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## EC730 Revised 1933 A Colony Brooder House for the Farm Flock

J. R. Redditt

Paul R. Hoff

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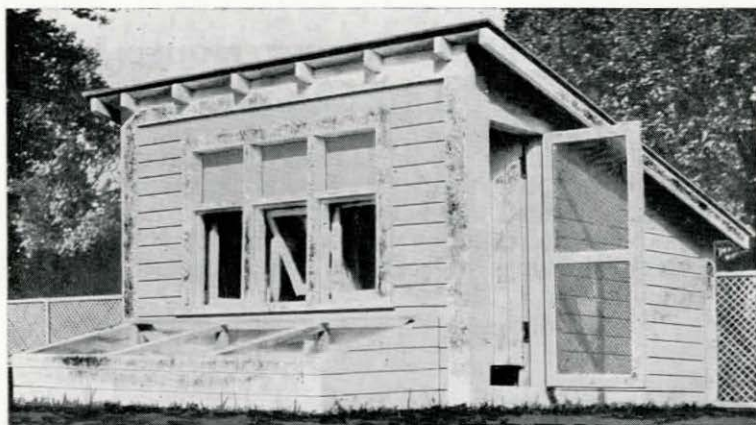
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Extension Circular 730 - 33

Revised, April, 1933

## A Colony Brooder House for the Farm Flock



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The University of Nebraska Agricultural College Extension Service  
and United States Department of Agriculture Cooperating  
W. H. Brokaw, Director, Lincoln

## **A Movable Brooder House Is an Aid to Sanitation**

Equipment which lends itself to sanitary practices promotes sturdy and constant growth of the chicks without any setbacks is of material aid in making the poultry venture a financial success. Sanitation insures health which is necessary for quality and profit.

A type of brooder house which can be readily moved to clean ground makes disease and parasite control much easier. Most of the death loss, worm infestation and low vitality in so many farm flocks is due to the use of old ground on which chickens have run year after year. The germs of coccidiosis, fowl typhoid, fowl cholera, bacillary white diarrhea, blackhead and other diseases as well as the eggs of round worm and tapeworms live over in the constantly used soil.

## **A Colony Brooder House for the Farm Flock**

J. R. REDDITT AND PAUL R. HOFF

Success with poultry depends largely upon the care which the chicks receive at the very beginning of the brooding period. The colony brooder house is essential because it affords a suitable environment for carrying out the duties of brooding. It must shelter and protect the chicks, retain the necessary amount of heat, and provide ventilation and light. In addition it must be durable, not difficult to move, reasonable in first cost, and convenient.

### **Size of Brooder House to Use**

Heretofore it has been assumed that the size of the brooder house is determined by the number of chicks to be brooded. A new thought which is being advanced, and one worthy of consideration, is that the size and purpose of the flock should determine the size of the brooding units.

For the average sized farm flock of about 150 chickens, the 10' x 12' movable colony brooder house has become almost nation-wide in its popularity. It is a standard unit well adapted to our rather standard sized farm flocks. The small house has been found to be less efficient than the permanent type of brooder house for large or commercial flocks, and poultrymen who plan to brood over 500 chicks should investigate the large brooding units before investing in a number of small 10' x 12' houses. (Commercial brooding and equipment are discussed in a separate circular.)

In allowing the size of flock to influence the size of brooder house, the number of pullets necessarily added each year is taken into consideration. Average farm flocks of 150 hens and pullets contain approximately two pullets to each hen, or 100 pullets. Allowing  $2\frac{1}{2}$  chicks per square foot, the 120 square feet of floor space will accommodate 300 chicks, the number necessary to maintain the addition of 100 pullets each year.

Flock owners on rented farms find the 10' x 12' brooder house an excellent place to keep 30 to 40 hens. It may be moved to another farm if desired.



