claim to prevent the disease in mature stock or in new-hatched chicks. For the most part, these treatments are still in the experimental stage and the poultryman will do well to confine himself to those which are offered on merit, with some positive guarantee attached.

Another common disease of little chicks is gapes. It is one of the very easiest to prevent—and every poultryman knows it is one of the most annoying to cure. As the cause of the disease is a parasite—the gape worm, or rather worms, which are found in attached pairs in the trachea of the little chick—and as this parasitic worm has its origin in the common earth worm, the best thing is for the poultryman to keep little chicks off such ground and away from other chicks which are infected and which are liable to cough up the worms and thus expose other chicks; as of course other chicks greedily pick them up. It is never safe to start a flock on ground that has been used before by gape-infected chicks. If they cannot be given new ground, they will have to be kept on a platform covered with new fresh earth that is known to be safe from infection; and this earth will have to be renewed at intervals to keep it fresh.

Where it is absolutely impossible to remove to new ground, the only thing is to take extra precautions disinfecting, using some powerful and thoroughly reliable disinfectant solution. While it is true that with tonic treatment to restore vitality to the little chick, and drastic treatment to kill the gape-worms in the wind-pipe, you can often save your chicks even though badly infected, gapes is certainly a disease which is easier to prevent in the first place, by a little more care in selecting the run for the flock.

Chickenpox, or sorehead as some poultrymen call it, is claiming more and more attention among chicken men. The scabby warts on comb, lobes and face are often mistaken for accidental injuries, instead

of being recognized as the symptoms of disease. This confusion may account for some neglect of the proper study of chickenpox disease for many years.

In damp, cold weather in the fall, chickenpox is very apt to make its appearance wherever any neglect of the poultry house during the summer has resulted in an accumulation of droppings, and these have become wet. Chickenpox starts with a fungus growth, which multiplies in damp quarters very rapidly. While the disease is not necessarily fatal, it is very contagious and troublesome—and could far better be prevented. Scrupulous care in the matter of cleaning the poultry house in late summer and fall, and special care to keep the quarters dry all the time, and sunned occasionally, will prevent this “smallpox of the chicken yard” from ever making its appearance. Of course along with this must be proper care to keep infected birds from the flock. All strange birds should be duly quarantined, no matter what the reputation and endorsement of their previous poultry yard. Never take anything for granted when handling any one’s else chickens!

*Chickenpox or Sore Head—
Showing scabby warts*

Poisoning is one common cause of trouble in poultry yards. Many strange diseases which are referred to me prove on investigation simple cases of poisoning. Sometimes very strange symptoms are reported in connection with these mysterious cases. But usually the common symptoms are the only ones noted—such as trembling, convulsions, and drowsiness and hiding away in dark places. Usually such cases are discovered too late to make an antidote or emptying the crop effective. But even where the poultryman knows exactly what antidote to use, or has it on hand ready for the emergency, how much better to avoid all danger in the first place by preventing the distribution of poisonous substances in places where the flock can get at it?

Many householders and poultry men are quite careless in the matter of using insect killers, or throw out such substances as salt meat, salt brine, lye, etc., in places where the chickens are liable to suffer the consequences. One very common source of poisoning in fowls is old paint, fertilizer mixtures, etc., etc., left in unseemly places. Many fowls meet death every season from such easily preventable causes. One often “doesn’t think”—until too late! Mould, or Aspergillōsis as it is scientifically termed, is really poisoning from mouldy hay or scratching material, inhaled by the fowl—or more often from mouldy

food which is eaten. Some unthinking people even throw out such unfit material as mouldy spoiled vegetables, or musty, burned wheat, with the expectations that their chickens will "get the good of it." Now mould is one of the diseases which can't be successfully treated. Here is a case where you must prevent in the first place or take your loss if it comes.

Limberneck is really poisoning. Limberneck is the peculiar symptom which follows ptomaine poisoning. Any rotten, putrid animal matter fed to chickens, or to which they find access accidentally, is more than likely to poison them. Some poultrymen think "limberneck" is a "contagious" disease. It isn't contagious—one bird can't get it from another. But they all get it from the same cause—for what one fowl gains access to the whole flock feast on—and thus the whole flock usually comes down with limberneck. While limberneck is easily treated by antidote, how much easier to prevent all danger in the first place. A little more care in feeding only

Limber Neck—Paralysis due to ptomaine poisoning

wholesome meats and fish; and special care in seeing that the premises are kept free from dead fowls, dead rats or carcasses of any sort, would make fewer hurry calls at the druggists. Burning and deep burying of all dead animals or putrid animal matter, is always the safest way.

