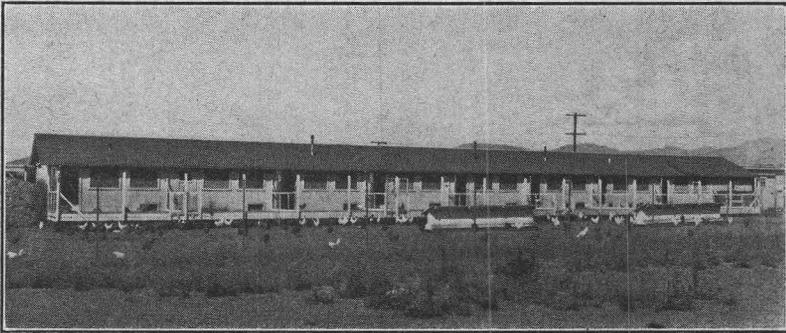


# O. S. C. Brooder Houses

By

FRANK L. KNOWLTON



Oregon State System of Higher Education  
Federal Cooperative Extension Service  
Oregon State College  
Corvallis, Oregon

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Cooperative Extension Work in Agriculture and Home Economics  
Wm. A. Schoenfeld, Director  
Oregon State Agricultural College and United States Department of Agriculture, Cooperating  
Printed and distributed in furtherance of the Acts of Congress of May 8 and June 30, 1914

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# O. S. C. Brooder Houses

By

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## BROODER HOUSING PRINCIPLES

**G**OOD 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 three to five 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.** Sunlight is necessary to the normal growth of healthy chicks or poults. Ordinary window glass filters out a high percentage of the ultra-violet rays of sunlight. Since these are the rays that supply vitamin D, it is important to permit them to enter the brooder house. This can be accomplished by using a glass substitute that permits the ultra-violet rays to pass through.

**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

\*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.

that are smooth on the inside, at least to a height of four 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 best, 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 their case, the most frequent solution is the employment of artificial yards of one of the several available types; namely, wire porches, cement porches, board porches, or gravel yards.

**Wire Porches.** Good brooding results have been obtained with wire sun porches. They may be used with any brooder house, but are most frequently used with the stationary types. The porch should be about 12 feet wide and as long as the brooding chamber. The wire should be galvanized and of 18-gage or larger. The mesh should be  $\frac{3}{4}$ -inch.

**Cement Porches.** Another type of artificial yard that often is used with stationary brooder houses is the cement porch. It should be built 15 or 20 feet wide and as long as the brooding chamber, and should slope away from the building at the rate of about three-fourths inch to the foot. Provision should be made for washing off cement porches every few days during the brooding period. This is best accomplished with a hose and water under considerable pressure. A cement gutter around the outside of the porch will facilitate the flushing away of the water and material hosed from the porch. From the disease standpoint it is very important that the birds cannot reach through the fence into this gutter. This can be prevented by constructing the gutter eight inches or a foot beyond the fence, or by employing as a base board for the fence a 1"x12" board set one inch above the porch. Since hosing the yard requires quite a little time, cement porches require more labor than wire porches.

**Board Porches.** In emergencies, board porches may be used as artificial yards. They cannot be recommended except as temporary expedients because exposure to sun and rain renders them short lived.

**Gravel Yards.** Several inches of gravel is sometimes spread over a yard, which is then used as an artificial yard. This is satisfactory until the accumulation of droppings fills the spaces between the stones. It is then necessary to remove the gravel and wash it or replace it with fresh gravel, a process which in most locations is too expensive.

## BROODERS

There are many types of brooders that may be used satisfactorily in any good brooder house. Among these electric, coal, gas, kerosene, fuel-oil or feather board brooders do not become a part of the brooder house in which they are used, but rather constitute removable equipment used in the brooder house.

