



WITH THE POULTRYMAN

A CHAPTER ON USING INCUBATORS

It is entirely unnecessary to argue with our readers that incubators possess great advantages over the natural method of hatching young fowls of every kind, for that question has been settled in the affirmative for a good many years, among those who are progressive and up-to-date poultrymen.

A great deal of serious study has been given to the matter of incubation during the last few years, and a distinct advance has been made in methods, because of the better understanding of what is really required to produce a good hatch.

Among the things we have learned is that it is not always a good hatch which brings out of the shell a large percentage of chicks. Hatching chicks depends on what Professor Rice terms hatchability in the eggs. Eggs may be in condition to hatch and the incubator may bring out a goodly number of chicks, only to be followed by a dwindling away that is very discouraging to the ambitious poultryman who seeks to do good work.

Eggs may be fertile without containing a germ with enough vitality to produce a chick which will come out of the shell, or one that will come out, but without vital power to continue to live. How much should be credited to the lack of vitality in the eggs, and how much to the incubator is a hard matter to determine.

There is considerable difference in the value of chickens when they first come from an incubator. One who has given the matter any considerable thought will be able to select the good chickens from the poor ones without much difficulty. The chick that is round and plump when first hatched, is much more valuable as a commercial risk than the one which has a dried-up appearance which is recognized after a little study along this line.

What causes this difference is one thing on which incubator makers have not yet agreed upon. Just now there is a conflict between the moisture and no-moisture incubator makers, which is very interesting.

While incubator makers are differing as to the necessity of supplied moisture in incubators, the experiment stations are remarkably unanimous in declaring that incubators which are supplied with moisture during the period of incubation produce chicks which have stronger vital powers than those which are hatched without the addition of moisture.

In Utah, Dryden, after many tests, decided that supplied moisture was necessary; in Canada, Graham came to the same conclusion, and in West Virginia, Atwood found that chicks which were hatched where moisture was supplied were much more likely to live than those hatched without moisture.

So far it is not quite clear whether the way the moisture is supplied makes any difference. One prominent incubator maker, who has spent much time in experimentation, has decided that a tray filled with wet sand, produces the kind of moisture needed. Another directs that the eggs be covered with a damp cloth at certain times, and others advise the use of pans containing water, for various periods from the whole time of the hatch, down to a few days.

The thing which puzzles the writer is the fact that he has hatched chicks which lived and thrived in most of the standard incubators of the last twenty years. We have used moisture incubators and non-moisture incubators. We have put in moisture from the beginning and for almost every period short of this time. The last two hatches were made with two totally different incubators. One was a hot-air machine, to which moisture was added on the fourteenth day, and the other was a hot-water machine, to which no moisture was added. The last machine did not even have a bottom to the egg chamber. The hatches in these two machines were almost identical in percentage of fertile eggs hatched, and in both cases the chicks lived and thrived, two being lost from one brood and one from the other, from causes other than accident.

A hatch made at a more remote period, in a non-moisture machine, brought ninety-five chicks that lived, from 110 fertile eggs, a result which was all that the most greedy operator could ask for.

While incubator makers and scientific investigators are disputing about moisture or no moisture, and disagreeing on the percentage of carbon dioxide that is necessary to the best results, our personal experience leads us to believe that the whole secret of success does not lie altogether in these directions.

We have had good results in machines which allowed the carbon dioxide to drop down and out below the eggs. In fact, one of the machines mentioned above was made with this object directly in view and was so made that it was impossible for any carbon dioxide to remain in the egg-chamber longer than it would take it to sink to the bottom of the chamber and sift through two thicknesses of burlap.

Another machine in which there was no chance for the carbon dioxide to get out of the egg-chamber, brought a hatch which figured above 90 percent.