While we could go on in this fashion and name practically every known poultry disease, the above should cover the most important ailments, and certainly cover all causes—

Except for LICE, the one great cause which explains so many diseases, so many setbacks, so many poor egg records, so much of the poultryman's loss.

It is hardly too much to say that lice make more trouble and loss for poultrymen than all other causes combined.

In fact, my first advice to the amateur poultrykeeper is to look for lice.

If you don't find them, then look again.

If a fowl is not doing well, or is in any respect below standard the chances are largely that the whole cause of trouble is parasites—collectively speaking—lice. If this little talk to poultrykeepers could

serve to impress this one fact more firmly, it will be time and effort excellently well spent.

The time to look for lice is all the time, but chiefly in warm weather. If neglected at this time, that is if allowed to breed unmolested, they increase so rapidly that within a few short weeks they will own most of the shares in your poultry plant and take practically all the profits. It is absurd to tolerate such a partnership.

When you go into the poultry business, go into business with the poultry and not with the lice which are liable to infest them. It is necessary to realize in the first place that lice and poultry go together. But on the other hand, lice and profits never go together. You take care of the lice question—and in nine times out of ten your poultry will take care of your profits. That's the best advice I can give any one on the subject of success with poultry.

I can imagine now the expression of Mrs. Jones or Mrs. Smith or any other careful housekeeper who also "keeps chickens." She is so sure her fowls don't have any lice. But I know that lice are natural to fowls. Unless they have just been treated for lice, I could take up almost anybody's bird at random, hold it up by the feet, ruffle the feathers, and then sift lice powder into the plumage, shaking it well down to the skin, stand the fowl on a sheet of paper, and after a shake or two down would come a shower of lice on the paper—dead lice, if the powder is what it should be—and I never would use any powder which will not stand such a test. Lice are easily scared or stunned, but not so easily killed. And the dead louse is the only kind you can safely have around your premises. Insist on a lice powder that kills lice, not merely stuns them or scares them, or you will have your work to do all over again. Mrs. Jones and Mrs. Smith, won't you please try this experiment?

And here is a job for Mr. Jones or Mr. Smith. There is a certain kind of louse which lives in the poultry house and only attacks the fowls by night. This is the "mite." The mite has all the habits of a certain other well-known pest—the horror of all good housewives, and they certainly know how to make war on these fellows and keep them absolutely out of their well-kept houses. The mite of the poultry house is own cousin to this villian, the bedbug—is in fact a sort of poultry bedbug, hiding in cracks and walls or on roosts by day, and only coming out at night to swarm over the helpless birds as they roost. The lice found on the bodies of fowls irritate and sap the energies of the bird; but the lice or "mites" of the poultry house actually suck blood, thus sap the vitality of the fowls as they roost, as well as destroying their rest. Now, Mrs. Smith or Mrs. Jones can do this job, but it's a heavy one, so I would offer it first to Mr. Poultrykeeper—the job of making war on mites.

For war it is. When you get after mites in the poultry house you must get after them right. Get into old clothes, clean up, remove all

droppings and accumulations. Then, with a good disinfectant or lice liquid go over the whole place. Spray the walls, make sure to get into every crack and corner. Use it extra strong on roosts, on dropping board and in nests. If the interior of the house has not been white-washed in some time it will be necessary to apply this. You know the rule is white-wash once a year at least—and twice a year is best. Your aim is to destroy the pest at its source. You cannot treat mites on the bodies of your fowls, you must get after them in the breeding places in cracks and corners where they hide by day. Only a liquid or fumes will do this. Fumes are more dangerous and less handy to use, so that we always advise using a good lice liquid for this work.

If you are in a section where fleas, chiggers, blue-bugs, etc., cause trouble, remember that hot whitewash will give you a fresh start; and then constant vigilance with strong disinfectant and lice liquid will keep things right. Remember that sunlight is always a big help against parasites such as these, as well as a general disinfectant and preventive of germ disease.

There is a certain kind of louse that established itself on the head of the older fowls but leaves them to attack the chicks soon as the chicks are hatched. This is the long-bodied head-louse—one of the biggest sources of loss of little chicks. These lice fasten themselves on the head or neck, sometimes under the wing of the chick, but usually on the neck, at the base of the skull. They suck the blood, sometimes even penetrate the skull into the brain of the little chick. Two or three of these lice can easily kill a chick or stunt its growth entirely. When a little chick droops always look for these lice. In the case of head-lice only individual treatment will answer. This treatment must be in the form of a head-louse ointment, for powders and such like substances will not reach them.

Thus you see there are three different kinds of lice. You must tackle all three. No one method of treatment or of prevention will answer. There are three kinds, remember, and your poultry management must cover all three.