### Construction of the 10' x 12' Brooder House (See Pages 8 & 9)

**Skids:** The brooder house is built on 4" x 4" skids, 14' long, beveled sled runner fashion on both ends. The skids are set at the edge of the house, just under the walls, and run the long way of the house. They are bolted, not nailed to the floor frame, as they may need to be replaced every few years. It is a simple matter to jack up the house, remove the old skids and bolt on new ones. Pressure creosote treatment will greatly lengthen the life of the skids. The ends of the skids are drilled to take  $\frac{1}{2}$  inch bolts holding clevises to hitch to when the house is moved.

**Floor:** The frame for the floor is laid on 2" x 8" sills, which are bolted to the skids. The floor joists are 12 feet long and are placed 2 feet on centers with spacers running through the center to hold the joists rigid.

When it is desired to raise early broilers and later use the brooder house for a second brood of chicks, the double floor proves its value. The sub-floor is usually shiplap, with a layer of building paper over it, and matched flooring above. The double floor results in more easily controlled temperature, lower fuel costs and sturdier, faster growing chicks. In this way a substantial saving is effected. Brooder houses used for only one brood of chicks during the months of April and May give very satisfactory results with a single floor. When the single floor is used alone, it should be of matched lumber.

**Wire Floor:** Wire floors or floors covered with hail screen (hardware cloth) have created rather widespread interest. Questions are constantly arising regarding the use of wire on the brooder house floor. After using it in various ways at the Nebraska Experiment Station poultry plant, the following general conclusions regarding its use have been reached:

*General.* Hardware cloth is recommended for battery brooders and also for floors of outdoor platforms and sun parlors having wind shelter.

An equally satisfactory plan for brooder house floors is to use wire or screen covered feed and water platforms along almost the full length of the west wall of the brooder house.

*Advantages.* Hardware cloth floors permit rather strict sanitation practices being maintained in the brooder house, provided frequent cleaning is practiced. They do not eliminate cleaning.

*Disadvantages.* Chicks do not seem to like hardware cloth floors as well as ordinary floors covered with litter.

Floor drafts are more pronounced and difficult to control in brooder houses equipped with wire floors.

The cleaning of wire floors is often quite a chore. The use and construction of them for best results requires that the wire screen be attached to the edges of frames made of 1" x 4" strips. These frames should be made to cover the floor completely, fit snugly and handle easily to permit frequent and thorough cleaning.

Wire floors are more likely to encourage toe-picking and cannibalism because of the danger of the chicks toes being caught or caused to bleed on the wire.

**Walls:** As the brooder house is subjected to strains and jerks when moving, the walls must be made stronger than is usually done in small building construction. Weather boarding is drop siding and the studs are 2" x 4" placed 2 feet on centers. Corners, window and door openings should be cased or otherwise treated to prevent wind and rain from entering.

**Roof:** Roof sheathing should be shiplap laid on 2" x 4" rafters placed 2 feet on centers. There is a 12 inch overhang on all four sides. The roof covering may be any of the usual