There are some classes of brooders, however, that are built into the brooder house and become a part of it. These are usually found only on large stationary installations. The two most used in Oregon are the continuous hot-water brooders, where water is heated in a central boiler and piped to each brooding room, and the under-floor-heat type, where flues

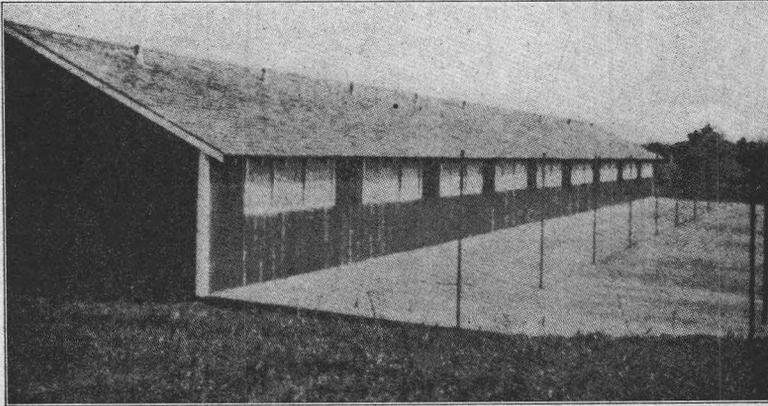


Figure 1. A neat, well-constructed, permanently located brooder house with concrete yard, on a prominent specialized Oregon poultry farm.

from a furnace are built under a cement floor, thus heating the brooder. Obviously installations of this kind are quite complex and each one must be considered an individual problem. Several kinds of commercial brooders of the hot-water type are on the market.

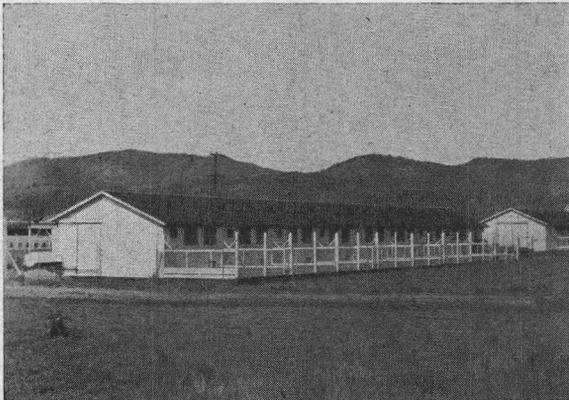


Figure 2. O.S.C. Stationary Brooder House with eight brooding rooms.

## TYPES OF BROODER HOUSES

Brooder houses may be divided into two types; namely, stationary, built on permanent foundations, and portable, built on runners or skids so they can be easily moved with a team or tractor. The size of brooding operations on any farm will determine the type of brooder house that will prove most economical on that farm. When only a few hundred are to be brooded, possibly one or two portable brooder houses will be the best to use. When many hundreds or thousands are to be brooded, a brooder house of the stationary type will undoubtedly prove most economical. Good chicks can be brooded in either type.

### O.S.C. STATIONARY BROODER HOUSE

For a number of years the 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 in Figure 2 and on the cover of this bulletin is the 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 brooding room will accommodate 500 ordinary-run chicks, 250 day-old pullets, or 250 poults.

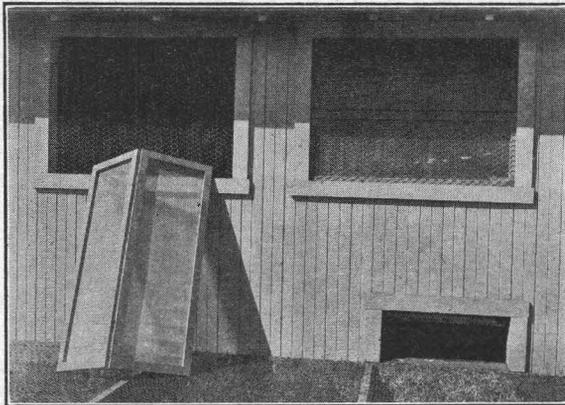


Figure 3. O.S.C. Stationary Brooder House  
front windows.

