

process after being jarred and disturbed out of its normal state it is much less likely to hatch a strong, healthy chick than if it is allowed to rest before being placed under the hen or in the incubator. This I have proved by actual experience.

New-laid, properly-fertilized eggs from vigorous, fully-matured breeding hens form the basis of successful hatching, and this important point should be remembered by all aspiring poultry keepers. There are also other matters equally important, such as free access of air during the period of incubation, for without oxygen for developing chick death will ensue. When only a few hours old—that is after incubation commences—it obtains the air necessary for its existence from the air chamber seen at the large end of the egg. When the eggs are placed under a hen she regularly turns them every day, and the same process is necessary when an incubator is used, otherwise the embryo chick will die. The shell of the egg must be clean, as if it is dirty it will have a tendency to keep out the air. Many failures arise from inattention to this. The conditions necessary for successful incubation are an even temperature and a certain amount of moisture or humidity, and good eggs. If a good hatch is desired, and most people prefer this, the eggs should not be over a fortnight old, and the fresher the better. A stale egg will often take as long as twenty-three days to hatch, but the longer the time the weaker will be the chick. In dealing with the sitting hen, one of the chief points to be noticed is the maintenance of the temperature. A hen will sometimes sit so close that she will not even leave her nest for food. This must be attended to. If she refuses to eat, she must be tempted with something unusual. I find that table scraps are fine for this.

Avoid chilling the eggs by allowing the hen to remain too long off the nest, or if not shut in she is liable to be off too long without anyone knowing of it unless closely watched. The owner is often responsible for the chilling by giving her more eggs than she can cover. This is especially the case in cold weather. A small number of chicks well incubated will make stronger chicks than a large number badly incubated. And if a large number hatch the hen cannot brood them so well nor keep them warm, and therefore their progress is slower. See also that the eggs do not become too dry. I make a practice of placing a grass sod, turned earth side up and slightly hollowed in each nest, and if the nests are not near the ground I sprinkle a little warm water over the eggs occasionally. This, of course, refers to hen hatching. My incubator is supposed to have enough moisture in the egg chamber to supply all the moisture necessary, but after several trials of it I decided that there was not enough, and at the beginning of subsequent hatches I introduced into the egg chambers an agate pie plate filled or partly filled with fresh buttermilk, which I renewed frequently. When buttermilk was not available I used water, to which I added a drop or so of zenoleum. I have had excellent hatches with almost no chicks dead in the shell since following this plan, so am sure that it is good. I also use the disinfectant as a wash, according to directions to disinfect the incubator before beginning the hatch, and put the eggs in before it is quite dry. By doing this any disease germs that may have collected on the eggs are removed.