For a good many years we have been thinking along other lines. We have watched a good many hens while sitting, and for years cared for a good many of them. The nests used were not calculated to contain much carbon dioxide. They were made by cutting a square of turf where the grass grew luxuriantly, turning it upside down and making a shallow, bowl-like hollow in the soil that was held together by the roots of the grass, and putting this into a box, open on the side. In the hollow thus made in the inverted turf, a very thin layer of cut straw was placed, and in the nest thus made, the eggs were put and the hen placed on them. In this manner a good many hundred eggs were hatched, yielding strong, healthy chicks which were at first reared by the natural method, but later were reared in brooders.

While hatching chicks by the natural method in large numbers, we had abundant opportunity to watch hens which chose their own nesting places, and we noticed that it did not matter much where a hen chose to sit, she usually brought out a good hatch in the spring, the chicks being very likely to live, while those hatched later in the season were very likely to die within four weeks of the time they were hatched.

This convinced us that there was something the matter with the natural method. It did not work well in hot weather. Perhaps nature has a set time in which to perform her functions, and under domestication the hatching season had been extended in such a manner that weather conditions are not favorable. No doubt the old superstition that thunder kills eggs had its origin in the poor hatches that are so common when hens sit in summer.

In all our experience it has seemed to us that it should be easy to hatch eggs artificially if we could secure the proper conditions as to heat, moisture and ventilation. But experience taught us that failure would come when all these conditions seemed perfect and success came with a machine in which there was no moisture, variable heat and poor ventilation. In the old days it was chance that gave a good hatch, because temperature could not be controlled and ventilation was an unsolved problem.

It was a good many years before it occurred to us that it might be possible that wide variations in temperature might conduce to better hatches. We began to be more observant along this line, and at last became convinced that the matter of an absolutely even temperature was not as important as it had been thought to be.

It is an almost absolute impossibility for a hen to maintain an even temperature in all the eggs on which she is sitting. Those on the outer edge of the nest will not be as warm as those inside, and it may happen that some of these eggs will never get to the centre of the nest. Possibly this may account for some lack of results, but we can not accept this as a fact, because nature's methods are correct, and its operations should be unerring, barring the accidents of surroundings. We may take it for granted that under natural methods the eggs under a hen are not always kept at an even temperature. This indicates that an absolutely even temperature is of secondary importance, and we have found this to be the case in operating incubators from which exceptionally good results were obtained.

For this reason we advise those who have difficulty in securing an exactly stable temperature not to be discouraged. If the temperature fluctuates between 100 and 104 degrees it is quite possible to secure good hatches, provided it does not remain at either of these points for a considerable period.

Another thing we noticed was that even in quite cold weather a sitting hen would leave her nest in search of feed, and stay away until the eggs were apparently cold. They would feel cold, although, no doubt, they were quite near the hatching temperature in the centre. This daily airing of the eggs by the sitting hen induced us to try it in artificial incubation, and from the first trial we have been increasing the time that the eggs were left outside the egg-chamber to air, until we have concluded that there is but little danger of cooling eggs down too much. A tray of eggs which was forgotten and allowed to remain on top of the incubator from twelve until five o'clock in the evening, were replaced and the eggs in it hatched as well as those in the other trays in the machine, which had been promptly replaced.

All of our experience leads us to believe that cooling down eggs during the period of incubation is of benefit to the hatch and to the chicks individually.

The sitting hen remains on her nest from the time she hears the first faint peep of the hatching chicks until the last chick is hatched, and usually some hours longer. In this the hen understands what to do to produce the best results. As soon as the eggshell is broken open the moisture inside escapes if the egg is allowed to lie where air currents can pass over it. When this happens the membranes become dry, the chick becomes chilled and dies in the shell. The hen "sits tight" in order to prevent the escape of this moisture and the incubator operator should follow her method and keep the egg-chamber of his incubator closed from

the time the first chicks break through the shell.

Do not open the machine to help a chick out of the shell. The chances are that it will finally get out without help. If it does not it is quite certain that it is a weakling which will die within a week or two. Chicks struggle and gasp when first hatched, but this is natural. Gasping opens the lungs and struggling gives them strength.