**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 the boards running up and down. This type of construction requires no studding within four 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. This type of floor is recommended because it is warmer and drier than other types.

**Windows and Ventilators.** Two windows, four feet by three 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 opened.

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.** The doors leading into the brooding rooms from the hall should be equipped with glass so that the brooder and the birds may be observed without entering the pen. All other doors should be solid.

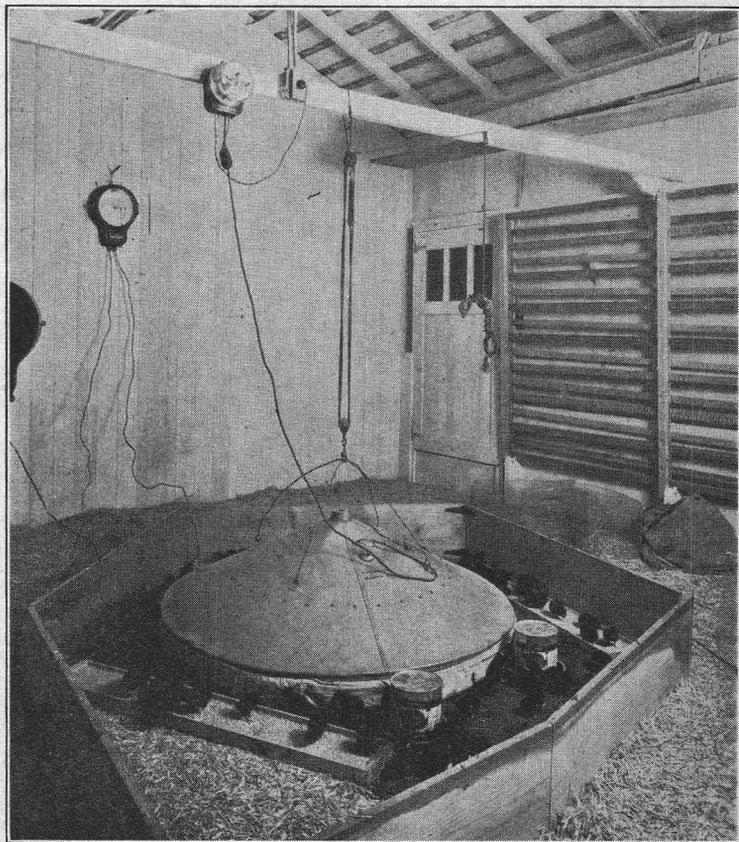


Figure 4. An electric brooder in operation in an O.S.C. Stationary Brooder House room.

