

MN. 2000 EB-83 (Rev '28)

Special Bulletin No. 83

Revised March 1928

# The Care and Feeding of Chicks

by A.C. Smith

Division of Poultry Husbandry  
Agricultural Experiment Station



**UNIVERSITY OF MINNESOTA**  
AGRICULTURAL EXTENSION DIVISION

Published by the University of Minnesota, College of Agriculture, Extension Division, F. W. Peck, Director, and distributed in furtherance of the purposes of the cooperative agricultural extension work provided for in the Act of Congress of May 8, 1914.

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## CARE OF THE CHICK DAY BY DAY

Nursery Period, from Hatching to Two Weeks of Age

First day.—After hatch is completed, leave in incubator first twenty-four hours. Lower to brooding temperature gradually.

Second day.—Feed six times, providing  $\frac{1}{2}$  ounce (approximately one small handful) for each 50 chicks for each feeding of one of the following rations: (1) Steel-cut oatmeal, (2) finely cracked wheat, (3) finely cracked corn, (4) commercial chick starter, (5) cracker crumbs or dry bread crumbs, dry or moistened with whole sweet milk, or (6) hard-boiled egg with cracker crumbs.

Third day.—Feed as during the second day, and give one feeding of green food—a lettuce leaf, or short grass on sod. Do not cut into small pieces but make them pick it. Continue green food until the chicks are placed on range.

Fourth day.—Beginning on the fourth day, and until two weeks old, in addition to scratch feed, greens, and water, give a mash composed of equal parts by weight of finely ground yellow cornmeal, oatmeal, pure wheat bran, and wheat middlings. To seven pounds of this mixture add 3 pounds of meat scraps and a tablespoonful of fine table salt. Feed in a covered saucer for 30 minutes, twice daily, gradually increasing the time limit until after the chicks are from 7 to 10 days old the mash is before them constantly.

For directions for feeding during FEATHERING AND RANGE PERIODS, see pages 10 and 11.

## SKIMMILK SAVES HALF THIS COST—TRY THIS

Poultry raisers who have an excess of skimmilk or buttermilk, or a cheap supply of either, may raise chicks at a very low cost. (From the very first they can eliminate the most expensive feed—the chick mash.) All the feeds really required besides this waste milk are finely cracked grains, and mineral matter and greens in abundance. After the first day give skimmilk, sweet or sour but not sour enough to be clabbered, or liquid buttermilk. Feed a mixture of 25 per cent pinhead oatmeal, 25 per cent finely cracked wheat, and 50 per cent finely cracked corn, the latter two the same size as the pinhead oatmeal, five times a day, but not so much that it remains in the litter for any length of time. On the third day in the hover, put in a small amount of hay chaff, straw chaff, or cut hay or straw for litter. Add to this as the chicks get older and larger. This method of feeding has been successful at University Farm, the chicks making almost as rapid gains as when fed a dry mash high in animal protein, and at much lower cost.

**T**HE care of the newly hatched chicks is without question the most exacting task of the poultryman. During this period, the most delicate of their lives, many die unless skillfully and tenderly cared for. This applies with double force when the chicks are reared without the aid of the hen mother, as more painstaking methods must be employed in both feeding and brooding.

No one should attempt to rear chicks artificially without the proper equipment. When chicks are reared by the hen mother, very little equipment is necessary; but too few early chicks and too many late chicks are reared. Chicks do not bring the best prices in the market unless hatched early in the spring, and pullets from late hatches do not lay when eggs are at top prices.

For success in rearing chicks artificially, a comfortable house, brooding devices of ample capacity and with ample heat, wholesome feeds of sufficient variety to promote health and growth, intelligent feeding, and strict sanitation are necessary.

#### Brooder Houses

Brooder houses must be warmly built, the floor especially must be absolutely free from drafts underneath, and so constructed as to protect the chick from cold. Even the most warmly constructed floors should be covered with two or three inches of dry loam, or better yet, fine sand, as a warm floor is vitally important to a young chick. "Keep the feet warm and the head cool," applies to chick life as well as to human life.

#### Sunlight

Sunlight is also necessary. More glass is required in a brooder house than in a laying house. About 25 per cent of the south side should be glass, or even more if heating facilities are adequate. Direct sunlight, which is essential to a chick's life, may be admitted at favorable times if windows are so constructed as to slide up and down.

