DAIRY.

stitute for Feeding Calves.

balanced ration in itself for consequently when a calf is milk and left to subsist on n becomes one-sided. In order animal grow as rapidly as should be substituted for the whole milk. Clover or alfalfa roughage, and should be sup- on as it will commence eat- re rich in protein, which go mal body, but they do not ration when skim-milk is fed. balanced ration, and are con- feed for any young animal. uplying the fat removed from re of four pounds rolled oats ual proportion to one pound has given splendid results. tion as to housing, and the proper temperature, in g with the feeds mentioned, ised more economically and hen receiving whole milk.

of a Winning Herd.

encourage patrons of cheese eries, to feed and care for t they will produce the f milk, the Western Ontario on offers prizes each year to nish the largest amount of y cheese factory in Western st of May to the thirty-first case of the creamery the per cow is considered rather milk.

In 1915 Jas. Burton & Son, of Sparta, were successful in winning first place with their herd of 18 grade Shorthorn and Holstein cows. They were able to produce all the roughage and the bulk of the concentrates fed on their 190-acre farm. During the six months, the entire herd averaged 7,175 lbs. of milk per cow. This is an exceptionally good yield, and goes to show that grade cows, as well as pure-breds, can be bred and fed to produce large quantities of milk. This firm's method of feeding and breeding, may not be according to what some dairymen believe to be correct, but it has given

air.

cows are kept on this out of unprofitable animals and their places are filled rton & Son do not raise any buying cows to keep their seldom have to pay more r a cow, it is considered re cows than raise them. the cows freshen in the is usually given for a few to bring them to their chop with sugar beets, and ows will eat make up the always kept in the stable -fourth of May, in order a start so it will last For the first week or two re fed grain, but once they s the grain feed is discon- middle of July or first of ts of bran is fed each cow the first of October oat ran, and three quarts fed son. No extra green feed ner, but an endeavor is ws from one field to an- This method keeps the ere cows are kept in one length of time. The aim up about the first of the x weeks or two months during February or March ount of themselves during n.

POULTRY.

Incubation and Brooding.

By F. N. Marcellus.

Poultry-raising is old as an art but new as a science, and it is a well-established fact that of the various branches of the work the production of eggs is the most important and also the most profitable. The productive capacity of a hen depends somewhat upon the age of the bird, as the older the bird the less productive she becomes. It is now conclusively proven that on the average the most productive period in a hen's life is during her pullet, or first year of laying. Hence, the necessity of hatching and rearing a sufficient number of pullets each year to replace a part of the old stock, and the more the better. It is not advisable to keep laying hens longer than two years, and one is better, with the possible exception of Leghorns, or breeds of similar type and characteristics.

WHEN TO HATCH.

The time at which the hatching of chickens should be done in the spring, is a debatable point. With the majority of breeders it is felt that too early hatching in the spring will result in a more or less serious moult of the pullets in the fall or early winter. This is, no doubt, a serious point. In comparing the production of birds hatched at different dates at the Poultry Department of the Ontario Agricultural College for the past three years, taking into consideration the total eggs laid up to a certain date in the winter, it was found that in practically every case the birds which were hatched earliest in the season obtained a lead which was not overtaken by later-hatched pullets. Comparing the average production up to the end of the year two lots of pullets hatched last spring, one on the 8th of March and the other on the 7th of April, we found there was a difference of sixteen eggs per bird, which on a flock of one hundred birds would mean sixteen hundred eggs. This, at the prices prevailing during the past fall, would make the earlier date of hatching worthy of serious consideration, irrespective of the possibility of a slight moult in the fall. It would certainly appear as if the hatching of such breeds as Plymouth Rocks, Wyandottes, Rhode Island Reds and birds of similar body weight might be profitably carried on as early as the 1st of March while with the light-weight breeds, such as Leghorns, the first half of April will be found sufficiently early.

SELECTION OF STOCK AND EGGS.

In order that our hatching and rearing results may be satisfactory it is necessary that we give some attention to the selection and care of the parent stock. Select those birds which are especially strong and vigorous. Where egg-production is the object sought after pay particular attention to the laying qualities of the females, but more particularly the laying qualities of the parentage of the male. The breeding stock should be compelled to exercise freely, both during the breeding season and the winter months previous, receiving an abundant supply of green feed, but must not be fed heavily on mangels and wet mash.