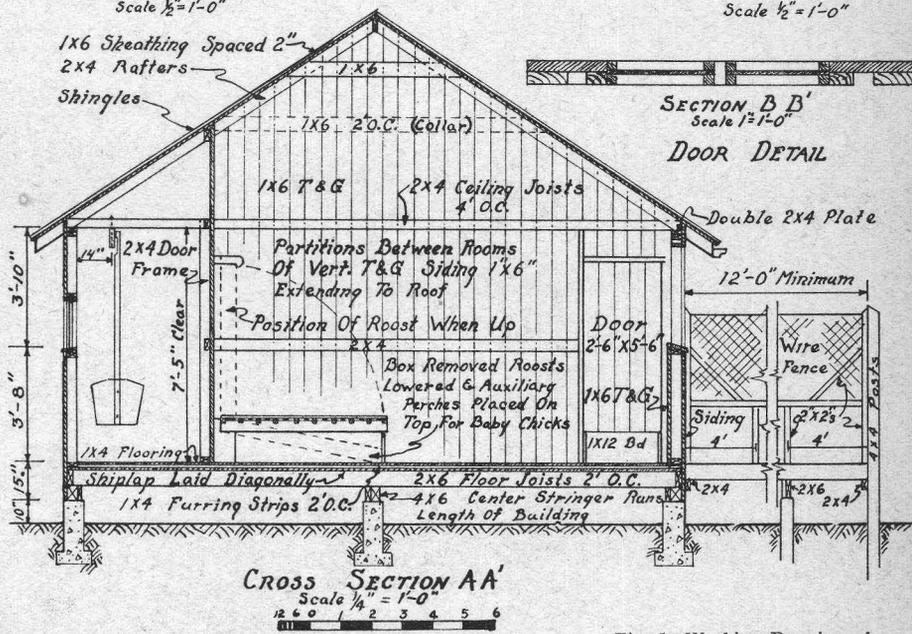
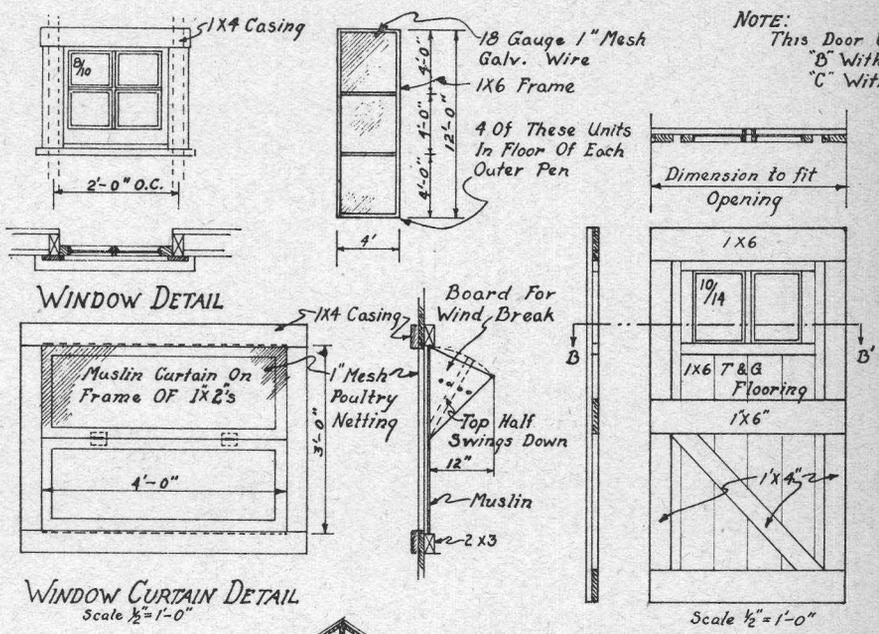
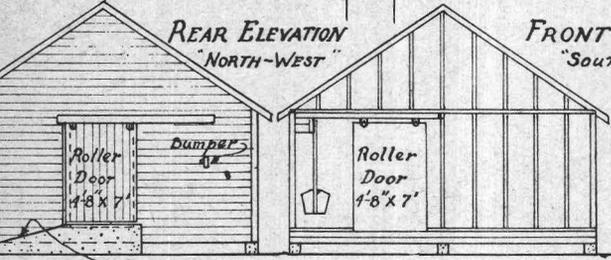
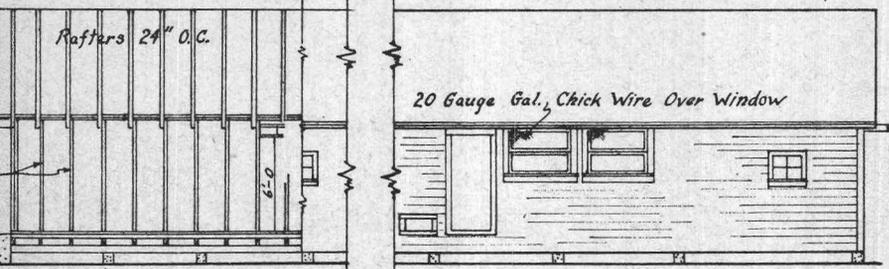
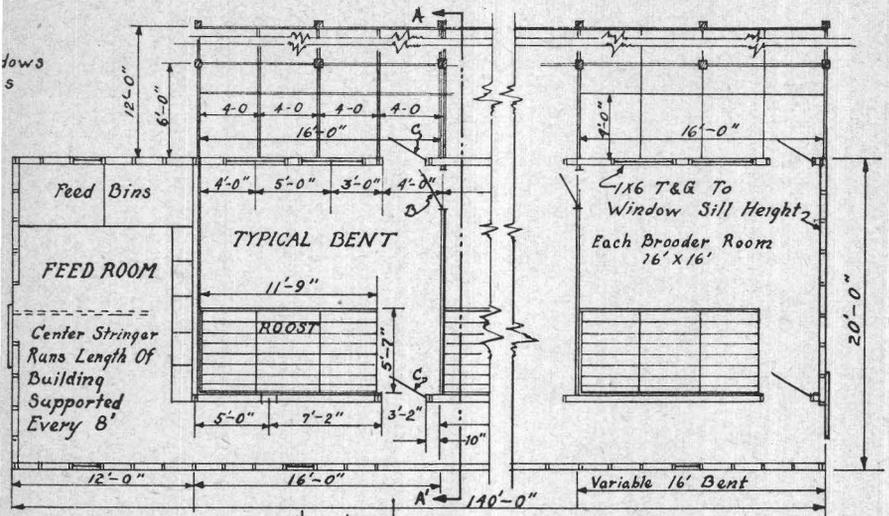


