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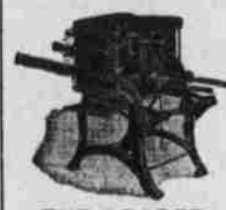
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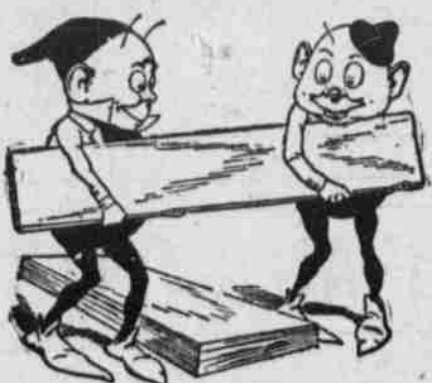
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Home Course In Poultry Keeping

IV.- The Modern Science of Incubation.

By MILO M. HASTINGS,

Formerly Poultryman at Kansas Experiment Station, Commercial Poultry Expert of the United States Department of Agriculture, Author of "The Dollar Hen."

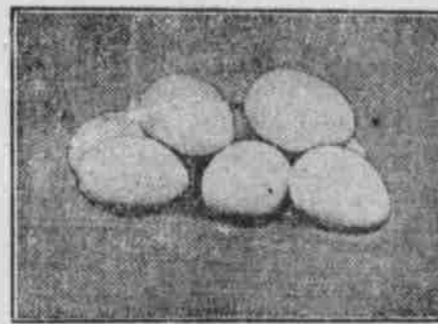
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ARTIFICIAL incubation has been practiced in Egypt and by the Chinese for several thousand years, but has been developed in this country only within the memory of the present generation.

Because of the great extent to which incubators have been advertised, the large circulation of poultry books put out by incubator manufacturers and the favorable views of the poultry papers, which get their chief support from incubator advertisements, the general impression is that artificial incubation is a greater improvement over the natural method of hatching than is in reality the case.

Hens or Incubators.

One of the chief claims of the artificial incubation is that by this means chicks can be produced at any season of the year, whereas hens brood only in the spring and summer. This advantage is not great, however, as most inexperienced people believe, for chickens hatched in the winter are difficult to rear, and because of the evening up of prices due to cold storage, as referred to in a previous lesson, the use



WELL FORMED EGGS SELECTED FOR HATCHING.

of incubators for hatching winter chicks is not particularly profitable.

The second important advantage claimed for incubators is that of saving labor, or, in other words, they enable one person to hatch a much larger number of chicks than would be possible with the use of hens. This claim is worthy of consideration. It is, in fact, the chief reason why incubators have gained their present standing.

As to the percentage of hatching and the vitality of the chicks, the average incubator, especially in the hands of the novice, will hardly equal the natural methods. The writer made an extensive study of the results obtained with incubators by Kansas farmers. The results showed that about as many farmers failed with incubators as succeeded with them.

The percentage of eggs that hatch either in incubators or with hens is commonly overestimated. The extraordinary hatches at poultry shows are usually arranged by setting two incubators and testing out the live eggs just before hatching and putting them in the one machine. A 60 per cent hatch of all eggs set for the season is good enough. Many very large and successful poultry farms have lower averages. The advisability of purchasing an incubator will depend upon many circumstances. All those who breed Leghorns will require incubators. With the Plymouth Rocks, Wyandottes or Rhode Island Reds I should favor hatching with hens until the poultry work grows to such size that this becomes impractical.

Eggs For Hatching.

There are many superstitious notions prevalent regarding the relation of the shape of an egg to its vitality and the sex of the forthcoming chicken. Such notions have no ground in fact. Eggs having weak shells that might become broken in the nest or unusually small eggs should be discarded. If there are more eggs available than we wish for a sitting it will be better to select the fresher eggs than to be overparticular about shape and appearance. The eggs for hatching should be stored in a cool, dry location and shifted or rolled about occasionally.

Eggs exposed to freezing temperature if not actually frozen may still retain their vitality, but it is generally considered best to keep them at a temperature between 40 and 70 degrees. If kept too warm eggs dry out rapidly and will not hold their vitality. A good rule is not to set eggs over two weeks old. The idea that jarring, as by thunder, will injure the hatching of eggs is without foundation; likewise the advice to let eggs rest after shipping has been proved to be groundless.