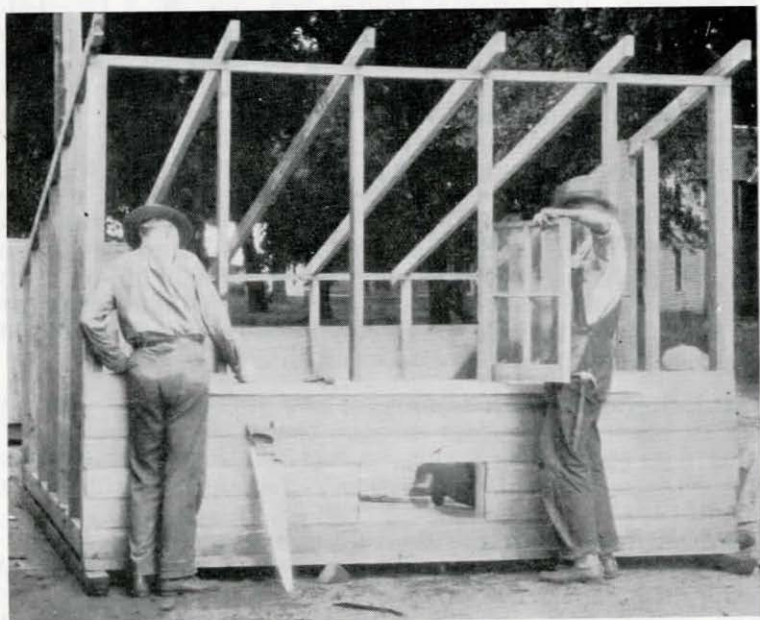


FIG. 1.—Note strong frame construction. Studs and headers set to conform to window measurements. A wide chick door is provided.





FIG. 2.—Brooder house in use showing sun parlor and window arrangement.

roofing preparations. Shingles will last several years but the roof is too flat to use them with entire satisfaction.

**Windows:** The brooder house has four 9" x 12"—4-lt. barn sash. Three sash are grouped on the front or south side of the house and the fourth is placed on the west wall. The two end windows in the front wall are hinged at the outside edges and swing in, being hung from the wall studs, and the center sash is merely set in and held in place by catches or buttons. The window on the west wall is hinged to the stud towards the rear of the building and also swings in. As is seen from the floor plan, Fig. 5, all of the windows that are hinged, are hinged at the side, and swing in, and the center front window, the only one not hinged, is held in place by catches, and can be taken out entirely. This window arrangement was found to give maximum possible variation in the amount of ventilation and direct sunshine in the house.

**Insulation:** Insulation may be compared to the double floor. It prevents heat loss through the walls and ceiling and in this way saves fuel, insures a more uniform temperature and, as in the case of double floor, makes brooding more efficient.

When all four walls and the ceiling are lined with insulating material, maximum benefits in fuel saving and efficient brooding are experienced; however, many brooder houses are giving satisfactory results with only the ceiling and rear (north) wall lined with insulating material. Uninsulated brooder houses are hard to heat, especially on windy nights

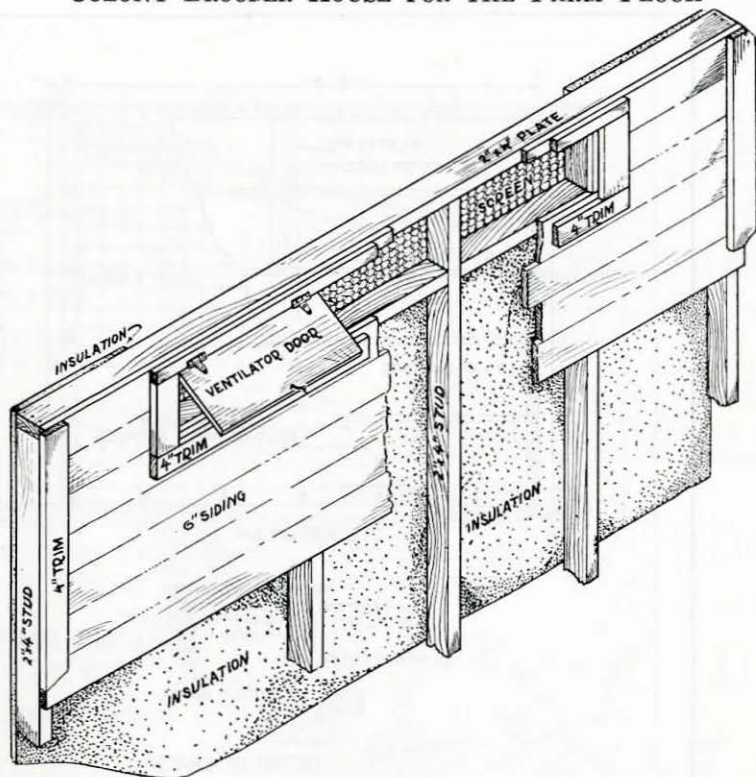


FIG. 3.—Phantom illustration showing rear ventilation and insulation.

when the outside temperature may drop rapidly, making it hard to maintain the proper temperature inside the house.