The best rule is to get after them early in the season—never let them get a good start. Keep ahead of the game. "Keep ahead of the game." That's the best rule always, whether applied to the subject of lice or disease. Never let trouble get a serious start.

Study causes, then practice prevention, in all your poultry management. It's prevention that counts.

Study the needs of your particular flock and the purpose of your particular plant. Find out and then follow the best system of poultry management for that individual flock and purpose and you will have settled practically nine-tenths of all trouble with poultry diseases.

When poultrymen write direct to me (as I invite you to do, if you wish to) regarding poultry troubles, there is one word they use very often, and it's a word I don't like to admit into any serious talk on

poultry. That word they use is "luck." When I run into this word in a poultryman's letter, I substitute another word, which I consider is better. This word is *management*. Thus, when a poultryman writes me "I had such bad luck this season," I read it "I had such bad management this season" and study the case from this viewpoint. Or if he writes "I'm getting along fine this time—never had such good luck before!" I write straight off and congratulate him on his good *management*.

I don't believe in poultrymen's "luck." I certainly know there's no "luck" about poultry diseases—it's good or bad *management* that determines a given result.

CHAPTER XI

SANITARY WATER FOUNTAINS

By D. H. GRAY, Armona, California, Breeder of S. C. White Leghorns

ONE of the perplexing problems in poultry culture is furnishing the fowls at all times with clean, cool water, and as the scientist gives us the information that the egg is composed of about 73 per cent water, it can be seen that the hen should not be allowed to go thirsty.

There are some who water their poultry by the means of a bucket and hard labor, in fact I adopted this plan at first myself, but after one summer's experience I found that it kept one man going almost constantly carrying water to keep the hens supplied. It is next to impossible to keep up a steady egg yield and follow the method of carrying water to the hens, especially when one has several hundred or several thousand.

It is very convenient to have a brook or ditch running through the yards, but we are told by those that have had experience that this is a dangerous method, for disease is easily spread by this means.

The next idea that would present itself would be to have water piped to each yard, and there be turned on by the man who cares for the hens. But this method has its drawbacks as when one is depending upon hired help to do that part of the work, it will often occur that the man will neglect to turn on the faucet. If these faucets are allowed to drip as is sometimes done, there will not be enough water, and then again there will be too much, so that puddles are formed, and the hens are allowed to contract disease.

So, after thinking over the different ways and means, which one might follow, I decided to make use of the float-valve, like those used for watering livestock, only of smaller dimensions. In the place of galvanized iron or tin, I made concrete troughs at a very little expense.

The water is first run in a barrel from the tower tank, as the direct pressure from the tank on the valve does not work as satisfactory as when taken from the barrel. The water is then piped to the yards, one trough supplying two yards by being placed half on each side of the fence that divides the pens.

It will be seen by the drawing that the concrete trough is placed about eighteen inches above the ground on a platform two feet wide and three feet long, so that the fowls cannot scratch litter into the water, and still not too high for them to hop on the platform to drink.

The platform also serves to keep the ground dry, under the trough, and thus aid sanitation.

The trough is four and one-half inches deep, two feet long, and ten inches wide, inside measurement. It is made by making the outside form of one by four lumber, inside measurement being twelve by twenty-six inches. As can be seen by sketch No. 2, inside of this frame is placed a strip of galvanized iron five inches wide, and about five feet six inches long. This is put around inside of the square wood frame to make the corners rounding. Inside of this is placed the inside form of the trough so that it is bottomsides up. This form should be made of galvanized iron, and in such a manner that there are no corners, and when put inside of the band of iron the bottom should be about one-half inch below the top of this band of galvanized iron, thus making the bottom of the trough about a half inch thick. It is a good plan to put over the curved form some wire netting, and thus reinforce the trough, of course this wire does not want to be made to appear on the surface of the trough but be kept covered by the cement.

The edge of this cup-shaped form is so made that the edge of it is

about one inch from the band strip of galvanized iron, and in arranging the form in this way the top of the trough has an edge one inch thick all around.

As soon as everything is put in place preparatory to pouring in the cement, all parts of the galvanized iron that are to be exposed to the cement should be thoroughly greased with any kind of machine or other oil, for if this is not done the cement will stick to the iron and it will be almost impossible to take the form away from the trough.

When all is in readiness a mixture of one part cement to one part sand and enough water to mix well should be poured into the form and be allowed to set one day or until the cement is rather hard, when all parts of the form should be taken off, and the inside of the trough finished with a mixture of pure cement and water, being rubbed down by hand or a smooth block, so that the inside surface is perfectly smooth. When the trough is thoroughly dry, after a day or two, it may be put upon the platform as shown in sketch No. 1, and water piped to it through a three-fourths-inch main pipe, reduced down to a half-inch to which the float valve is screwed. It can be seen in the drawing that instead of a common ball for the float as is used on larger troughs, a square float is made of light weight galvanized iron, one inch thick, three inches wide, and six inches long. This float is soldered to the rod that controls the valve, and it being flat will give plenty of room for the water control.

