Brooder Houses

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O.S.C. Brooder Houses

By
H. E. Cosby*

BROODER HOUSING PRINCIPLES

Good brooder houses are essential in the artificial brooding of chicks or poults if satisfactory results are to be obtained economically. They must provide adequate capacity, dryness, ventilation without drafts, entrance of sunlight, protection from enemies, and ease of cleaning.

Capacity. It is very important not to crowd chicks or poults in a brooder house. Best results cannot be attained unless sufficient floor space is provided. Observance of the following space recommendations is particularly important where birds are reared to range age in brooder houses using artificial yards exclusively.

Ordinary run chicks—approximately half pullets and half cockerels as they ordinarily hatch—should be given about 50 square feet of floor space for each 100 day-old chicks, where from 300 to 500 are brooded together. It is assumed that the cockerels will be removed as soon as they can be distinguished, because the growing pullets will need the space relinquished by the cockerels.

Sexed day-old pullets should be provided with about 100 square feet of floor space for 100 pullets. Since there are no males to remove when they are from 3 to 5 weeks of age, the only way to prevent crowding as the pullets grow is to limit the number originally put into the house.

Poults require about the same amount of floor space as sexed pullets; namely, 100 square feet to 100 poults.

Dryness. Dryness is highly desirable in a brooder house. The construction of a double floor with air space between the upper and lower boards, tight walls and a good roof will aid in the control of the moisture problem.

Ventilation. An adequate amount of fresh air is essential to the best results in brooding; but direct drafts must be avoided.

Sunlight is desirable during the brooding period even though its equivalent in ultra-violet rays is supplied by vitamin D products incorporated in present day starter mashes or pellets.

*Acknowledgment is given to H. R. Sinnard of the Department of Agricultural Engineering for assistance in the preparation of the building plans shown in this bulletin.
Protection from enemies. Rats, cats, many other animals and birds will inflict heavy losses on chicks or poults if given access to the brooder house. Hence it is essential that the house be constructed to keep such enemies out.

Cleaning. Brooder houses should be cleaned frequently and disinfected thoroughly, at least at the start of each new brood. The construction should be such as to make it possible to clean and disinfect easily. Walls that are smooth on the inside, at least to a height of 4 feet above the floor, and floors that are tight and smooth facilitate cleaning. All interior equipment should either be removable, or hinged to the wall so that it can be raised up from the floor during the process of cleaning.

YARDING

It is highly desirable to let chicks or poults out of brooder houses just as quickly as the season and weather will permit. A yard must be provided around the brooder house for this purpose. The kind of yard to be provided in any particular situation will depend upon the type of brooder house used, and to some extent upon the means and preferences of the poultryman.

Soil contamination. It is poor brooding management to attempt to brood chicks or poults year after year on the same soil yards. There are many kinds of diseases, germs and parasite eggs with which such soil may become contaminated and serious losses are likely to result in young stock having access to contaminated yards. There is no very practical or effective way of disinfecting soil.

This problem is handled, in the case of portable brooder houses, by moving them at frequent intervals to clean ground; namely, ground upon which no poultry, young or old, has been kept for a year or longer. Stationary brooder houses cannot be moved, and so, in this case, the most frequent solution is the employment of artificial yards.

Wire porches have given general satisfaction and are widely used as outside runs for either chicks or poults until they are old enough to be moved to the growing range.

The sun porch should be constructed the length of the brooder room and a minimum of 8 feet wide, where commercial numbers of chicks or poults are brooded. The floor wire should be a galvanized product and no smaller than 18 gauge 1-inch mesh.
Lath porches can be made from 1¼ inch slats placed from 1 to 1½ inches apart. This material should be oil treated to facilitate cleaning and to protect it longer from the effects of weathering.

Cement and board porches have been used successfully. They require frequent washing. Since more labor is involved in their sanitary care and maintenance neither one is so widely used as the wire or lath type of porch.

BROODERS

Various types of brooders, such as electric, gas, coal, kerosene, wood, fuel oil, and featherboards are used successfully in brooding young stock. Such brooders are removable and do not constitute built-in-equipment as an integral part of brooder house construction.