Fig. 5. Working Drawing of

rows  
5



END ELEVATIONS  
Scale 1/8"=1'-0"

O.S.C. Stationary Brooder House.

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 roosts are hinged to the rear wall and may be lifted up out of the way during the first part of the brooding period or later when the pen is being cleaned. One-inch mesh poultry netting is tacked to the under side of the roost racks.

When the chicks are first being taught to roost, the outer edge of the roost rack is let clear down to the floor. Later this is lifted up and supported by a 1"x12" board that runs along the front and end, thus keeping the birds from the accumulated droppings.

**Yard.** Although any type of artificial yard may be used successfully with a stationary brooder house, a wire porch is shown in the plans. The removable panel type of wire porch shown in Figs. 5 and 10 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.** Ten years experience at the college with brooding in a stationary brooder house of this design has shown that with spring or summer brooding there is no litter moisture problem, but that with fall or winter brooding, particularly with electric brooders, such a problem is likely to develop. It is believed that the best method of controlling this problem is to resort to some form of floor heating. Attention is called to the plans, pictures, and discussion of floor heating contained on Pages 41 to 48 of Extension Bulletin 480 on Poultry Housing. Although the material in this poultry housing bulletin was prepared with laying houses in mind, the fundamental principles are just as applicable to stationary brooder houses.

## BILL OF MATERIALS

### O.S.C. Stationary Brooder House

(Eight Brooding Rooms)

	<b>Concrete</b>		
Foundation Blocks—material required:			<b>Floor</b>
1 cubic yard coarse aggregate		Shiplap—2800 square feet—1"x	} No. 3 Common
$\frac{3}{4}$ cubic yard fine aggregate		6"—3267 board feet	
5 sacks cement		Furring strips—1540 linear feet	
		1"x4"	
	<b>Wood Blocks</b>	Building paper—2800 square feet	
As desired.		Flooring—2800 square feet 1"x4"—3500	
	<b>Stringers</b>	board feet—No. 4	
3—4"x6"x12'—72 board feet			<b>Plates (Outside walls)</b>
24—4"x6"x16'—768 board feet		Lower—23—2"x4"x14'—215 board feet	No.
		2 Common	
	<b>Floor Joists</b>	Upper—46—2"x4"x14'—430 board feet	No.
71—2"x6"x20'—1420 board feet		2 Common	
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 (28½ M.)