It will be seen that above the trough are suspended two pieces of light weight galvanized iron, one foot wide and three feet long. A hinge is formed by fastening them to a strand of the fence above. There are also two wire hooks that are fastened to a strand still further up on the fence, that hook under the outer edge of the strips of iron to keep them spread out over the trough, forming a roof, thus affording a shade for the water. In the winter time these strips of iron are released from the hooks and are allowed to hang, and in this manner keeps the water at the proper temperature.

It will also be noted that there is a wire hook fastened to the platform, that hooks over the pipe to keep the valve down so that the float can properly control the valve.

It might be asked why the troughs are not made of galvanized iron or some other metal. The answer to this would be that it is some times necessary to put permanganate or other chemicals in the water as a tonic for the fowls, and most of these chemicals act on the galvanized iron to weaken the solution and eventually destroy the metal. Another reason is that the cement keeps the water much cooler than would the metal.

It is the duty of the poultryman each morning to clean out the troughs by releasing the hook that holds down the valve, and raising the valve and float out of the trough and with a small whisk-broom sweep out all of the water and thoroughly scrub the trough, which is

easily cleaned, there being no corners, and the inside surface being smooth. Every week, or as often as is necessary, the troughs are scalded out with boiling water. After the cleaning, the valve is again hooked in place and fresh water fills the trough to the proper level.

I have used this system for two years with fifteen fountains in use, supplying thirty pens, and find it to be very satisfactory, as I have not had one case of contagious disease among my fowls. It is a good plan to run water under pressure through all of the pipes, before laying it, so that all of the scale and other particles may be washed out of the pipe. If this is done there will be nothing to get under the seat of the valves, and thus cause them to afterward leak.

CHAPTER XII

ADVERTISING AND POULTRY SELLING

By AMOS BURHANS, Waterville, Minnesota

ADVERTISING is any form of publicity that places the name of a man and his work before the people. Most advertising is constructive. Advertising can be destructive. The latter is grown from the seed the breeder germinates in the mind of the buyer who is not well pleased with his purchase. When you buy your first pen of good birds and let the neighbors know you are championing them, your advertising commences. It never ceases until the fatigue of memory overtakes those who have heard of your birds and yourself. This is the reason that advertisers of years ago are getting replies today for stock they are not now breeding.

Continuous advertising is the basic principle of publicity. Even if your ads. read poorly, are too small, badly displayed, continuous advertising is going to do its work. It will not do its work so well as if the ads. are changed often to make them seasonable, and the matter properly worded to attract, but nevertheless it will pull. Just the same idea is incorporated in the saying, "I can tell a man's breeding methods by his ads.," as is contained in the old saw, "Show me a man's shipping coops and I'll tell you what his flock looks like." To prove that one is alive he must keep doing live things.

Very few breeders of more than a year's experience are not acquainted with poultry journals. There are a few breeds of pure-bred stuff that one reaches only through the farm papers but their number is small compared to the army of readers who go to the poultry press for the information they want about rearing and buying. The poultry press is the one great medium through which the seller and the buyer are brought into touch. Every fancier who is reaching out for more business should persistently use the poultry journals if he expects to develop trade that will make his business grow. He should be an ardent supporter of the journals in his own states and determine by their returns on the investment he makes with them just how much space he can profitably use. But he should remember that in some instances it has been known to be profitable to increase advertising to get better results and in others to cut down the space in order to make the investment bear paying returns. One must judge from the liveness of a journal—its contents, number of breeders represented, the interest patrons take in it, its editorial matter, and general makeup—all these and more, must be considered before a perfect judgment

can be formed of its value to the breeder. There may be something wrong with the advertising, the way it tries to make an appeal, its wording, its note of warmth or aloofness, that delays returns. The principles are soon learned in the advertising game but the little details that go to make up the finer points come only after serious study and experience.

Farm journals are best used to sell incubator eggs and the cheaper grade of stock, though of late years the best poultry journals have so steadily persued large circulations that their own readers have afforded a market for the same class of birds the buyers of farm journals demand. In using farm journals it is best to give prices of birds offered in the ads. These journals are the basis on which the forty variety man banks his advertising. He sells cheaply, ordinary stuff fills the bill in a good many instances and he knows that when he gets a reply from a reader of a farm journal that they have a plot of ground to rear chickens on and are really interested in starting. The big variety breeder once gets a good farm journal name on his card index and he never lets it get off without knowing that the intending buyer has purchased elsewhere or else changed his mind, so persistent is the follow-up. Even then, the name is kept for a folder or small bit of advertising to be sent him later. Sales come from most unusual sources and it is the business of every breeder to cultivate the unlikely as well as likely spots that he may some day do business with the man he is reaching.