Operating an incubator is not such a dreadful task as some think it is. It is not quite as easy as the proverbial "falling off a log." A boy or girl of ten years will pick up in a few days enough knowledge of the subject to operate a machine with perfect success.

That the incubator is helpful in proven by the fact that the poultryman who has used one for a year, very rarely goes back to the natural method. He has learned how much time and labor the machine has saved him, and that results are more certain than they were when he depended on hens alone.—Poultry.

POULTRY HOUSES FOR COMFORT

Elaborate poultry houses may appear pleasing to the eye, but the great majority of them are more ornamental than useful, as well as being built more for the convenience of the attendant than for the hens. There are really but two or three plans for building a convenient poultry house at a low cost. The cheapest is one that is square, with a flat roof. If square, the house will afford the greatest space possible in proportion to the cost. If the cost is no object, it is better to invest in lath and plaster than in a fancy outside, as the house will then be more comfortable, both in winter and summer. A great many poultry houses have been constructed for the wealthy, which are cheerless and cold, being the most unsuitable structures that could be devised for poultry. The main point is comfort, which includes plenty of scratching room on the floor, warmth in winter and cool air in summer. The object, after all, is to secure eggs, and when building a poultry house this should be kept in view if the hens are kept for profit as well as for pleasure.—N. W. Pacific Farmer.

HOW TO GET THE MOST EGGS

You need to start with good birds. What I mean by that has no reference to fancy points but fancy birds need to be good in the same way also. In a general way, the points of goodness are about as follows in all the breeds:

Females with smallest heads, strictly female combs, alert eyes, energetic head action, broad and deep in body, sturdy in legs, no suspicion of a spur on the legs, abdomen dependent, not with fat, absolutely feminine in looks, carriage and voice and full of activity.

Males very masculine in build, action, carriage, voice and all else, broad in body, dependent abdomen not with fat, very strong legs, not too long; absolutely majestic in deportment, attentive to hens, and valiant protectors of them; of abundant activity.

In females the shape, alertness, activity, femininity are all indications of good development, high health, tendency to egg production. But they cannot produce plenty of eggs unless the food they get is right, however they get it. And if there were no other way of finding out what food is right than to see what they are getting when they lay most on forage alone, that sufficiently indicates what is right. It means grain, green food, seeds, pebbles and bugs. In other words, it is balanced rations of animal and vegetable food with plenty of good grit and fresh water.

POULTRY NOTES

Cool the eggs daily. Don't use poor kerosene. Keep water on top of the font if possible. Make a hole in the screw cork of the font. This lets off the accumulation of gas in the body of the lamp and prevents firing.

Never turn the lamp full height when first lit; the flame "creeps" and grows after lighting.

Keep your hands clean when handling the eggs. It means good hatches.

When there is a big percentage of unfertiles hatch from the balance of the eggs is usually poor.

The time to remedy the trouble is immediately unfertiles are discovered. Look to the breeders.

One of the best ways to turn eggs is to remove one row and slightly tilt the tray, letting the others roll gently over. Then replace the removed eggs in the spare space.

Coal ashes should not be used in the dust bath until the cinders have been carefully sifted out.

The best way to reduce the mortality of our flocks is to eliminate the weak specimens, lest they transmit their weakness even unto the third and fourth generations.

You will have to do some hard thinking as well as hard work in your poultry yards if you expect to raise better birds than your competitor. He is very much awake, studying and improving his flocks.

Keep a record of what your hens are doing and know for yourself whether the enterprise is a profitable one. If not, look for the reason why not. If fairly profitable study and plan to make it more so in the future.—Farm Stock and Home.