#### Ventilation

A safe and sane system of ventilation must be installed and operated with judgment. Double-sash windows hung on weights and pulleys are recommended because they are easily adjusted and serve the double purpose of lighting and ventilating the building. Muslin over openings the size of which may be adjusted by a wooden slide or other device is satisfactory. Enough fresh air to prevent odors must be admitted.

#### Brooders

There are four different types of brooders, each of which differs from the others as to the method of obtaining and distributing heat.

The **continuous hot water brooder** provides for the greatest number that can be brooded in a single system with a single heater

or heating plant. While not by any means novel, it is perhaps best adapted to large numbers, and to very early chicks in cold climates.

This system requires an expensive house, usually too large to be in any sense portable, each successive brood of chicks being compelled to use the same outdoor run not only throughout the season, but year after year. This is all right if the outdoor runs are spaded or turned with a cultivator and sown to quickly sprouting small grains such as oats, rye, or wheat. When specially constructed the brooder can be quickly and easily cleaned and sanitary conditions are rather better than in a system that allows the floor litter to become contaminated with the night droppings.

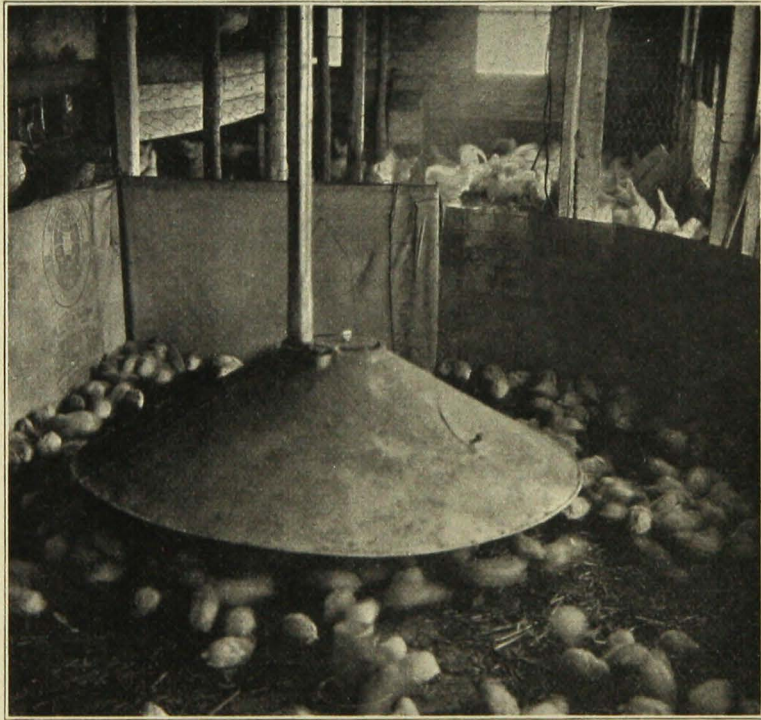


Fig. 1. Coal-Burning Brooder Stove in Use  
Section of laying house used as a brooder house; inadvisable except as a necessity.

The **brooder stove** is the most popular and probably the most practical for broods of a few hundred when kept in reasonably warm buildings, because of the comparatively small cost and because a building of special design and construction is not necessary. However, with any system of brooding a building must be warm, light, and dry. Often a part of the laying house is partitioned off for brooding purposes.

Because of danger from lice, mites, and disease this practice is not advisable except when economy makes it unavoidable.

While it is seldom advisable to run brooder stoves at advertised capacity, they can be operated successfully and at comparatively small cost. It is vital that their heating capacity be proportionate to the size of the building in which they are used. Close attention is essential to success with these devices.

Brooder stoves are built for several kinds of fuel, but those heated with coal are probably the safest and most reliable.

**Oil-burning hovers** are being perfected gradually and altho they have not the heating capacity of the coal-burning brooders they are used with success when the weather is not too cold, in buildings that are warmly constructed or provided with a little auxiliary heat.