Accommodations For Sitting Hens.

The convenience of the arrangement for sitting hens has a great deal to do with the success of the hatching. By all means I should advise that a place be provided for the sitting hens away from the general poultry house. This may be in a separate room or building, where tiers of boxes are used for the nests and feed, water and dust wallow provided in the room. The nest boxes are open on the top, not on the side, and a board is laid loosely across

them to confine the hen. The hens are set in groups, so that those sitting on eggs which are to hatch the same time may be given their liberty at once. The attendant has only to remove the board from the nest, lift off the hens and return in a hour to see that there is a hen on each nest.

Another scheme for the easy handling of sitting hens, the plans for which have been largely sold, consists in constructing a series of outdoor nests and runways made by setting foot wide boards on edge about one foot apart. The runways are covered with laths or setting except the one in which the nest is constructed, this being protected from the weather by another wide board to form a roof. Each hen thus has her individual nest and a runway, in which the hen may exercise and dust herself to get rid of lice. Old fruit cans are used to provide food and water.

Such an arrangement for sitting hens reduces the work of caring for them to a minimum, and if the nests are well protected from the weather and the ground where the nests are located thrown up so that the water will not run in the results are usually better than with hens set indoors. The nests should be arranged so that hens may be shut on them when the eggs begin to hatch, or the restless hen will frequently leave the nest with the first few chicks and allow the others to die in the shell.

Essentials of a Good Incubator.

In the case of artificial incubation we have a number of points to look after that do not concern us when hatching hens. The first to be observed is uniform temperature—103 for all eggs in the machine at all times. The second consideration and one that causes much more trouble in practice is to provide just sufficient circulation of air of just sufficient dryness to cause the eggs to lose water by evaporation at the normal rate; otherwise the body of the chick will contain too much water or not enough and die in the shell or shortly after hatching. The novice can do no better, as far as this and other points of incubation are concerned, than to follow the directions of the maker of his machine.

The following discussion of the points of a good incubator are given to help the poultryman in selecting a machine or in deciding whether he is capable of handling the problem of artificial incubation successfully rather than for the purpose of teaching him to run any particular incubator.

The case of the incubator should be built double or triple wall to withstand variation in the outside temperature. The door should fit neatly and should be made of double glass. The lamp, both bowl and chimney, should be made of heavy metal material and should have a wick sufficiently wide to maintain the temperature of the incubator with a low blaze. The lamp is generally placed at the end of the machine, though there are some good incubators now made with the lamp placed underneath the machine. The heat is got from the lamp to the eggs by means of a circulation of hot air or a tank of hot water. The hot air machines seem to have proved most successful in practice, and the majority of well known makes are now of that type. It is easier, however, to make a cheap hot water machine that will retain the heat than it is to make a hot air machine. This is because the tank of hot water holds the heat against sudden changes in outside temperature.

Regulators composed of two metals, as aluminium and steel, are best. Wafers filled with ether are more sensitive, but weaker in action. Hard rubber bars are frequently used. The incubator needs no arrangement for turning eggs, as this is not as important a part of the operation as is frequently stated, and the eggs can be rolled around readily with the hand



END OF THE BATCH.

at the time the trays are taken out to be turned end to end, a precaution necessary to equalize any effects due to different temperatures in the various parts of the machine. Cooling the eggs, upon which many incubator manufacturers lay considerable stress, has never been proved to be of benefit. A good thermometer is essential in running an incubator and is best laid face downward on top of the eggs. Thermometers hung in a fixed position above the eggs frequently fail to register the temperature of the eggs themselves.

The best location for an incubator is in the cellar. The more even in temperature this cellar is kept the better. The cellar should not be so damp as to warp the incubator, but, on the other hand, should not be entirely dry. If there is a furnace in the cellar or it is in any way heated open water should be exposed in a warm place. The ventilation of the cellar is not as important as is ordinarily imagined, for chicks need very little oxygen. The increased evaporation induced by too much ventilation is a greater evil than lack of fresh air.

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