Some classes of brooders found on farms engaged in large scale brooding operations are definite stationary installations. Among those generally used in Oregon are: the continuous hot-water-pipe brooders where water is heated by a central boiler, the furnace-heated room where featherboard brooders are used, and the underfloor type where flues from a furnace are built under a concrete floor to supply heat to the brooder. Each type of stationary brooder installation is complex and presents its own engineering and construction problems.

TYPES OF BROODER HOUSES

Brooder houses may be divided into two classes: (1) stationary, built on permanent foundations, and (2) portable, built on skids so they may be moved by team or tractor to new ground areas.

The size of the brooding operations, the acreage of land, the availability of draft power, and the need of saving labor are factors for each farmer to consider in determining whether the brooder house should be centrally located and equipped with an artificial yard or the portable house plan be carried out in fact.

O.S.C. STATIONARY BROODER HOUSE

For a number of years Oregon State College has used stationary brooder houses with success. A number of houses of this general type have been built on Oregon farms and have proved successful under commercial conditions.

Dimensions. The house pictured on the cover of this bulletin is one for which plans are given on pages 8 and 9. It is 20 feet by 140 feet over all. It is divided by solid walls into eight brooding
rooms each 16 feet square, and one feed room, which is 12 feet by 20 feet. A 4-foot hallway runs the length of the building at the back. A building of this design can be constructed to contain either more or less than the eight brooding chambers shown here.

**Capacity.** Each 16 feet by 16 feet brooding room will accommodate 500 straight run chicks up to the age when the cockerels can be detected and removed. Each room will accommodate 250 day old pullets or poults during the normal brooding period of 8 weeks. The capacity of the brooder used might have to justify brooding a lesser number but not greater than the capacity of the room.

![Figure 1. Front windows, O.S.C. stationary brooder house.](image)

**Walls and ceiling.** The front wall is of double construction primarily to leave the inner surface smooth. The partitions are all of single construction with boards running up and down. This type of construction requires no studding within 4 feet of the floor, so that each wall is relatively smooth on both sides. For average conditions in most parts of Oregon it has been found that ceilings are not necessary and consequently none is shown in the drawing. In the extremely cold sections of the state, or in the warm sections where summer brooding is done, the additional expense of a ceiling would be justified.

**Floors.** The floors shown in the drawings are of double construction; that is, two board floors with an insulating air space between. Cement floors are frequently used and are successful if they are properly constructed with adequate drainage.
Windows and ventilators. Two windows, 4 feet by 3 feet, are provided for each brooding room. These windows are equipped with glass-substitute covered frames hinged in the middle so that the top half may be tipped in to any desired angle or opened entirely according to the amount of ventilation desired. Wind baffles are provided on each side of each window to prevent wind from blowing directly in when the frame is open.

Figure 2. An electric brooder in operation in an O.S.C. stationary brooder house room.
WINDOW DETAIL

1x4 Casing

ii
2'-0" O.C.

WINDOW CURTAIN DETAIL

Scale 1/8" = 1'-0"

1x6 Sheathing Spaced 2"
2x4 Rafter
Shingles

6" x 3/4" Casing

1x4 Casing

Board For Wind Break

Top Half Swings Down 18"

Shut Muslin

2x3

1x6 T & G Ceiling Joists 4'-0"

1x6 T & G Flooring

SECTION B-B'

Scale 1/8" = 1'-0"

DOOR DETAIL

Double 2x4 Plate

Partitions Between Rooms Of Vert. T & G Siding 1x6 Extending To Roof

2 Position Of Roast When Up

Door 2'-6" X 6-0"

Wire Fence

Cross Section AA'

Scale 1/8" = 1'-0"

Figure 3. Working drawing
S.C. stationary brooder house.
In the rear wall of each brooding room a ventilator opening into the hallway is provided. The amount of ventilation is controlled by a slide regulated from the hallway.

Doors. Each door leading into a brooder room from the hallway should be equipped with a glass window so that during routine inspection trips the brooder and chicks may be observed without the attendant needlessly entering the pen.

At the bottom of each door on the pen side a 1"x12" board is fitted in slides and the bottom of the hinged door comes to within about a half inch of the top of this board. This arrangement makes it possible to open the door without interfering with the litter. The board can be lifted out when the pen is being cleaned.