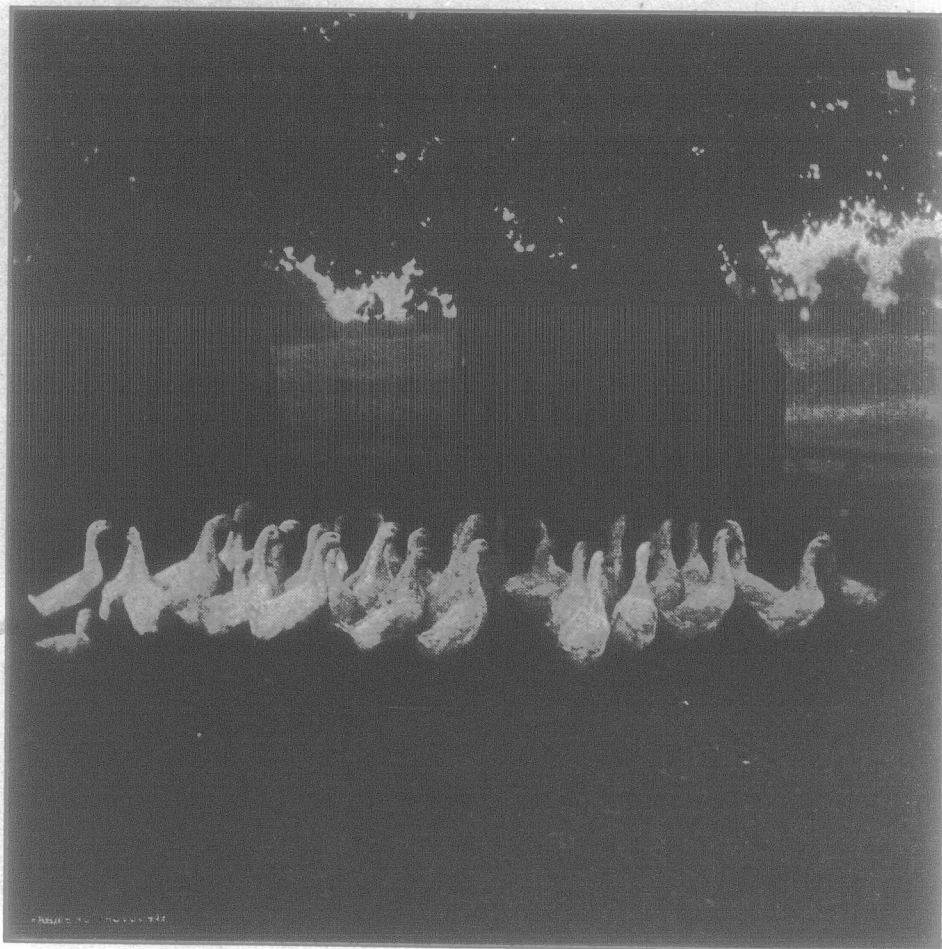
Where incubators are used much depends on the make of the machine, the arrangement of securing the necessary amount of heat, etc., and moisture, but above all, a thorough knowledge of the machine in use. However successful we may be with one incubator we may fail utterly at first with one of a different make. Make yourself master of your machine, and then begin to hatch. Of course, there are failures with natural hatching, due to three main causes. They may be due to some fault in the eggs or to the sitting hen, or to the owner's carelessness as to circumstances under which he forces the incubation to take place. With regard to the eggs, of course, the chief thing is that they are fertile. Fertile eggs may either become addled by rough handling, or the chick may be formed only to die before it can make its way out of the shell. Either of these misfortunes may be one of the weaknesses of the germ, inbreeding or breeding from old and worn-out birds, or on the other hand, from young and immature stock. Towards the end of the season also the germ is weaker. Sometimes weakness is caused by allowing too many hens with one male or vice versa. Insufficient care in collecting and preserving the eggs for hatching may cause them to fail.

Farmers, as a rule, pay little or no attention to the proper mating up of their flock, with the result that they have hens of a nondescript variety and no particular egg record. To get the best results trap-nesting is to be encouraged, but when one cannot or does not care to go to the bother of trap-nesting the next best plan is to observe individuals in the flock closely, leg-band the early layers, and watch them closely for any sign of weakness; cull out the weaklings and breed only from the best. Yard the main flock if possible and let the breeders have a good run,

or if this is not possible then yard the breeders. The initial cost of enough poultry fencing to yard a dozen or so hens is small compared with the improvement which can be made in the flock in a very short time. By choosing your breeders and separating them from the rest of the flock you know exactly what you are breeding from. Instead of having to set eggs from the good layers and the poor layers alike, and very often when no selection is made it is the eggs from the poor layers just beginning to pass in their quota of eggs that are used, you can have eggs from only the good layers, and it is by this method and this only that the high record hens are produced. A hen laying from forty to fifty eggs in a year will have a poor show for producing a two-hundred-and-forty egg pullet. He who is going to make a success of poultry raising must have an ideal ever before him. Make the two-hundred-and-forty or even a three-hundred-egg hen your ideal, and climb steadily toward that point by breeding only from high-egg-record hens mated to males of the very best type and strain procurable. Year-old hens mated with two or three-year-old males or two-year-old hens mated with year-old males give the best results. Never mate old hens with old males, or young hens with young males. Have vitality and vigor on both sides and avoid over feeding, as fat hens rarely produce highly-fertilized eggs. Provide plenty of green feed in the form of cabbage, turnips, mangels, or clover, and keep your breeders busy. Vigor and vitality in the breeding pen means vigor and vitality in the chicks. Couple this with careful attention to the care of your eggs before incubation and during the process, and you will be amply rewarded for your trouble.