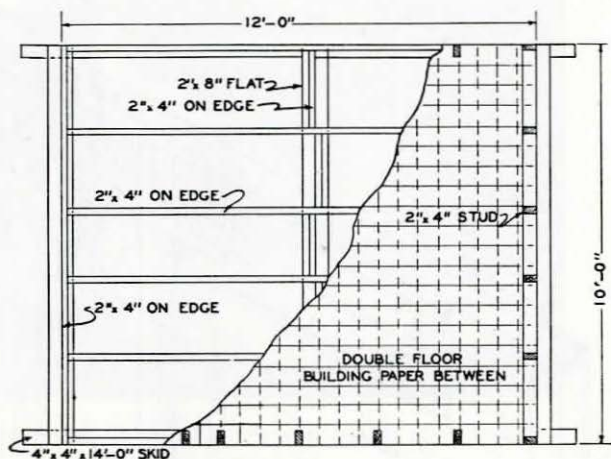
In three years' use, the extra cost of an insulated brooder house may be accounted for in fuel saving alone. This is particularly true where early broilers are raised. The improved quality of chicks raised is the most important factor.

Material used for insulation lining includes wood and the many wood substitutes. It is necessary to coat most of these materials with paint, creosote, or some other material distasteful to chicks. The writers have seen a large number of instances where the whole lower edges of the wall linings were entirely destroyed by the chicks.

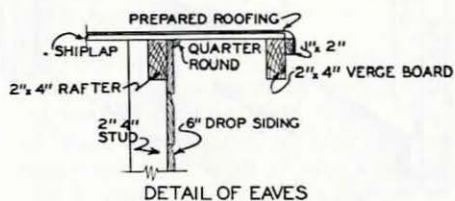
In most cases there is very little difference in the insulating value of the several products, (*per inch of thickness*); most of the insulating materials being  $\frac{1}{2}$  inch thick.