The chick door lifts up. Its bottom is on the same level as the floor and porch, which makes it easier to train chicks to go in and out. The height to which the door is lifted should be varied according to the size of the developing birds. As the birds grow larger it will be found desirable to put a 1"x4" across the bottom of the doorway to keep the litter from being scratched out onto the porch.

Roosts. The roosting frames are hinged to the rear wall until needed by the chicks or during cleaning. One-inch poultry netting is tacked to the underside of the roost racks. The perches should be made of 2"x2"x12" or preferably made of 2"x3"x12" material and should be left flat, with no rounding off of the edges.

When the chicks are first taught to roost the outer edge of the frame is let clear down to the floor. Later this is lifted up and supported to 1"x12" boards that run along the front and end, thus keeping the chicks from the accumulated droppings underneath.

Yard. Although any type of artificial yard may be used successfully with a stationary brooder house, a wire porch is shown in the plans. A removable panel type of wire porch is highly recommended as the removal of the panels makes it possible to clean the ground under the porch of droppings, grass, and weeds.

Litter moisture control. Spring or summer brooding presents little or no wet litter problem but the problem arises with fall and winter floor brooding. Aside from frequent cleaning the best method of control is to use more litter or some form of floor heating. Some of the methods of floor heating are discussed on pages 41-48 of Extension Bulletin 480, Poultry Housing. If floor heating is used the stringers, floor joists, and other under structure material should be treated with wood preservative.
BILL OF MATERIALS
O.S.C. Stationary Brooder House
(Eight brooding rooms)

**Concrete**
Foundation Blocks—material required:
1 cubic yard coarse aggregate
1 cubic yard fine aggregate
5 sacks cement

Wood Blocks
As desired.

**Stringers**
3—4"x6"x12"—72 board feet No. 2 Common
24—4"x6"x16"—768 board feet No. 2 Common

**Floor Joists**
71—2"x6"x20"—1420 board feet No. 2 Common

**Floor**
Shiplap—2800 square feet—1"x6"
Furring strips—1540 linear feet No. 2 Common
Building paper—2800 square feet
Flooring—2800 square feet 1"x4"—3500 board feet—No. 4

Plates (Outside walls)
Lower—23—2"x4"x14'—215 board feet No. 2 Common
Upper—46—2"x4"x14"—430 board feet No. 2 Common

**Studs**
85—2"x4"x14'—1300 board feet No. 2 Common

**Ceiling Joists**
37—2"x4"x20"—494 board feet No. 1 Common

**Rafters**
142—2"x4"x14"—1363 board feet No. 1 Common

**Sheathing**
2735 board feet 1"x6" No. 2 Common

**Shingles**
3650 square feet (284 M.)

**Siding**
1500 square feet—2916 board feet No. 4 Common

**Partitions**
Plates—(lower)—
1—2"x4"x16'—140 board feet No. 2 Common
2—2"x4"x16'

Plates—(upper)—
9—2"x4"x16"—96 board feet No. 2 Common

Nailing Girts—
1—2"x4"x16'—310 board feet No. 2 Common
2—2"x4"x14'
8—2"x4"x14'
16—2"x4"x16'

**Ceiling**
2860 square feet 1"x6"—3337 board feet No. 4 Common

**Windows**
10—4 light sashes (20"x24")

**Muslin Curtains**
(16 total) 352 linear feet 1"x2" No. 1 Common; 192 square feet muslin

**Shields for Windows**
4—1"x12"x12" No. 1 Common

**Poultry Netting**
80 linear feet 4' wide 1" mesh

**Gutter**
288 linear feet

**Doors**
2 with window sashes
16 without window sashes.

**Trim**
800 linear feet 1"x6"—400 board feet No. 1 Common

**Door Boards**
6—1"x12"x10' No. 3 Common

**Block in Between Rafters**
20—1"x4"x14' No. 3 Common

**Window Sills**
150 square feet 1"x6" T & G No. 4 Common

**Roosts**
32—2"x 3"x 6' No. 2 Common
64—2"x 4"x 12' No. 2 Common
64—2"x 3"x 6' No. 2 Common
32—1"x 2"x 6' No. 2 Common
8—1"x 8"x 12' No. 2 Common
8—1"x12"x12' No. 2 Common
8—1"x12"x 4' No. 2 Common