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The Strawberry in the Farm Garden.

Editor "The Farmer's Advocate":

Of all small fruits grown in Canada, the strawberry is pre-eminently the most popular. While one may meet people holding dislikes to other fruits, an occasional person disliking even the raspberry, the strawberry seems to be a universal favorite. Yet, notwithstanding this, and in spite of the fact that it is one of the most easily cultivated of fruits—how very few comparatively are the farm gardens containing well-kept, productive strawberry beds. Having grown this fruit for a good number of years, I will give a few practical pointers for the benefit of beginners.

Almost every farmer will tell you that he has tried growing strawberries, but they won't grow on his land. Be it heavy or light, moist or dry, the soil usually gets the blame for the lack of success. Yet this fruit succeeds on a very wide range of soils. There seems to be an impression abroad, however, that the strawberry

will not thrive, excepting in dry situations amateurs nearly always choosing the driest spot available, with the result that, unless the weather be very favorable at fruiting time, the berries dry up, and the grower throws up the game in disgust. The writer has been growing this crop of late years on rather low land, although water does not stand on it a length of time, and yet in 1912, the season of continual downpours, the best part of a bumper crop was produced on the lowest portion of the plantation. My advice, therefore, is to plant in fairly moist soil, unless some system of irrigation is available at fruiting time.

Plants to give good satisfaction, should be taken only from rows of last year's planting, which have not been allowed to fruit; selecting the strongest, near the mother plant, in preference to the partially-developed plants, at the outside of the row.

Standard varieties, which have proven profitable in the hands of experienced growers, are the kinds to plant. Keep shy of the new varieties, being boomed by nurserymen. They may or may not prove valuable, and experimenting with them is likely to end in discouragement for beginners. When once a variety is found to give good results stick to it, until you are sure you have a better one. When I began strawberry growing, I obtained some plants of the Clyde variety in a co-operative experiment, and although I have tested a considerable range of varieties, the Clyde is still the standby. While other kinds have deteriorated, it seems to actually improve from year to year. It might not be suitable for long shipment, but for the home garden and nearby market I consider it as near the ideal berry as any I have seen.

The soil should be prepared if possible by a cultivated and manured crop the previous year, deeply fall plowed, and followed by thorough cultivation in the spring previous to planting. Fine or well-rotted manure should also be applied before the spring cultivation if necessary. The soil can hardly be made too rich for this crop. Furthermore, heavy manuring is conducive to retention of soil moisture, so necessary in this case. Once the plants are dug, every effort should be made to prevent the drying out of the fleshy rootlets. It pays also to clip about one-third of the roots off with a pair of shears—cutting squarely across. A better root system, will be the result. Plant as early as possible. Years of experience have taught me that the earliest planted

rows invariably give the best results.

Plant in long rows if you can, and allow from three and one-half to four feet between rows to permit of horse cultivation. In these days of scarce labor, the strawberry patch is liable to be under cultivated if sole dependence is made on the hoe. Eighteen or twenty inches is about the right distance to space the plants in the row, and the spade is the best tool for planting, thrusting it into the soil and opening the hole by shoving the handle away from one, the plant is now placed with the crown just at the surface, after which, the soil is packed around the plant, with the foot as firmly as possible.

Cultivation should begin at once to conserve the soil moisture and should be continued at least once a week throughout the growing season. Cultivate quite deeply and close to the rows at first, gradually working more shallow and narrow as the rows develop. Keep the soil immediately around the plants well loosened with the hoe. This is needed most particularly in the early part of the season. Pinch off all blossoms as they appear. Many beginners fail to do this, thinking that it will make but little difference and "won't it be nice to have some strawberries this year?" The writer has repeatedly proven by experiments that it is a genuine