Daily papers, country estate journals, classified advertising in the magazines, these have all been used by poultrymen with varying success. The breeder must determine for himself their availability.

Most breeders use a different box number in their address to know where the inquiry comes from. Some of them have changed initial in their name. They want to "key" their advertising and positively know where the business is coming from.

It is a good idea to put this key on each card in the index so that at the end of the season the casting up of accounts with the journals and advertising mediums can be rightly computed.

One means of keeping before the reading public that is adopted by the live-wire breeder is making notes of his work and building them up into articles for the poultry journals and club catalogues. There can be nothing of an advertising nature in the articles yet if there is meat and food for thought in them they constitute a well-written advertisement. Editors are always glad to get little hints about your solving of daily poultry yard problems as well as the longer material. A well-written and exhaustive article in your club catalogue, the topic one worth serious effort, will do much to place a breeder at the head of his line. I know a breeder of Buff Wyandottes who has practically built up his business on the strong articles he had published in the club catalogues and journals, each one of them devoted solely to buff color breeding.

The idea is to make one's name synonymous with the breed or variety and to so keep before the buying public that mention of the breed will recall to mind the name or names behind it. When you think of Barred Rocks certain names spring to mind involuntarily. They have advertised themselves to that point where even the man who does not breed Rocks recalls their names when the breed is spoken of. The race is to the swift, strongly alive breeder who keeps before the people all the time.

Advertising by means of coop banners in shows draws interested persons who want interviews with the breeder if they are not blatantly flaunted. Banners giving the idea that stock and eggs are so high in price that the average breeder or beginner could not afford to buy of you will do you little good. Two instances: Smaller exhibitors did a lot of business at one of the great southern fairs after it was noised about that a certain man in the class sold a breeding pen for a cool thousand. There will always be timid buyers. Another breeder who had won largely year after year at one of the big northern shows went out and bought a banner that blew this fact into the ears of visitors. His neighbor sold the most dollars worth of stuff at the show because he was modest and pleasing in personal contact and did not flaunt any high figures. As a rule high figures on winners are bad advertising.

In getting advertising at the shows go in to win first. Buyers like to do their buying of a winner. Buy a bird or two to strengthen your line-up if necessary. This is just what you can eventually expect others to do of you when they need strength in their exhibits. Show records are a basis for advertising. They will continue so until the system changes radically from its present one. One of the best Red breeders in America shows his birds at all the large and small shows he can get the time to make displays at. It is through constant showing that you perfect yourself in the art of training show birds and fitting them. Remember, one cannot tell in what quarter business will be found. A certain large eastern breeder made a small but select display at a western show a few years ago and told me he sold more stuff at it than any other exhibition he had ever attended. There was a large idea in the novelty. A breeder who is known state wide could do the same thing by going to the best county show in his state and repeating the trick.

The cash advertising appropriation should be made with a view to getting rid of the probable season's product. If you have reared five hundred birds and expect to sell four hundred of them as well as the old breeding stock you can plan on having to invest at least fifty cents per bird in advertising if you are known only locally. I have been pleased to spend one dollar each to sell three hundred head. This included advertising, stamps, printing, catalogues, circulars, and all the little things except showing. One will have to make about a hundred sales to sell this number. The higher priced birds bear the least

expense each in the selling plan. This is especially true after you have made one good class through winning.

If I were going to start with a new breed or variety today I would put fifty dollars in getting out five hundred nine by twelve eight-page catalogues, the paper to be hundred and twenty pound super-calandered stock. I would put cuts and matter in it that would make it kept by all who saw it. Then I would invest a hundred dollars in placing it in as many hands as I could by connecting with them through the journals. I might put another fifty with it to get the first edition out. If two-thirds of them went out before the egg season, they would make enough business to warrant a rather nice egg list with a record of the matings and this I would put out with a catalogue to all the eggs-for-hatching inquiries. The list of stock inquirers should be gone over also with the egg list mailed to each of them. This is assuming that I started in the spring with sufficient breeders to give me about a hundred birds in the fall.

My first space would be small. I should let folks know that I was breeding stock of my hobby before I had anything to sell. I know the labor of building up a trade and am speaking now from experience. Early in the fall I should increase this space, beginning first display advertising in my state poultry journals with probably a card in one of the larger journals of national importance. The rate card of every journal should be in my files. I would want to know about every journal that showed signs of being alive. I should study the advertising of all the leading breeders and their literature. It would all help me to climb the ladder of breeding and selling success.