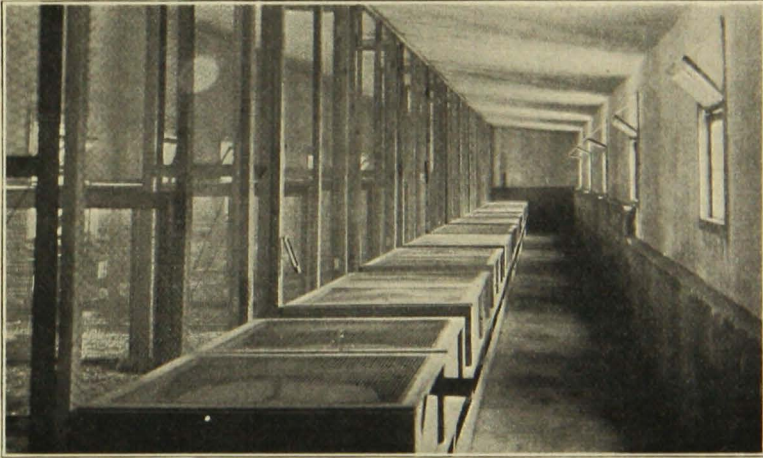


Fig. 2. Continuous Hot Water Brooder

**Portable hovers**, usually heated with oil lamps, are quite adaptable to small broods, 50 to 100 chicks, and have the advantage that they are easily set up, in any warm or semi-warm room. They are comparatively inexpensive, quickly heated, the heat is easily regulated, and the temperature is practically automatically controlled.

**Electric brooders** of the same capacity as the small portable lamp hovers, that are even more easily installed and that are reasonably reliable, have been put on the market more recently, and are used quite commonly.

**Cold hovers** are of little use in the climate of the mid-northwest unless they are in a room in which a temperature of about 70 degrees Fahrenheit is maintained.

## FEEDS

Chicks are little fowls and need the same kinds of feed as larger fowls and just as much variety. We give fowls four classes of feeds: grains, greens, animal feeds, and mineral feeds, besides water.

We feed **grains**, but the grains must be very finely cracked for the comparatively small organs of the chick. The hulls must be removed from the hulled varieties.

The old product known as pinhead oatmeal was an ideal grain feed for young chicks in many ways, especially in size. Wheat and well-seasoned corn cracked to this size are good.

Commercial chick starters are usually composed of all these and several other grains or seeds, the most common of which are millet, kafir corn, cracked peas, and hemp seed. They are desirable feeds because, as usually compounded, they supply a great variety of grains and seeds which are cracked to a suitable size, and the highest grades contain only the sweetest and soundest kernels.

The **greens** must be young and tender, the more so the better. Very early in the season these must consist of hothouse vegetables or those that have been kept through the winter, of which lettuce and cabbage are probably the best. Most any fresh raw vegetable serves the purpose fairly well. Apples, mangels, and beets are suitable, altho freshly grown succulents are more acceptable.

A practice that is altogether too common is that of chopping greens and vegetables for young chicks. It should be discontinued, as it takes too much time and the chicks are better if allowed to pick from a leaf or slice.

When many chicks are hatching, the grass, clover, and many weeds of which the chicks are fond are sprouting. The shorter these are the better they are for the chicks and the better liked. If they can be given in the sod it is excellent, as the practice affords the chick exercise as well as food.

The **animal feeds** must be sweet and wholesome in every particular and of the most nutritious and easily digestible kinds.

Without a certain amount of animal food, chicks will not thrive. Satisfactory results must not be expected if it is withheld or supplied in insufficient amounts. When a shortage in animal food exists, chicks grow slowly, do not develop normally, or if the shortage is too great, pine away and die, which is perhaps just as well, as without a liberal supply of this most important part of their ration, pullets will not be profitable producers even if they reach maturity.

Probably the chief reason why success is difficult for a beginner is that many young chicks die. While it is possible to over-feed to the detriment of the chicks, those that are under-fed and especially those that receive little or no animal protein, are most likely to die.

The results of a series of feeding experiments carried out by the staff of the Poultry Division at the Minnesota Agricultural Experiment Station show most conclusively the absolute necessity of supplementing grains, greens, and mineral feeds with animal feed in some form.