**Carrier**
8—2"x 6"x16' No. 2 Common
1—2"x 6"x19' No. 2 Common
35—4"x10" bolts
140 board feet track
2 hangers
1—2"x 4"x12' No. 2 Common
1—1"x 3"x 7' No. 2 Common
1—1"x 4"x 8' No. 2 Common
1—1"x 6"x 7' No. 2 Common
3—1"x10"x16' No. 2 Common

**Feed Room**
150 square feet 1"x6" T & G No. 4 Common

**Incline Approach**
10—2"x6"x12' No. 4 Common

**Screen Porch**
17 posts 4"x4"x9' No. 4 Common
16—2"x4"x16' No. 4 Common
8—2"x6"x16' No. 4 Common
17 posts 4"x4"x3' No. 4 Common
64—1"x6"x12' No. 4 Common
32—1"x6"x16' No. 4 Common
384 linear feet 4' galvanized wire (No. 18—1" mesh)
9—2"x3"x10' No. 4 Common
9—2"x2"x16' No. 4 Common
236 linear feet of 5' poultry netting
### Hardware
- 20 linear feet door track
- 4 pairs door hangers
- 23 pairs door hinges (5" strap)
- 16 pairs hinges (curtain) (2" butts)
- Nails as required
- Paint as required

### SUMMARY OF LUMBER

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<td>150 sq. ft. 1&quot;x6&quot; T &amp; G No. 4 Common</td>
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<td>Windows—10-4-light sashes 20&quot;x24&quot;</td>
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### SUMMARY OF HARDWARE

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<td>236 linear feet 3' poultry netting</td>
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<tr>
<td>80 linear feet 4' wide 1&quot;-mesh poultry netting</td>
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<tr>
<td>160 linear feet track (barn door)</td>
<td>2800</td>
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<tr>
<td>6 hangers (barn door)</td>
<td>35—1/2&quot;x10&quot; bolts</td>
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<tr>
<td>16 pairs door hinges [curtain (2&quot; butt)]</td>
<td>Nails as required</td>
</tr>
<tr>
<td>Paint as required</td>
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### O.S.C. PORTABLE BROODER HOUSE

Portable brooder houses have been in use for a great many years. The O.S.C. portable brooder house, for which pictures and plans are included here, has been designed and successfully used by the O.S.C. poultry farm.

The reason for having brooder houses portable is to make it possible to move them to fresh ground to control soil contamination problems.

**Dimensions.** The O.S.C. portable brooder house shown here is 12'x14', which is quite large for a portable house. Experience has shown, however, that where birds are crowded satisfactory brooding results cannot be attained. The extra floor area that the large house affords is therefore of great value.

**Capacity.** The O.S.C. portable brooder house will accommodate 350 straight run chicks until cockerels can be separated or 200 day old pullets or poults when outside run is available.

**Moving.** In designing this house, strength, weight and durability, as well as serviceability, have been considered. A good team of horses can move the house, particularly when the ground is wet,
although it is easier to move it with a tractor. When moving the house, pass a logging chain through crevices attached to runner ends and fasten on opposite end of house to a piece of 4"x4" laid crosswise on runner ends. This will prevent unnecessary strain and racking, which may occur if chains are attached to runner ends only.

Figure 4. Side elevation and floor plan of O.S.C. portable brooder house.
Ventilation. Two windows, each 2 by 3 feet, are provided for light and ventilation. Frames, covered with muslin or a glass substitute, fit into these windows. The top sections of these frames are hinged so they can be tipped in to any desirable angle. At each end of each frame there is a baffle board to prevent the wind from blowing directly on the birds. After the birds are completely feathered,
Figure 6. O.S.C. portable brooder house. It may be equipped with an artificial porch and used in a permanent location.

Figure 7. To reduce first year's cash outlay the laying house may be built first and partitioned off into temporary brooding rooms, as shown above.
the use of these frames is discontinued. The change should be made gradually.

Under most conditions the two windows will provide adequate ventilation. When more ventilation is desired for late spring brooding, two or three 2-inch holes may be bored in each end near the roof peak and a sliding board fitted over them for regulation.