**Ventilation:** In addition to the ventilation secured through the windows at the front and side of the house, three

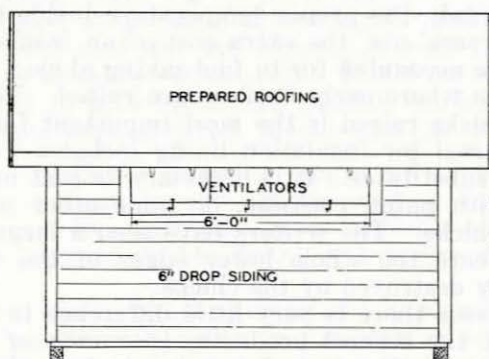




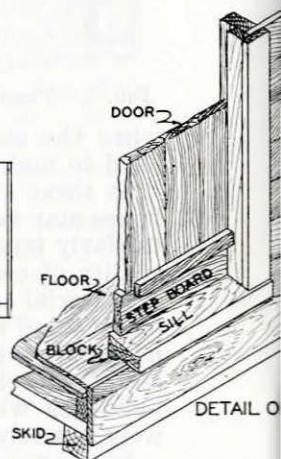
FLOOR PLAN



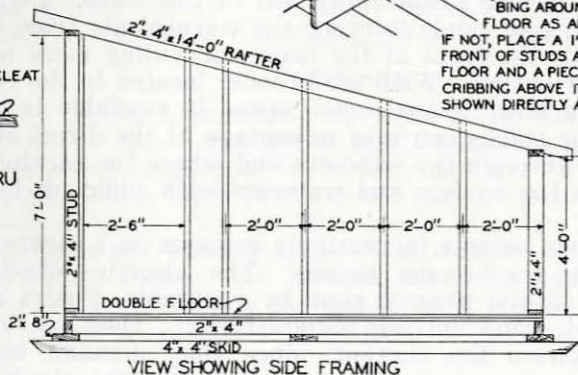
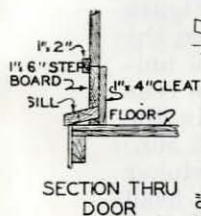
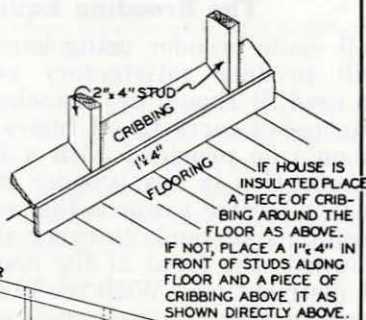
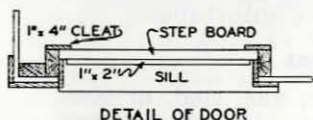
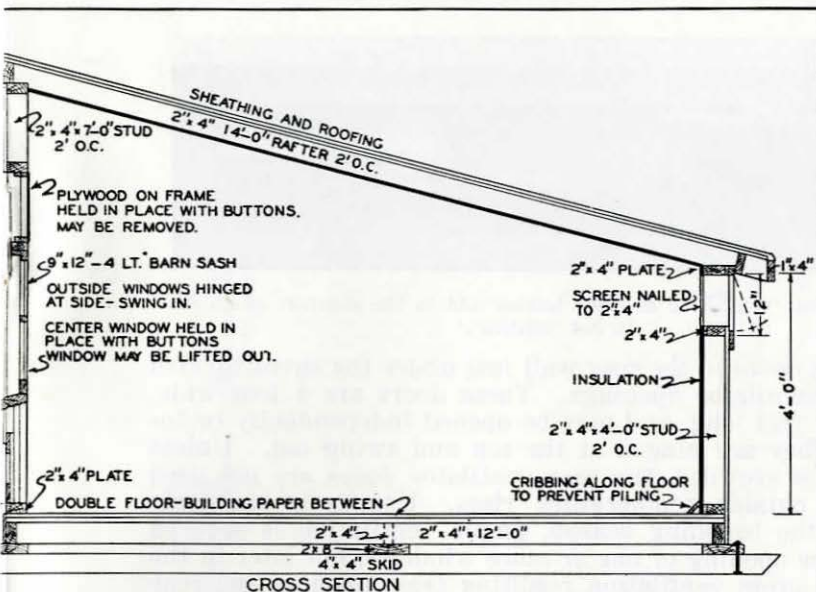
DETAIL OF EAVES



REAR VIEW



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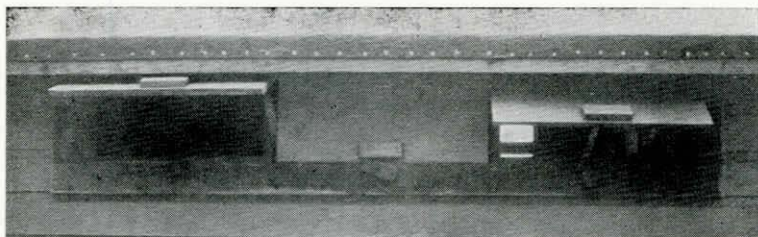


FIG. 4.—Rear ventilated brooder houses add to the comfort of chicks in hot weather.

ventilating doors in the rear wall just under the eaves furnish auxiliary ventilator openings. These doors are 1 foot wide, each one 2 feet long, and may be opened independently or together. They are hinged at the top and swing out. Unless the house is crowded, the rear ventilator doors are not used until the outside temperature rises. Usually in the early weeks of the brooding season, ample ventilation is secured through the opening of one or more windows, but later in the season the cross ventilation resulting from opening the rear ventilators usually keeps the house very comfortable.