In the first series of experiments, an equal number of chicks of practically the same breeding and of the same hatch were fed the same ration of grains, greens, and mineral foods, but were allowed different amounts of high grade beef scraps for the animal matter, the amounts varying from none to  $33\frac{1}{3}$  per cent. The check pen system was used and results agreed in each case.

The amount of beef scraps had double significance, as it influenced not only the rate of death but the rate of growth.

The feeds used were: (1) commercial chick starter, a mixture of finely cracked grains and seeds; (2) all the greens the chicks would eat; (3) all the mineral matter their appetites demanded (the chicks were put on clean, fine sand and later given artificial chick grit); (4) a dry mash of pure wheat bran to which was added different percentages of high-grade beef scraps varying as follows: to pens 1 and 5, none; to pens 2 and 6, 10 per cent; to pens 3 and 7, 20 per cent; and to pens 4 and 8, 30 per cent. The results were most marked.

In pens 1 and 5 the death rate in twelve weeks was 82 per cent: that is, starting with 52 chicks, only 9 survived, and they gained only 1.34 ounces each during that time.

In pens 2 and 6, in which 10 per cent of beef scraps was added to the wheat bran and only 1.5 per cent of all concentrates (grain, bran, and beef scraps) consumed was beef scraps, the death rate was reduced to 53.4 per cent. But no greater gains in weight were made.

In pens 3 and 7, in which 20 per cent of beef scraps was added to the dry bran mash, and in which 2.7 per cent of the total concentrates consumed was beef scraps, the death rate was slightly reduced, being 51.9 per cent, altho they gained an average of 3.04 ounces—twice as much as those that had a smaller percentage of beef scraps.

In pens 4 and 8, in which 30 per cent of beef scraps was added to the dry bran mash and in which 5.4 per cent of beef scraps was consumed, the death rate was materially decreased, being 25 per cent of the lowest rate in any other group, and the gains in weight were increased about 5.25 ounces.

The markedly improved conditions that prevailed with the largest proportion of animal matter, raised the question of how much could be advantageously added. A new series was tried, in which two pens were fed bran mashes to which 40 per cent and two to which 50 per cent of beef scraps was added. In the first group, in which 12.7 per cent of total concentrates consumed was beef scraps, the chicks averaged 22.7

ounces gain; while in the second group, in which 14.3 per cent of total concentrates consumed was beef scraps, the average gain was 23.02 ounces. With beef scraps in the proportions indicated, normal range growth was very nearly attained with close confinement, an abnormal condition.

The efficiency of powdered whole milk as a source of animal food was tested. The results, as to growth, development, and mortality, were practically the same. The highest number died among those that received no animal protein and the lowest number among those that received the greatest amount, in this case 23 per cent of powdered whole milk in a mash with wheat bran.

The **mineral feeds** must be of a size suitable for the comparatively small organs of the chick. The minerals necessary for the small chick are sand, which remains in the gizzard and grinds the food, and some mineral for the construction of the frame. If beef scraps are fed, these usually contain so much bonemeal that the requirements in that particular are met. If milk is fed, finely ground bone should be included in the mash to the amount of 5 pounds per 100 pounds of mash. When the chicks are a few weeks old it is well to keep ground oyster or clam shells before them constantly, as with older fowls.

The first feeds should be sweet, well-seasoned, and something they like. Moreover, the size of the kernel to be fed is important; it must be neither too large nor too small. Suitable **first feeds** for baby chicks are:

1. Pinhead or steel-cut oatmeal.
2. Very finely cracked wheat or corn, about the size of steel-cut oatmeal
3. Commercial chick starter
4. The yolks of hard-boiled eggs
5. Cracker crumbs or stale dry bread
6. Crumbs soaked in sweet milk.

## CARE OF THE CHICK DAY BY DAY

### First Week

**First day.**—Hardening the chicks for the brooder. For twenty-four hours after the chicks hatch they should be left in the incubator and put through what is sometimes called the "hardening process" which is to accustom them to lower temperatures. As soon as they are all or nearly all hatched and show dry, fluffy down, allow them to drop to the nursery chamber below the tray. Here they are gradually accustomed to the lower temperature of the brooder by leaving the door of the incubator open more and more, by lowering the flame, or both.