If I happened to be successful in making some winnings the first time out with my stock I should build upon them in my advertising. The mere fact that John Jones or Sam Smith has a flock of such-and-such and has made certain winnings, does not make a good ad. If I was strong in certain particulars, I would let folks know it. If my flock was founded exceptionally well, they should know that. I would mention in detail what I had for sale, sexes, ages, its ripening time, prices for certain quality breeding stock, and other little essentials. I would word my ad. differently as possible from competition, give big value for the money and never let up on hammering into the public that I was a comer. !

A firm that made a big season's sales told me once that their sending to all breeders a series of plate-paper proofs of sketches of their winners had a great deal to do with that year's business. The idea was that fanciers who got them would place them on the walls of their homes because of the beauty of the prints, and the firm name could not be erased easily from the memory of the recipients.

Another firm that is going big puts its faith into a big catalogue. They have the stock to back it up. They adhere to facts in show records, dates and exact winnings and places. New territory is reached by showing in new places, increasing the mailing list, bringing out new

ideas and going just a little further in certain forms of unique advertising than competitors. One breeder got started first by having a small incubator maker insert his advertisement in the incubator catalogue. Incubator catalogues get into a lot of territory that the average breeder overlooks. A certain firm, now out of business, made a business of trying to get new advertisers to place advertising with them. The firm declared it would put out thirty or fifty thousand circulars and said they had room to get a breeder's advertising thereon as they could not fill the space. The inducements were many and the thing looked good, but they never issued the circulars. Know the firm. Many of them will carry no advertising other than their own.

After-season sales can generally be best planned and made to pay by running through the card index and offering to delinquent inquirers certain stock that has not moved fast, at reduced prices. The earlier you cut the price of eggs-for-hatching in two after the spring rush the greater will the business be. In working for advance orders it is well to make a price inducement, shipping time inducement for eggs, or give extra quality when possible. The addition of an extra female or male in a fair-sized order has often brought in the order that hung fire. The thing is to keep in touch with the buyer. Get him to write as often as he will, asking the questions he cares to and which places him under obligations. Be persistent. Hammer all the time. Think out new wrinkles for each different customer who has an order worth getting.

Some of the don'ts I **might** mention for ad. writers would choke you with mirth, yet I have taken a list of them from advertisements, each one picked out at the time it was seen because of its curiousness. Here is a line from a full page advertisement that leaves the reader of it further from the advertiser than before he read it: "Don't fail to read my catalogue containing matter on undertakings that no other breeder has ever written." If there is a single obscure idea or thought in an advertisement that one thing kills it. It is so in the case I cite. Be simple, lucid and trite in wording the advertisement. Have a certain position in the journal and stay there year after year. This gives a business that permanent note so essential to growth. There is a breeder on the rear outside cover of most of the big journals who changes his advertisement every month. His advertisements are turned to regularly by the breeders of that variety just for the sake of comparing what he has to say this issue with what he said the month previous. He is a live advertiser.

Nearly every breeder at a show is asked to increase his advertising space in the journals or else begin advertising with each of those which have representatives on the floor of the show room. The advertising solicitor is generally a bit prejudiced in favor of his journal. But he is also full of advertising ideas that can be used to advantage. The wise breeder learns all he can from the solicitor about the use and display of space, the way others are getting business, and what is

going on in the field. There is nothing conducive to more business than pleasant personal relations with the advertising solicitor and field man. Many times he is in shape to sell a bit of stock for you or do you a turn that will head business your way. If you have the goods and show him over your plant he is the best advertisement in the world.

The advertising contract is merely a memorandum of the amount of space you will agree to use and the terms under which you buy it. It can generally be terminated at the space buyer's request. In fact, I never heard of more than one that was not. The publisher knows that he must have amicable personal relations with the advertiser if he is to be steadily patronized by him. Use all the space that you can afford. One never uses too much. Follow up the advertising in a journal with mentions of your new advertising matter and cuts of stock as often as you can consistently ask for their running. I know of nothing better to boost for business than cuts.

LETTER WRITING, CATALOGUE BUILDING, AND ILLUSTRATIONS.

The letter of the breeder to the buyer reveals to the latter the very personality of the man he is dealing with. The impressions a letter makes on its recipient are hard to efface, whether they be good or bad. The mail order businesses depend wholly on letter writing in some of its forms to bolster up the business, tear it down or make it grow. It may not matter how successful a breeder is in the show room or exhibition hall, nor how attractive he may make prices, if he cannot write a warm, feeling, personal letter, attractively setting forth the merits of his stock, he will not stay in the business long. The appealing business letter is honest in its sincerity, right to the point, neat, accurate, not skimpy, unbragging, personal in a friendly acquaintance that does not cross the line of familiarity, and couched in simple grammar.