**Wire porch.** A wire porch constructed of removable panels may be used to advantage with the O.S.C. portable brooder house, particularly in connection with the brooding of poults.

**BILL OF MATERIALS**

**O.S.C. Portable Brooder House**

**Foundation and Floor**

- 2—4"x8"x16' runners
- 2—4"x4"x12' end sills
- 6—2"x6"x12' joists
- 2—2"x6"x14' headers
- 200 bd. ft. 1"x6" T&G Flooring
- 200 bd. ft. 1"x8" Shiplap
- 60 linear feet 36" Asphalt building paper
- 30 Lath

**Runway**

- 1—2"x12"x8' sides of runway
- 1—1"x6"x12' Top T & G
- 40 ft. Lath

**Back Wall**

- 1—2"x4"x14' plate
- 1—4"x6' post
- 2—2"x4"x16' braces
- 1—1"x4"x16' Fascia board (Label on drawing)
- 1—1"x6"x14' Frieze board
- 120 bd. ft. 1"x6" T&G Siding

**Front Wall**

- 1—4"x4"x14' plate
- 3—2"x 4"x 7' post
- 2—2"x4"x9' braces
- 1—1"x4"x16' Fascia board
- 1—1"x 8"x14' Frieze board
- 95 bd. ft. 1"x6" T&G Siding
- 2—2"x4"x8' window frames
- 1—1"x12"x4' curtain wind stop
- 14—14' blind stop muslin frame ends
- 2—12' blind stop two sides for muslin frames and 1 window casing
- 1—9'48"x1" mesh poultry netting
- 2 pair 2" butt hinges
- 1—28 yards light muslin

**Chicks Door**

- 1—2"x4"x4' plates
- 1—2"x4"x14' braces
- 1—2"x4"x10' braces
- 1—2"x4"x14' Door Jamb
- 2—2"x4"x7' post
- 1—1"x4"x10' door cleats
- 1—1"x4"x16' door casing

**Roof**

- 20—2"x4"x8' rafters
- 2—1"x4"x16' finish for cornice
- 300 bd. ft. 1"x6" T&G Flooring
- 300 bd. ft. 1"x8" Shiplap
- 1—5' galvanized iron saddle 1 pitch
- 6—2"x4"x12' rafter ties
- 1—1"x6"x16' ridge board
- 2 rolls roofing paper
- 1 length 5' galvanized iron stove pipe

**SUMMARY**

- 2—4"x8"x16' No. 1 Common
- 2—4"x 4"x12' No. 1 Common
- 1—2"x12"x 8' No. 1 Common
- 6—2"x 6"x12' No. 1 Common
- 2—2"x 6"x14' No. 1 Common
- 14—2"x 4"x16' No. 1 Common
- 7—2"x 4"x14' No. 2 Common
- 8—2"x 4"x12' No. 2 Common
- 1—1"x12"x 6' No. 1 Common
- 1—1"x 8"x14' No. 1 Common
- 1—1"x 6"x16' No. 1 Common
- 950 B. M. 1"x6" T&G Flooring
- 200 B. M. 1"x8" Shiplap
- 7—1"x4"x16'
- 1—1"x4"x10'
- 1—1"x 6'
- 3 blind stop 14'
- 2 blind stop 12'
- 60 linear feet 36" Asphalt building paper
- 50 feet Lath

**HARDWARE**

- 1 roll—9 feet of 48"x1" mesh poultry netting
- 1—2½ yards light muslin
- 2 pair 2" butt hinges
- 1 pair 4" strap hinges for door
- 1 pair 4" hasp for door
- 235 bd. ft. 1"x6" T&G Siding
- 1—1"x6"x 6' mesh poultry netting
- 2 pair 2" butt hinges
- 1 pair 4" strap hinges for door
- 1 4" hasp
- 15' galvanized iron saddle 1 pitch
- 1 length 5' galvanized iron stove pipe
- 2 rolls roofing paper
- 1—1"x10" carriage bolts and washers
- 35 lbs. 8 penny box nails
- 10 lbs. 16 penny common nails
- 2 lbs. 6 penny finishing nails

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