Fine sand on the bottom of the machine not only prevents toe-picking, but prepares the gizzard for its work.

**Second day.**—Removing the chicks to the brooder.

**First,** have the brooder ready, every part clean, free from mites, lice, disease germs, and filth of all kinds; and fresh, clean, sifted sand under the hover and over the entire floor space of the scratching pen if possible. (See notes on brooders, page 3.)

**Second,** have the hover warm. The temperature at floor level should be 90 degrees Fahrenheit. Later, let the chicks tell you whether it is too warm or too cold. It should be so warm under the hover that the chicks will spread out, or sit apart as hens do in summer time, not huddle together. You will see their heads protruding from under the canvas or cloth strip and they will utter their low, contented chirp, if warm enough to be perfectly comfortable. On the contrary, if cold they huddle together and utter their sharp peep or complaining note.

They should be put under the hover, from under which they will come very soon. Occasionally they should be gently pushed back until they know where the heat is. It is well to place a circle of one-inch mesh wire netting around the hover about 36 inches outside, if it is a stove brooder. The distance depends upon the temperature and the number and age of the chicks. This is to prevent them going too far away, as they are likely to become chilled. Another circle of wire should be placed under the hover to prevent the chicks getting too close to the fire.

Other styles of hovers are boxed in so that the chicks can not get far away and not so close but that they can get a little way from the hover if it is too warm.

Both water and grit should be supplied before food. This lessens the chance of bowel troubles. Greens, if of very young growth, may be fed as soon as one likes provided they are given so that the chicks are compelled to pick out small bits. No attempt should be made to chop them, but let the chicks pick from the leaf or slice.

On this day the chicks will probably show signs of hunger, and should be **sparingly** fed.

**First feed.**—There are different opinions as to whether the feeds should be finely cracked grains, or a mixture of fine meals, usually referred to as mashes or dry mashes. Both methods are used with success but the former, that of feeding small seeds or cracked grains, is most common and perhaps most successful generally.

Give a small supply of one of the feeds mentioned. If one of the dry, hard feeds, give on the sand and in good light; if one of the moist feeds, give on a clean board or in a metal dish. Give a small supply

and see that every chick eats. If one does not, make it drink a swallow or two of water. Feed every two hours. If any of a previous supply is found before them, do not feed until chicks are hungry. If this feed is of the moist kind, remove it.

**Third day.**—Feed as during the second day; a small handful will be enough for each feeding for a brood of fifty chicks. In addition give greens—a lettuce leaf, an inside cabbage leaf, or short grass on the sod, but make them pick it; do not cut up greens or feed any that they can swallow whole or in large pieces. A small bite is enough for one swallow. Never feed more than the chicks will eat.

**Fourth day.**—Feed as on third day, gradually giving more of both the grain and the green feeds.

Remove the water for an hour each morning and evening and give **fresh, sweet, whole milk**. A small supply will do much to keep chicks healthy and growing.

Use a few handfuls of cut straw or hay chaff (dry, sweet, and clean) for litter. Throw grain into this and teach them to exercise. This is very essential. (See paragraph on exercise, page 12.)

**Fifth day.**—Repeat feedings as on fourth day except omit one cracked grain feeding and in place feed a very little **pure wheat bran** on a clean board or in metal dishes—just what the chicks will eat in five or six minutes, no more. If pure bran can not be obtained, or if you desire to do so, buy some good well-known, thoroly tried chick mash and feed by the same method. With such a mash, milk may or may not be given. If milk is supplied, the mash or bran should be taken away at least one hour before the milk is given. (See paragraph on mash feeds, page 11.)

With a simple mash of wheat bran, milk or a high grade of beef scraps is necessary to promote proper growth.

Feed beef scraps just as directed for bran. Begin the fourth day if milk is not given, and increase gradually; or mix with the wheat bran in proportion of 7 pounds bran and 3 pounds beef scraps.

Feed young, tender greens liberally.

**Sixth and seventh days.**—Feed as on fifth day.

### Second Week

Feed as on seventh day, gradually increasing quantities of mash, grains, and greens. After ten or twelve days feed mash or bran and beef scraps mixed, in hoppers.

### Feathering Period

(Two to eight weeks of age)

During the feathering period the chicks are acquiring feathers rapidly as well as developing frame, and need a liberal supply of concentrated animal food of such a nature that it may be easily digested.