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

**Partitions**  
 Plates—(lower)—  
 1—2"x4"x16' } 140 board feet No. 2  
 7—2"x4"x14' } Common  
 8—2"x4"x12' }  
 Plates—(Upper)—  
 9—2"x4"x16'—96 board feet No. 2 Common

**Nailing Girts—**  
 1—2"x4"x16' } 310 board feet No. 2  
 7—2"x4"x14' } Common  
 8—2"x4"x12' }  
 16—2"x4"x16' }

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

**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**  
 2—2"x6"x14" No. 2 Common

**Roosts**  
 32—2"x 3"x 6' No. 2 Common  
 64—2"x 2"x 12' No. 2 Common  
 64—¾"x 2"x 12' No. 2 Common  
 32—1"x 2"x 6' No. 2 Common  
 8—1"x 8"x 12' No. 2 Common  
 8—1"x 12"x 12' No. 2 Common  
 8—1"x 12"x 4' No. 2 Common

**Carrier**  
 8—2"x 6"x 16' No. 2 Common  
 1—2"x 6"x 12' No. 2 Common

**2 hangers**  
 35—¾"x10" bolts  
 140 linear feet track

**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"x2"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 (curtains) (2" butts)  
 Nails as required  
 Paint as required

**SUMMARY OF LUMBER**

4—1"x12"x12" No. 1 Common  
 37—2"x 4"x20" No. 1 Common  
 142—2"x 4"x14" No. 1 Common  
 3—4"x 6"x12" No. 2 Common  
 24—4"x 6"x16" No. 2 Common  
 71—2"x 6"x20" No. 2 Common  
 2—2"x 6"x14" No. 2 Common  
 8—2"x 6"x16" No. 2 Common  
 1—2"x 6"x12" No. 2 Common  
 168—2"x 4"x14" No. 2 Common  
 27—2"x 4"x16" No. 2 Common  
 17—2"x 4"x12" No. 2 Common  
 32—2"x 3"x 6' No. 2 Common  
 64—2"x 2"x 12' No. 2 Common  
 64—¾"x 2"x 12' No. 2 Common  
 32—1"x 2"x 6' No. 2 Common  
 8—1"x 8"x 12' No. 2 Common  
 8—1"x 12"x 12' No. 2 Common  
 8—1"x 12"x 4' No. 2 Common  
 1—1"x 3"x 7' No. 2 Common  
 1—1"x 2"x 8' No. 2 Common  
 1—1"x 6"x 7' No. 2 Common  
 3—1"x10"x16" No. 2 Common  
 6—1"x12"x10" No. 3 Common  
 20—1"x 4"x14" No. 3 Common  
 10—2"x 6"x12" No. 4 Common  
 17—4"x 4"x 9' No. 4 Common  
 17—4"x 4"x 3' No. 4 Common  
 16—2"x 4"x16" No. 4 Common  
 8—2"x 6"x16" No. 3 Common  
 64—1"x 6"x12" No. 4 Common  
 32—1"x 6"x16" No. 4 Common  
 9—2"x 2"x10" No. 4 Common  
 9—2"x 2"x16" No. 4 Common

2735 bd. ft. 1"x6" No. 2 Common Sheathing  
 3267 bd. ft. 1"x6" No. 3 Common Shiplap  
 3500 bd. ft. 1"x4" No. 4 Common Flooring  
 3337 bd. ft. 1"x6" No. 4 Common Ceiling  
 1540 linear feet 1"x4" No. 3 Common  
 352 linear feet 1"x2" No. 1 Common  
 800 linear feet 1"x6" No. 1 Common  
 2500 square feet siding  
 150 sq. feet 1"x6" T & G No. 4 Common  
 28½ M. shingles

**Windows—**10—4 light sashes 20"x24"  
**Doors—**2 with window sashes  
**Doors—**16 without window sashes

**SUMMARY OF HARDWARE**  
 236 linear feet 5' poultry netting  
 384 linear feet 4' galvanized wire No. 18  
 —1" mesh  
 80 linear feet 4' wide 1"-mesh poultry netting  
 288 linear feet gutter  
 160 linear feet track (barn door)  
 2800 square feet building paper  
 6 hangers (barn door)  
 35—¾"x10" bolts  
 23—pairs door hinges (5" strap)  
 16 pair door hinges [curtains (2" butts)]  
 Nails as required  
 Paint as required

**MUSLIN**

192 square feet



**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 ordinary-run chicks, 200 day-old pullets, or 200 poults, when outside run is available.