AROUND THE FARM

NAVICULAR DISEASE

NAVICULAR disease, often called coffin-joint lameness, is a very common disease, especially in the lighter classes of horses—those that are used for roadwork, either in saddle or harness. The navicular or coffin joint is situated within the hoof, hence the name "coffin joint." It is formed by the articulation of the lower end of the small pastern bone with the articular surface of the bone of the foot with the navicular bone (a somewhat shuttle-shaped bone), placed immediately behind the joint, with the long axis transversely placed. The flexor tendon of the foot passes over the posterior aspect of the joint, immediately over the navicular bone, before becoming attached to the os pedis (the bone of the foot). The disease under discussion consists in inflammation being set up in the joint. In well-established cases the inflammation causes an alteration in structure of both bone and tendon, the fibrous covering of the bone becomes destroyed, and a form of decay is established, and the bone and tendon become united, the normal condition being the playing of the tendon over the bone in somewhat the same manner as a rope plays over a pulley.

Causes.—In many cases there is doubtless an hereditary predisposition, not altogether due to conformation. Horses with short, upright pasterns are predisposed, on account of conformation. This is readily understood from the fact that concussion is greater than in horses with oblique pasterns. Ordinary concussion from traveling on hard roads is doubtless the most fertile exciting cause. Irregular exercise is also often noted as the cause. Horses that are used only occasionally, those that often stand in the stable (especially in dry, hot weather, when no means are taken to supply moisture to the feet) for several days without exercise, and, when taken out, are driven fast, then allowed to stand for a variable length of time, then given a fast drive again, etc., etc., frequently suffer from the trouble. The dry and somewhat hot condition of the feet predispose to the disease, and concussion acts as the cause.

It must be understood that horses are liable to a sprain of this joint. This does not often occur, and when it does the patient will show sudden lameness, when, if the trouble be diagnosed, the patient given rest, and moisture kept to the foot by poulticing or standing in a tub of cold water, he will recover, as from other sprains. The joint being surrounded by horn, local applications to the joint cannot, of course, be practiced. The symptoms of "navicular disease" are very insidious. The trouble may be developing in one or both feet. Lameness is usually irregular. The patient will be noticed slightly lame, probably the driver cannot readily decide whether or not he is going lame, or he may show suspicious symptoms when first brought out, but soon goes sound, and the driver may decide that he was mistaken in suspecting lameness. Then, he may go sound for a variable time, then show suspicious symptoms, or probably decided symptoms, then again go sound, etc. The intensity of the lameness varies greatly without apparent cause. An examination of the foot and leg will not reveal any cause of lameness, and the horse stands sound. After a variable time the symptoms of lameness become more decided and constant, and the patient will be noticed pointing the foot when standing, but even now he will go practically sound after being driven. The symptoms increase, until he will show lameness all the time, will step short with the lame foot and stub the toe, wearing the toe cork off quickly. An examination at this stage will usually reveal the foot smaller and probably deeper in the heel than its fellow, and there will be more heat in the foot, but this is very hard to detect. The patient is supposed to show tenderness upon pressure exerted upon the hollow of the heel with the thumb, but I have never seen this symptom well marked. There being an absence of apparent cause of lameness in any part of the limb, the symptoms having been more or less as described, and the foot having become smaller than its fellow, is usually considered sufficient reasons for diagnosing "navicular disease." We may say that we are forced to judge, largely by negative symptoms. When both feet are diseased, the step will be short and groggy, the toes stub, and toe-calks wear off quickly, and, when standing, the patient will point one foot and then the other, and will often be noticed to be inclined to canter, rather than trot. Both feet being diseased, there will not be a difference in size, as they will both have become smaller than normal, but this will, in most cases, be hard to determine.

Treatment.—If treatment be adopted during early stages of the disease, a cure may be effected; but if the disease has advanced until there is alteration of the structure of bone and tendon, a cure cannot be expected. In such cases the symptoms may be allayed, to considerable extent, and the horse rendered of some service for slow work, but he will never be valuable or serviceable for any considerable amount of work on hard roads. Treatment should be directed to allaying the inflammation and increasing the growth of hoof. The patient must be given a long rest, the shoes removed, and the heels lowered, and soles pared well down. Poultices, either hot or cold, should be applied to