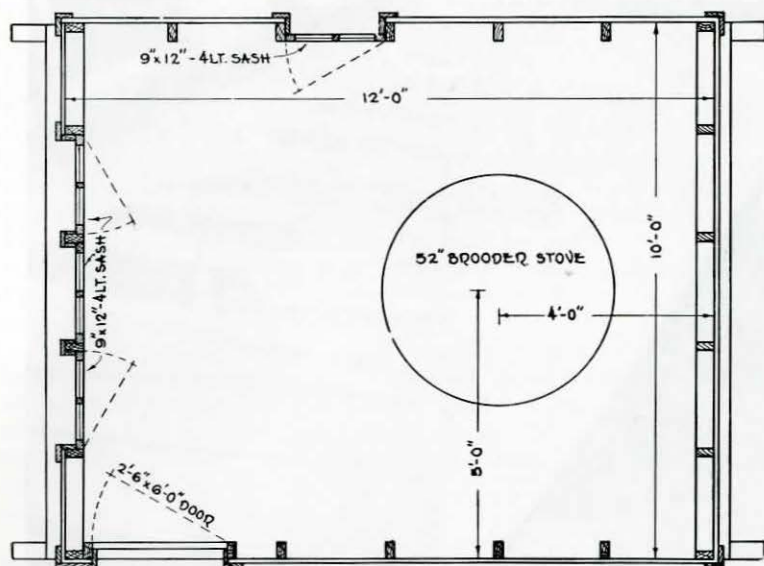
### **The Brooding Equipment**

Any well made brooder using kerosene, gas, coal, or electricity will produce satisfactory results. If a hover type brooder is used, it should be 52 inches in diameter or larger. For the purpose of carrying off fumes, all types but an electric brooder should be provided with a flue leading through the roof, as combustion in any brooder stove will produce fumes. The brooder is located towards the rear of the house. Figure 5. The sloping roof tends to carry the warmed air from the brooder towards the front of the house, providing more uniform heat distribution. With the brooder located to the rear of the house, a large unobstructed space is available in the front where the chicks can take advantage of the direct sunshine entering through the windows and where the caretaker can work with the feeders and waterers with sufficient head room.

Electricity has become increasingly common as a means of furnishing heat for brooder houses. The electric brooders manufactured at the present time by reputable dealers are built to do their work entirely satisfactorily. They are suitable only for power line current, since they demand more current than can be supplied from most farm light plants.

Before purchasing an electric brooder, it is wise to inquire as to the cost of operation from the power company furnishing





FLOOR PLAN NEBRASKA TYPE 10'x12' BROODER HOUSE

FIG. 5.—Floor plan with window arrangement and brooder location indicated.

the current, as electric brooders are heavy consumers of current, compared to some of the pieces of electrical equipment.

An electric brooder used with a hard coal or kerosene brooder seems to be more satisfactory and economical than when operated alone. In a large brooder house, the two can be used successfully, combining the advantages of both.

### Lighting

Many people have discovered that a dim light burning in the brooder house all night is good insurance against crowding. On farms equipped with electricity, a 10-watt bulb, partially shaded, is hung in the front part of the brooder house in such a manner that any direct rays from the light fall only on the feed and water stands. Where electricity is not available, an oil lantern will furnish about the same amount of light. Especially after the chicks have started to roost, the light should be shaded so the roosts are in nearly total darkness.

As extra protection against crowding, a number of manufacturers of brooders are placing a small red or blue light under the hover. This light seems to be an attraction to the



FIG. 6.—The top of the sun parlor is screened with 1 inch poultry netting to allow direct sunshine to enter.

chicks and prevents them piling in cold corners away from the hover.

During the daytime, when toe-picking and cannibalism are harder to control, the house may be darkened and light supplied from either red or blue lights strong enough to allow the chicks to feed readily. Since the chicks can not see fresh blood in such a light, control of such vices is very easy.

For the past several years, statements have been made concerning the desirability of burning dim lights on chicks all night as a means of stimulating growth. Many poultry men claim remarkable success through this practice, while others are doubtful.

#### **Brooder House Litter**

Litter in the ordinary brooder house is intended to help make brooding sanitary. The kind of litter used and the way it is sometimes used may have exactly the reverse effect. For instance, clean sand is used in some localities for litter and as we think of it, some of us are likely to be favorably impressed with the idea; yet sand as litter is said to be one of the most active means of spreading coccidiosis among chicks. If coccidiosis is present in the brood, it does stand to reason that this accusation might apply because chicks will pick in sand more than in many other forms of litter.