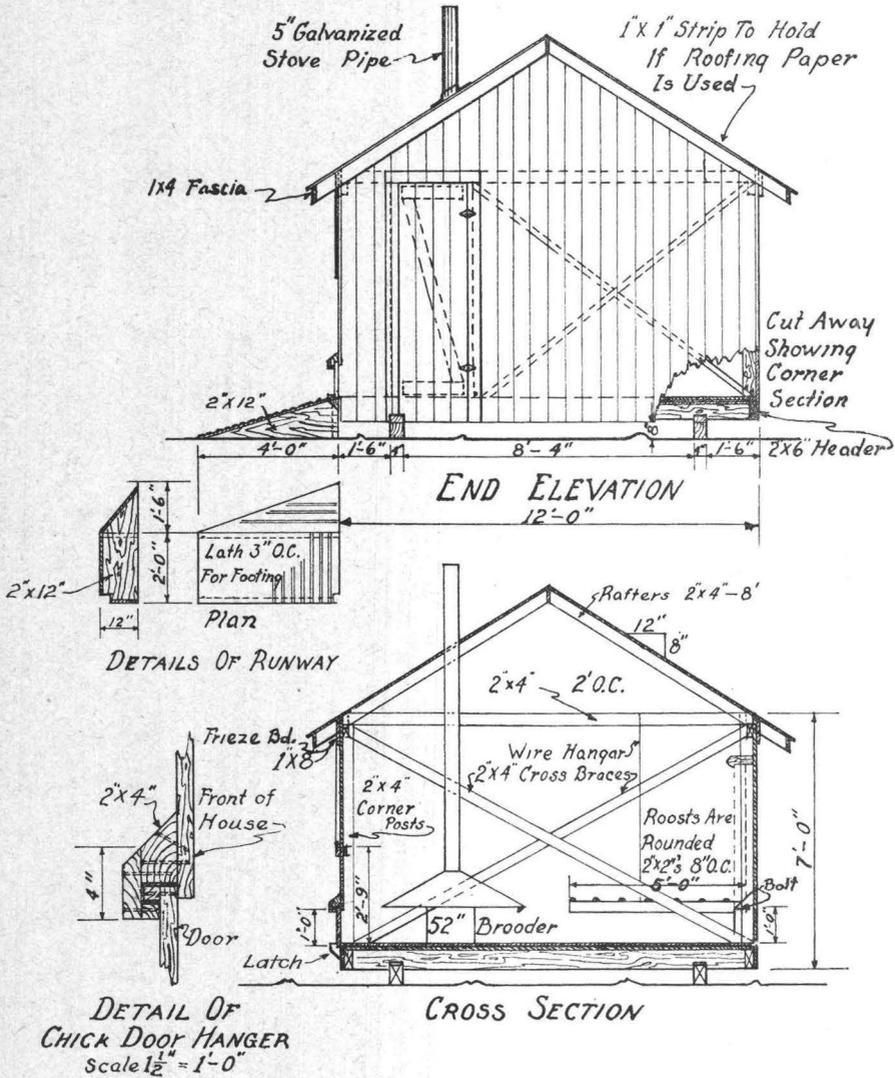


Figure 7. End Elevation and Cross Section of O.S.C. Portable Brooder House.