Then feed:

(1) A good commercial chick mash which should be fed in hoppers, or

(2) A mash composed of equal parts by weight of cornmeal, wheat middlings, pure wheat bran, and oat flour, fed in hoppers; with a constant supply of skim milk, sweet or sour, or buttermilk, but adhere to one or the other and do not change.

(3) When milk is not available, add a double portion by weight of high-grade beef scraps to the above mash.

(4) No mash, no water, but skim milk, sweet or sour, or buttermilk constantly before them, following the plan outlined below as to scratch feeds.

For the night feeds at the age of four weeks, add to the finely cracked grain a little wheat or cracked corn, increasing the quantities gradually; or feed large sized chick feeds at night but continue to give the "chick scratch" or finely cracked chick feeds at other feeding times, as the finer the feeds the more exercise necessary to appease the appetite. Arrange feeding methods so that the chicks are compelled to exercise briskly several times a day. (See paragraph on exercise, page 12.)

### Overfeeding

At any time, and particularly during the first and second weeks, overfeeding results in disastrous losses. The tendency, especially for a beginner, is to feed too liberally. If scratch feed remains on the floor for any length of time the chicks are sure to lose their taste for it, refuse to eat it, and actually starve in the midst of plenty.

### Range Period

(Eight weeks to maturity)

Put chicks on range as soon as the weather is quite mild. At this age the lighter breeds will be feathered out, and the medium and heavy breeds partially so. As seasons vary, the time when chicks may be put on range will vary also. There is danger of getting the chicks out too early.

**Grains and dry mash** may both be fed in hoppers, if desired, in order to save labor.

**Mash**, in general, may consist of finely ground grains and their by-products, to which may be added always a small amount of fine table salt and enough beef scraps to supply the protein element. Occasionally, as when green foods are lacking or scarce, ground alfalfa or clover is used to supply the vegetable element.

**Mixing the mash.**—The mash should be thoroly mixed and particular care taken that there are no lumps of salt. Keep in a dry, cool place until used. Alfalfa or clover, when used in mash feeds, must be finely ground and should be the finest quality obtainable; that is, should consist of leaves without stalks, which are too tough for easy digestion by either fowls or chicks.

No. 2 or No. 3 mash may be used during this period or commercial growing mashes may be substituted. (See page 11.) Ground oats, hulls removed, should be used instead of oat flour in No. 3 or No. 4, and 1 pound of fine table salt to every 100 pounds of mash. If there is a shortage of fresh, succulent greens and none can be obtained, use one half the amount of wheat bran and substitute alfalfa leaf meal for the other half.

**Animal foods for range period.**—If skimmilk or buttermilk is available in unlimited quantity, beef scraps are not absolutely necessary. A constant supply of both milk and beef scraps promotes rapid growth. The amount of beef scraps in the mash mixture may be reduced in proportion to the amount of milk products available. To insure rapid growth it is well to add at least 10 per cent of beef scraps to the dry mash mixture. If the supply of milk is not plentiful or is irregular, it is better to add 15 per cent or slightly more of beef scraps to the dry mash.

Another quite satisfactory method is to use two hoppers, one for a mash mixture with no beef scraps included, and another filled with high grade beef scraps only. As chicks prefer bugs, worms, and insects to dry beef scraps, they will eat the latter only when there is a shortage of the former. Chicks may be trusted to balance their rations when all necessary elements are accessible.

## SPECIAL NOTES ON FEEDING AND CARE OF CHICKS

**Exercise** is important at all ages, as it not only makes a healthy chick but a meaty chick as well. The notion that exercise takes off rather than put on meat is erroneous. The sooner a chick is taught to exercise the better for the chick, and the better for you, because you will have not only better chicks but many more chicks. Chicks exercise vigorously in seeking the finely cracked grains scattered in a litter; but the right sort of litter must be provided. Light, loose, dry litter is ideal.

**Confined quarters** increase the amount of work required to raise chicks. The care differs from that of range chicks in that all greens and all animal foods must be provided, and exercise compelled. If too closely confined, it is almost impossible to grow chicks at a profit, even with the most constant and faithful care.