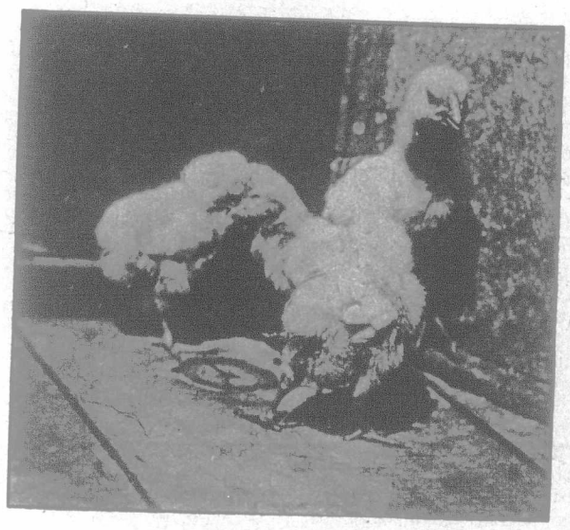
The eggs which are used for hatching purposes should be normal in shape, of good color for the breed of birds kept, and weigh at least twenty-four ounces per dozen or two ounces per egg. During the period before setting, the eggs should be kept in a room where the temperature does not fluctuate more than a few degrees, storing eggs small end down and turning daily, but it must always be remembered that the sooner eggs are set after being laid, after the first two or three days, the better will be hatching results secured.

HOW TO HATCH.

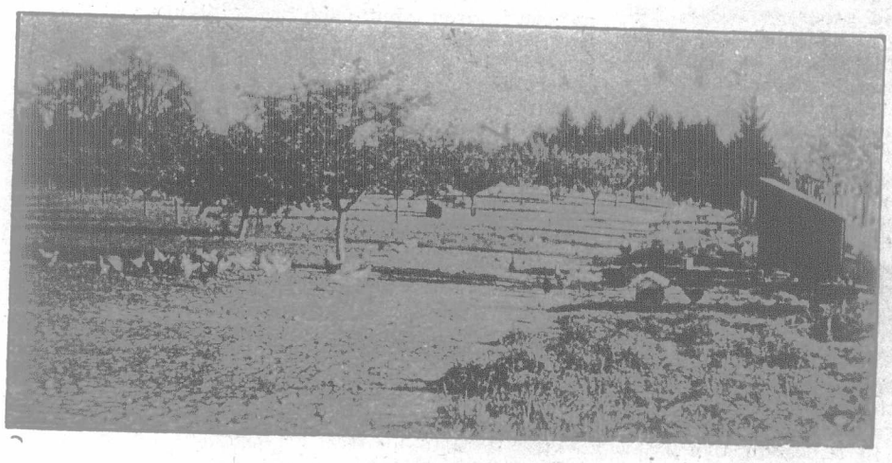
Two common methods of hatching are in general use to-day, i. e., natural and artificial. Both methods have their commendable features, and also their faults. Where one desires to hatch chickens early in the spring, or where keeping the non-setting varieties, or desire to hatch several hundreds or thousands, then the artificial method becomes a necessity. As to the labor and cost apart from the initial cost of the incubator, which amounts to from twelve to seventeen cents per egg capacity, the cost of the two methods does not differ greatly. The fuel cost of incubating one hundred eggs with kerosene at twenty-five cents per gallon is, approximately, forty cents. To incubate the same number of eggs by natural means will require six or seven hens. The cost of feeding six hens for three weeks, based on arbitary figures of ten cents per month, which is low, is forty-five cents. The labor of caring for one hundred eggs in an incubator is considerably less than that of caring for the required number of hens. There is also the question of the freedom from vermin in the case of the incubator-hatched chickens which is important.

In the selection of hens for hatching purposes, those which are quiet, easy to handle and of the medium-weight breeds, are to be preferred. The light-weight breeds are unreliable, and the heavy breeds are too clumsy and likely to break the eggs.

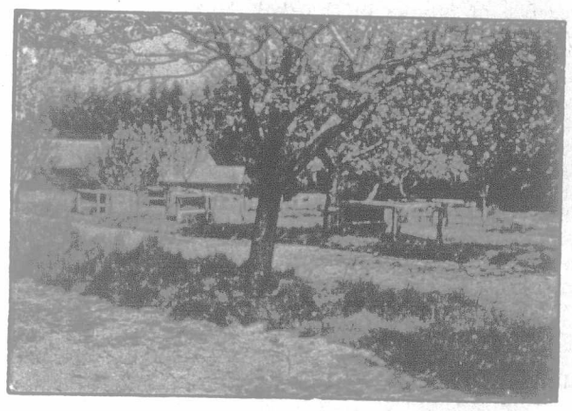
The nest for a hatching hen should be about sixteen inches square and eight inches deep, and so located that the other birds will not be able to get on the nest. It is never advisable to set birds in the pen with the laying hens. The nest should either be placed on the ground or a piece of sod the size of the nest inverted in the bottom, slightly hollowed out and the nesting material, preferably oat straw or chaff, placed on the sod. During the early part of the season eleven to thirteen eggs may be placed under the hen, while in the latter part of the season, when the weather becomes warmer, fifteen to eighteen may be given to each hen, depending somewhat on the size of the bird.