**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

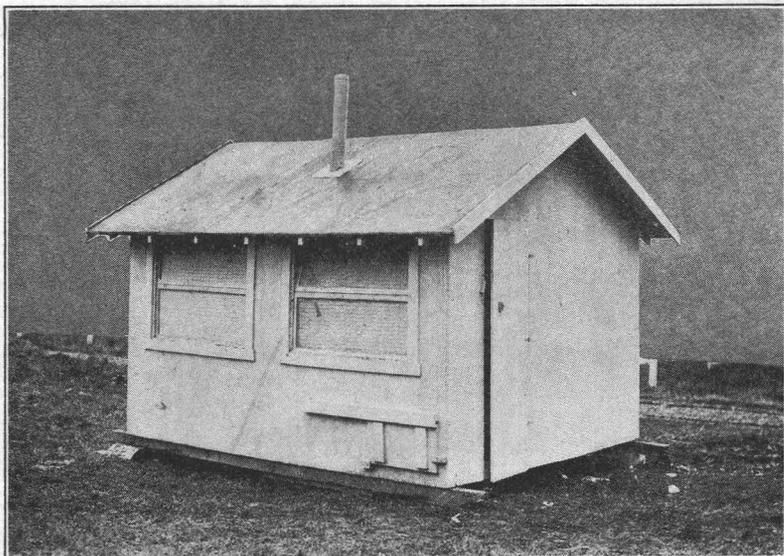


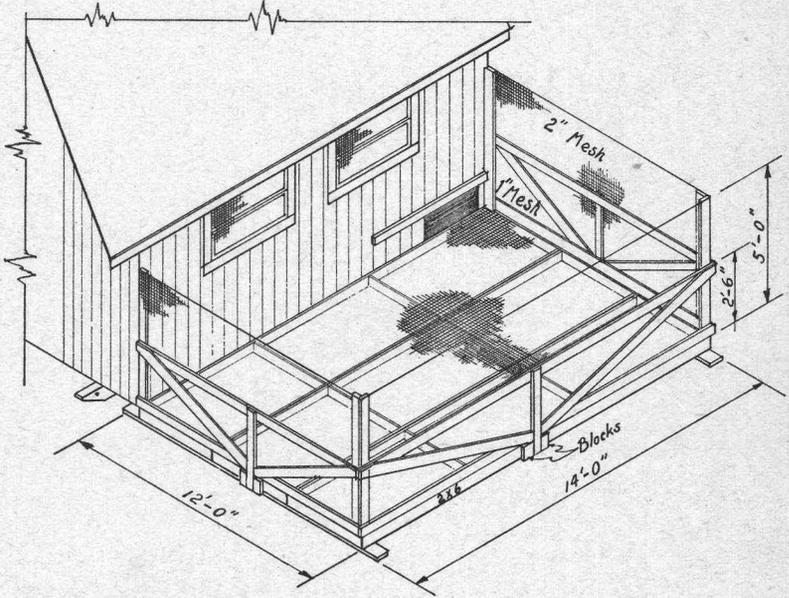
Figure 8. O.S.C. Portable Brooder House.



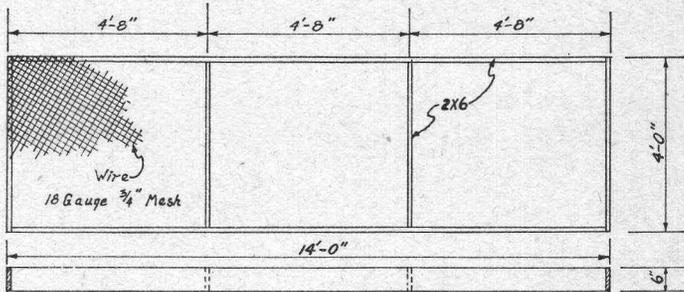
Figure 9. O.S.C. Portable Brooder Houses equipped with removable panel wire porches on an Oregon poultry farm.



**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. Figure 9 shows some of these porches in use while Figure 10 shows their construction.



REMOVABLE PANEL WIRE PORCH FOR BROODER HOUSES



WORKING DRAWING OF WIRE PORCH PANEL

Figure 10. Working Drawing of Removable Panel Wire Porch.