Good litter will be something light through which droppings will filter readily and, at the same time, it must be inexpensive to use. The average farm poultry raiser, being forced through circumstances to use what he has available, may use chaff, chopped straw, plain straw, hay or leaves and find any one of them quite satisfactory when cleaned out sufficiently often. In the corn belt, ground corn cobs are gaining popularity as litter for chicks. Seemingly this product is meeting the essential requirements of brooder house litter. Points in its favor include low cost, wide availability, lightness, and absorptive power. Cobs can be run through a hammer mill at a cost of about two dollars a ton.

At times when wheat bran was quite low priced in some localities, it was used for litter with good results. Like the sand, however, chicks ate it, and while it was all right to eat at first when it was clean, it very soon became the means of spreading disease. Of all forms of litter, bran is one of the quickest to mold; and moldy litter, whether it is straw, hay, cobs, or bran, is harmful to chicks.

In spite of costs and its becoming rather dusty, peat moss has a number of points in its favor such as lightness, freedom from mold, little danger of being eaten by chicks and power to absorb moisture, but at five times the cost of wheat bran a good many poultry raisers feel they cannot afford it in view of prevailing poultry and egg prices. Any litter must be removed as it becomes dirty if it is to be effective in maintaining sanitation and health in the flock.

### **Chick Training Roosts**

Losses and stunted growth resulting from crowding, piling, and smothering are well known to the average poultry raiser. Preventing these unnecessary losses and runts is one of the poultryman's first jobs. Since it is well known that piling ceases as soon as the chicks start roosting, it becomes our duty to get the chicks onto perches as soon as possible. This is done by using training roosts early in the brooding period. Such roosts are regarded by successful poultrymen as necessary brooder house equipment.

A popular type of training roost and one that is easy to make, consists of small strips of lumber, such as laths, nailed to supports over which small mesh poultry netting or hardware cloth has first been tacked. The wire netting keeps the chicks from getting to the floor where they can pile and crowd and also keeps them out of the damp manure which has a damaging effect.

Since this type of roost is flat and chicks are inclined to climb, a common practice is to raise the back or side of the



roost that is against the wall. With the front side on the brooder house floor and the back raised six or eight inches, the chicks are encouraged to climb the roosts. If training roosts are put in the first week, a number of chicks will have learned to roost in a few days and others will quickly follow. Precautions must be taken to keep chicks from getting underneath these training roosts.

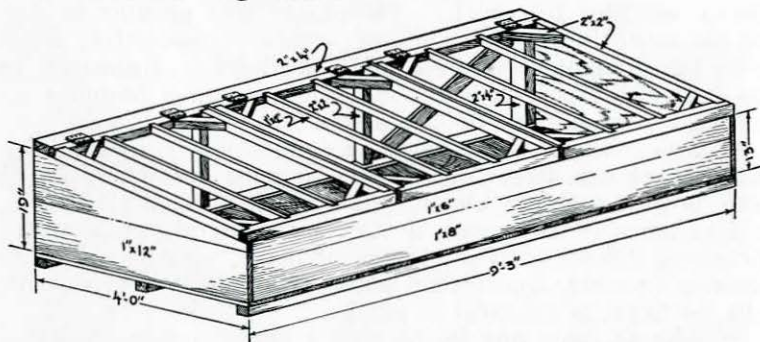


FIG. 7.—Details of Sun Parlor Construction.

### The Brooder House Sun Parlor

A sun parlor, Figure 6, is a small lean-to structure in front of the brooder house. The many good features of the sun parlor have won for it wide popularity and use. Some of these features are as follows:

1. It economically enlarges the brooder house, adding room for approximately 75 to 100 chicks to the capacity of the house.
2. Chicks are permitted to get away from the heat and have a chance to exercise in cool fresh air.
3. Chicks are permitted to get into the direct sunlight for which there is no substitute.
4. Sun parlors keep chicks off the ground and thus lessen the danger of coccidiosis and other diseases.
5. The wall of the sun parlor provides a windbreak which prevents the chicks being chilled too quickly.