There was a breeder in the east, a producer of very good birds. He wrote a voluminous letter yet throughout the whole page or pages of it there was not a warm note. Chilliness prevailed and his mercenary character stood out conspicuously. It is needless to say he is now out of business. Another acquaintance writes a letter that does not convince even himself and yet he has never thought how his wording or getting up of a letter for his prospects would affect him if it came from some one who was trying to sell him a bird. The letter that appeals to you has a certain quality in it that goes to the human nature spot and commands attention. No matter how good birds you may have if you cannot convince a reader of your letter that they are as good as you believe them you cannot make the sale. When I first began poultry selling I kept the phrases of appeal that touched me. These I clipped out of each letter and reread often. Common place phrases such as: "Yours received of recent date"; "Your letter to

hand"; I am in receipt of yours of the, etc." These phrases are good ones to avoid. The last one always seemed to me to be condescending to open what you may have written to the party who answered that way. Broad generalities are also bad. If you are making the sale of a single bird, go into detail about that bird. Give the head points, shape of neck, back, tail, breast and color—detail is what the buyer wants to know. If the bird is worth the money he will stand it. If there are more than a pair or trio in the shipment, even a breeding pen, describe each bird carefully. You may know they are right and worth the money and more, but if you do not tell what you know about them to the reader of your letter how is he to know?

Honesty, clarity, perfect description, simple terms, technical phrases (such as hackle, cape, throat, all being sections of the neck and indicative of a particular section of the neck), friendliness interest in the customer, promptness, short sentences, spelling and neatness—these are the foundations for the successful poultryman's letter. When you get a quick reply with an order you may know that you have told the inquirer something that he particularly wanted to know about the bird before he bought. The more detail you get into the letter the quicker your correspondence is terminated and the time given to other prospects.

Short sentences are generally clearest to the letter reader. They impart vim to the letter. If you cannot master a typewriter yourself, do as one breeder I know: Turn the machine over to a young member of the family and dictate the reply. With a little practice this is easily handled. Get the letter out on a neat piece of stationery and if you have a particularly good half-tone which you can get an artist to work into a design for a letterhead this will greatly add to the letter's appeal. A design will not cost much. I have known one of the best artists to get out neat drawings for letters for five dollars. And it is the attention to these little details that bring business. The name of the farm, strain of birds, or your own name can be worked into the design and the plate is good for a lifetime to have more matter printed from it.

Ruled paper is good for letters written in longhand. Unruled for typewriters is best. Have it of good quality and without a gloss finish. Neat large or small envelopes to match give the letter a tasty appearance. Novelties in the guise of letters are not business letters. They detract the attention from the contents.

If your expected reply does not turn up within a fair length of time a short follow-up letter, asking if you have overlooked anything the buyer would like to know, is in order. Get out your carbon to his inquiry and see if there is something you have forgotten to mention as the buyer may think you have purposely done this. Do not make the follower too long. Better have it short and timely.

Form letters are the best used when you are replying courteously to a general inquiry. They can be written on the machine at spare

moments and having the appearance of genuine dictated letters are kept. In them it is well to ask if there is something specially wanted, stating that you are in exceptionally good shape to fill the orders for, and inviting questions. It makes the recipient feel that you have not slammed a catalogue or mating list or circular into an envelope and begrudgingly mailed it to him.

Circulars are generally six by nine, four or eight page affairs or catalogettes. They are unpretentious, should be gotten out on good paper stock, be well printed, and contain a rather shorter account of your flock and strain and its history than a catalogue. Circulars are abbreviated catalogues. The generalities of catalogue building can be applied to them.

A general flock catalogue should be used to give the inquirer who knocks at your door an idea of what you can supply him. It should be a history of your strain of birds, contain all of your winnings, and give in detail answers to all the questions which you will glean from the letters that come to you asking for information. Keep a list of the questions, making notes of them as they are taken from your inquiries and answer them in the reading matter of your catalogue. It is a good idea to make the catalogue a sort of book on the breeding and care of your hobbies. For a number of seasons before I issued a catalogue I read all those and preserved them that impressed me as worthy. I had some ideas of my own that I was working out in the breeding and rearing of my birds and jotted these down on slips of paper which I placed on what I called my catalogue hook—where all the ideas worth using in that brochure might be had when wanted. One will gather good notes or schemes or phrases for wording certain parts of his catalogue and mating lists from many sources. These should be treasured until they are wanted. Ideas do not come flooding to a man's brain when he is drawing on it seriously for immediate purposes. Thought tickles ideas from the gray matter, so the scientists tell us.