Strong and Weakly Chicks.



Chicks in Colony Houses.



Raising Chickens in an Orchard.

One of the greatest objections to hatching with hens is the difficulty encountered with vermin from the hens getting on the young chicks. It is, therefore, necessary to treat the hen for body lice by dusting with insect powder. This powder may be made at home by mixing together one part carbolic acid (90% to 95% pure) with four parts of gasoline, and when thoroughly mixed adding sufficient plaster of Paris to take up the moisture. Allow this to stand for a short time until the gasoline evaporates, when it can be readily dusted into the birds. Apply this material around the vent and under the wings just before setting the hen, and again on the sixteenth day of the hatching period, but not later as it may cause blindness in the young chicks. Supply the hen with plenty of fresh drinking water, a dust bath and whole grain, but under no condition give feed which might have a loosening or laxative effect on the bowels. Should the nests become fouled they should be cleaned, but the eggs should not be washed if it can possibly be avoided.

It would not be possible nor advisable to go into the details of the operation of an incubator, for the reason that different makes of machines are differently operated. All makes of machines are first operated and tested out by experts before being placed on the market, and the instructions which are sent out with each macnine will be found the best guide for operating that particular machine. The machine should be operated for several days by a beginner before putting the eggs in place. After the third day from putting eggs in they should be turned or shunned twice every day, but when filling and trimming lamp the eggs should be turned first so as to be certain that no oil comes in contact with them. On the ninth day the first test is made, when the infertilities and dead germs, are removed. The latter are distinguishable as small, dark spots from which the blood lines have disappeared, and also by a circular red line which is also termed a blood-ring. A second test may be made about the sixteenth day, and the balance of the dead germs removed. On the eighteenth day the eggs are turned for the last time, and the machine should then be closed and left closed until the hatch is over. If the chicks start panting the ventilators or door of the machine should be opened sufficiently to supply air.

HOW TO BROOD.

Artificial and natural methods of brooding are both used as in the case of incubation. It is usually found best where either method of incubation is used to brood the chicks by the same method. Regardless of which method is used, the young chicks should not receive any feed until they are forty-eight hours old, and better sixty or even seventy-two. The young chick, when it emerges from the shell, has sufficient food in the digestive tract to keep it alive for at least five days, and feeding should not take place until the greater part of this supply has been assimilated. During the period before feeding starts, however, the young chicks should receive plenty of fresh drinking water and some coarse sand or fine frit. They are, of course, with the mother or in the brooder at this time, the brooder having been running previously at a temperature about ninety-nine degrees under the hover.

EARLY FEEDING.

The first feed of the young chicks may consist of stale bread slightly moistened in milk or rolled oats mixed with hard-boiled eggs (boiled for thirty minutes) shell and contents. This is fed in small quantity and at frequent intervals during the day, preferably five times per day for the first three weeks. Fresh drinking water should be before the young chicks at all times. It is possible and advisable after the first few feeds of the above feeds to feed a small quantity of chick food in the litter of the brooder so as to start the young chicks scratching. The chick food may consist of any of the commercial chick foods or be made up of cracked wheat, thirty-five pounds; finely-cracked corn, thirty pounds; pinhead oatmeal, thirty pounds; and chick grit, five pounds. In many cases the commercial chick food will be found cheaper than home-mixed. About the third week gradually replace the rolled oats or bread with a mash composed of one nundred pounds wheat bran, one hundred pounds wheat middlings, two hundred pounds corn meal, fifty pounds fine beef scrap, and thirty pounds bone meal. This is fed in a slightly moist, crumbly condition. In case sour skim-milk or buttermilk is available for drink then it should be used as such; also to moisten mash in which case the beef scrap would be reduced to twenty-five pounds. The number of feeds per day should be reduced to four times in the third week, and to three times in the fifth week. Whole grain should replace the chick food as soon as the chicks are large enough to eat it. The chicks should be gradually accustomed to going without extra heat as soon as they show much feather growth on their bodies. Care must be exercised not to overheat the chicks at any time, nor to chill them, as either is most surely fatal. In the case of hen-brooded chicks where they become infested with lice the top of the head should be greased with lard.

Poultry-keeping is a business of details, and it is only by close attention to the various little things that we may hope for success. It is a business demanding long hours of labor and seven days a week, and it is usually due to lack of staying qualities that some people who start in the business give it up. It is, however, one