The sun parlor shown is 10 feet long and 4 feet wide, being attached directly to the front of the brooder house. The floor may be either solid flooring, in which case it may later be used inside the house for a dropping board, or it may be made of hardware cloth. In either case it is made separate from the walls of the sun parlor for ease in cleaning. The three hinged frames making the top are covered with 1 inch mesh poultry screen.

### Brooder House Equipment

Chick raising is simplified and usually more successfully done where brooder houses are properly equipped with efficient labor saving and sanitary equipment. Essential equipment consists of feeders and waterers with low hardware cloth covered platforms upon which to place them. Enough feeders should be provided to allow half the chicks to eat at once and waterers for one-third of the chicks to drink at once. Details regarding the building and use of poultry equipment are given in Nebraska Extension Circular No. 1441.

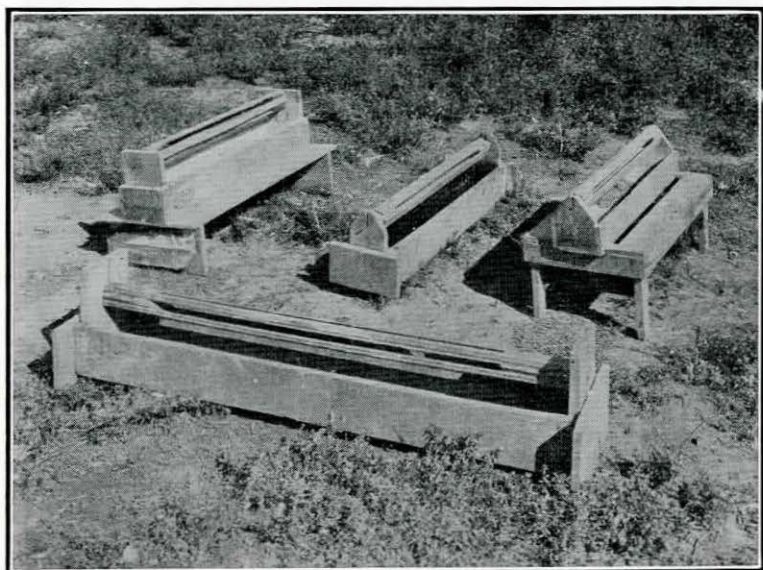


FIG. 8.—Chick mash feeders in common use on many Nebraska farms.

If more detailed blueprints are desired before building either the brooder house or sun parlor, they may be secured from the agricultural extension service, college of agriculture, Lincoln, Nebraska. Please order by the following numbers:

Brooder House Plan 10: 727-9—30c.

Sun Parlor Plan: 727-13—15c.

Distributed in furtherance of cooperative agricultural extension work. Acts of May 8, 1914, and June 30, 1914. Extension Service of The University of Nebraska Agricultural College and U. S. Department of Agriculture cooperating. W. H. Brokaw, Director of Agricultural Extension Service.

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(Revised 4-33-10M)

### **REMODELLING AN EXISTING BUILDING INTO A BROODER HOUSE**

Almost any small building can be remodelled into a satisfactory place to brood baby chicks. The brooder house described in this circular can be used as a model, and any building to be remodelled should be made to conform to it as closely as possible.

The exact size is not as important as the amount and arrangements of windows, ventilation, movability and tightness. Tightness is important in conserving heat.

If it is not possible to purchase insulating material to keep out cold drafts, and to conserve heat, an efficient substitute can be used. Wire netting can be tacked to the underside of the rafters and to the inside of the wall studs. The space between the wire and the sheeting boards can be stuffed with straw to form an insulating layer. It is most important that the ceiling is insulated. The north wall comes next, and then the west and east walls, in order of importance.