the feet, or the patient forced to stand in a tub of water several hours daily for a week or ten days. Then a blister should be applied to the coronet, all around the foot. Nothing is equal to a blister to encourage the growth of horn. The blister should be repeated every four weeks, and the patient given a long rest. When again put to work, rubber pads should be worn under the shoes, or bar shoes, to lessen concussion; worn; but the rubber pads give the best results. Even where there is alteration of structure, this treatment will usually alleviate the symptoms by increasing the growth of horn, and thereby relieving the pressure that is caused by contraction of the foot. In regard to contracted feet, we must always remember that this is not a disease of itself, but the result of disease. When a horse becomes so lame from navicular disease as to be practically useless, and treatment will not give relief, all that can be done is to get a veterinarian to perform neurotomy. This consists in removing the nerve supply to the feet, and, while it removes the lameness, it does not cure the disease. It is not advisable to operate unless, as stated, the horse is practically useless, as the freedom of action after operation often causes a fracture of the weakened navicular bone or a rupture of the weakened tendon, or both, which, of course, necessitates the destruction of the animal; but in some cases the animal lasts for years after the operation. The feet of horses that have been operated upon should be examined regularly, as, though sensation has been removed, the processes of repair and decay continue as in a healthy foot, hence the animal may pick up a nail, etc., and will not show lameness, but the ordinary results of such an accident, viz., the formation of puss and sloughing of the tissues, will occur, and may not be noticed until past treatment.—"Whip."

FERTILIZER CONSTITUENTS

It is a fact to be lamented that so many farmers think they cannot tell what elements of plant food their land needs to produce certain crops without the aid of an agricultural chemist. While it is a fact that a chemist can analyze the soil and give you the different amounts of plant food a certain number of pounds of the soil contains, it is also a fact that we farmers with some knowledge of the effect of the fertilizers constituents (ammonia, phosphoric acid and potash) on growing crops, could apply these constituents more intelligently and thereby derive more profit from the money invested. There is, at least, one way in which we can tell what elements of plant food our land is in need of, and that is by watching the growth of the crop. "By their fruits ye shall know them," can be applied very forcibly to the soil and crops grown thereon.

It is certain that ammonia produces stalk growth and produces also in the plant a very heavy leaf growth, and gives the leaves a very dark green color. If there be an excess of ammonia, there will be an excessive stalk growth; this excess of stalk growth will be weak and will not mature so early as would be the case were there plenty of phosphoric acid and potash to help it mature. The plant will also be deficient in blossom, pollen and seed (or fruit) as the excess of ammonia retards the development of the seed or fruit-making properties of the plant.

Phosphoric acid is one of the most needed constituents, as it is absolutely necessary to have an abundant supply of phosphoric acid for the formation of pollen in connection with potash, to help the plant mature. It has a wonderful effect in hastening the maturity of the plant both in seed and stalk. Some soils are so destitute in phosphoric acid that crops planted on them will die before they reach maturity. Phosphoric acid also aids the plant to assimilate the ammonia and potash.

Potash is the constituent which is needed in the formation and transference of starch in the plants. All grains and fruits contain starch, and without starch, grain or fruit cannot be formed. According to very best authorities and the latest researches relative to the use of potash by the plant, it has been found that starch is formed in the leaves of the plant and is later carried to the seed or fruit; without the aid of potash this transferring of the starch from the leaf to the seed or fruit cannot take place. It is shown from careful experiments that the potash derived from vegetable matter, preferably tobacco dust, which, of course, has been once transformed in the plant, is the best form of potash, and is assimilated gradually as the plant needs it, thus feeding the crop from germination to maturity, at the same time furnishing humus to the soil. This cannot be said of chemical (sulphate or muriate) potash. It also makes the plants take on their woody nature, causing them to stand up, and thereby preventing "lodging" in the grain.—Farm and Poultry Review.

To go two or three miles at too rapid a gait is much harder upon a horse than to go twice the distance if properly driven. To get the full capacity out of a horse without injuring, use moderation in the beginning of every task imposed on them.