In laying out a catalogue decide on the number of pages you want to use. They should be in multiples of four. A twelve, sixteen or twenty page catalogue with cover is generally a good starter. Twelve pages of body and four of cover give sixteen pages that may be used to display the merits of the stock. Ask a half dozen different printers who make a specialty of poultry printing to give you dummies or blank catalogues of the size wanted, and their prices for printing. You should use eight or ten point type for the body of the matter you will write to go in it. One interview with a printer who has done catalogue work will make you fairly well acquainted with size of type, paper values and a host of details. If you are in a city a few visits of this kind at the smaller shops will put you in shape to talk to the bigger ones or write an intelligent letter about what sort of work you want done.

I think that a nine by twelve inch page is the nicest catalogue size, affording big display for extra fine cuts and making a nice type page

when run two columns to the page. If you have decided on size—and remember that a catalogue of the size I mention cuts with less waste and costs less in proportion than another size—bind your body of twelve or eight or sixteen pages together (common letterheads of this size will do for your first dummy) and put outside a cover of manila. Firmly fasten the cover to the body. Number the pages. On the outside front cover should be the title. Give it the name of your farm, strain, self or other display that you have decided upon. Remember you are advertising birds rather than yourself. The address, farm name, strain, and a modest cut are about all that is necessary. Inside the front cover place the information most buyers want to know in short, snappy sentences. Give the express offices you can ship by, when and how you like visitors to your flock and plant, whether you prepay charges on stock or eggs, the weight of single settings, doubles, fifties and hundred lots, the weight of single birds cooped, pairs, trios, pens, how you ship, feed and water, some of your best testimonials and other items that have suggested themselves to you.

Page one can be used in introducing yourself and birds to those who may not have heard of your show record, the utility value of your flock and its history of founding and steady climb into the limelight. At the top of this page it might be a nice thing to have a cut of your general poultry farm and residence premises. This cultivates personal feeling, or friendship, especially if the farm is attractive.

The next few pages can be best used to give the illustrations of your winning birds and their breeding, what crosses of blood have given you best results, testimonials and your breeding and rearing plans. The more information that you can crowd into your catalogue about successful breeding and rearing, the longer will that printed matter be retained and reread. Looking through the best catalogues that come to you will give you the ideas. They will stimulate others. If you are pedigree breeding the details of your work will interest buyers. Should you breed more than one variety better keep the page or pages devoted to each free from matter of any other breed.

Your method of packing eggs for shipment, how well they have arrived at their destination and hatched, with names and dates, gives a wonderful strength to the egg trade. The success of your patrons in the show room and what they have produced from matings you may have sent them is also good material. Generally this can be had by keeping in close touch with your clientele. Most of them will not object to its use, though it is best to ask them if you may use their testimonials.

As you grow more and more into the advertising and publicity work of the poultry breeding and selling business you will see the advantages of a summer sale list to get rid of the breeding stock. It is not profitable to carry them over when you have an extra good lot coming on.

Mating lists can be gotten up each spring and placed inside your catalogues for the egg season. Refer to your card index and see if you have mailed a catalogue to the inquiring party before wasting one by covering the same field twice. If he has been sent a catalogue let the mating list with your additional winnings of the winter, if they are not in the catalogue, go to the inquirer in a small envelope. The mating list should give an accurate description of all the females in your breeding pens as well as the males. The higher priced eggs you expect to sell, the more will the buyer want to know about them. Anything specially attractive should be dwelt upon.

Stock catalogues are best issued in the fall. I would send a new catalogue of my general flock and farm and business methods to all the inquirers who had asked for the previous one, though it is not wise to send more than two catalogues and two mating lists to an inquirer who has not patronized you. I have always noted, however, that as soon as a new catalogue got into the hands of readers business picked up splendidly. A correct method of keeping up the card index will tell you where to place the new catalogue. Dwell on a new catalogue in your advertising just as soon as issued. The buying of printing will teach you that three thousand catalogues can be bought for nearly the price of two thousand. If you are exhibiting at a state fair and work persistently to pick out the interested people you can give away from two to three hundred which will bear fruit. Keep their names and addresses and index them, making note that they have had a catalogue. Other things being right, you will be surprised to note the business these will later bring into the office. Generally speaking the specialists who do poultry printing will do you better work for the money than general printers. Get them to bid on the work.

The more good photos and line drawings or retouched photos you can afford the better for your advertising. The up-to-the-hour fancier has a camera which permits him to work on the ground glass, to make pictures of his birds when they are in their prime. There is a man in Iowa who built up a five thousand dollar framed business on the strength of his photos. The history of poultry selling began to expand when good illustrations entered the poultry journals and leading breeders' catalogues. One catchy photo will often lead to many sales.

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