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A. P. SPENCER, Director

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## POULTRY HOUSES AND EQUIPMENT

By

N. R. MEHRHOF and FRAZIER ROGERS

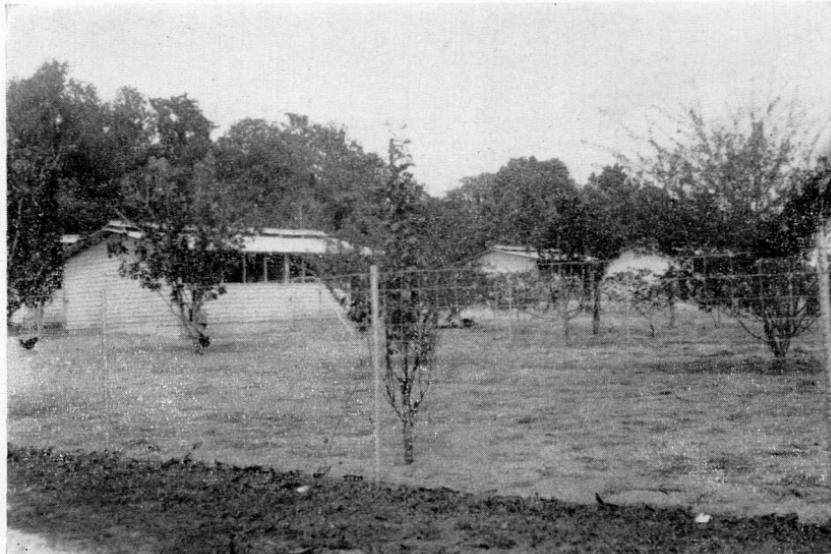


Fig. 1.—Even-span laying house with roof ventilator, open front and rear ventilator.

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Fig. 2.—Laying house with open front, roof ventilator and rear ventilator.

# **POULTRY HOUSES AND EQUIPMENT**

By N. R. MEHRHOF and FRAZIER ROGERS<sup>1</sup>

One of the most important phases of poultry management is the provision of suitable environmental conditions for baby chicks, growing birds and adult birds. The birds should have the right kind of houses, properly located. A good poultry house is an economical investment.

Poultry of all ages are housed for comfort, protection, efficient production of eggs and poultry meat and convenience of the poultryman.

In Florida climatic conditions vary, and houses in southern Florida may not be satisfactory for northern and western Florida. Poultry houses in the southern part of the State are more open than those in northern and western Florida. For this reason each poultry raiser must use his or her own judgment when planning details of the poultry house. Nevertheless, there are a few principles of construction which should be carefully considered in the building of all poultry houses.

This bulletin is prepared to furnish poultry raisers with suggestions for building poultry houses and for constructing different types of equipment to be used in the management of birds of various ages.

## **METHODS OF HOUSING POULTRY**

There are 3 general methods of housing used, according to the method of management—the colony system, the semi-colony system and the intensive system. These methods are employed with baby chicks, growing birds and laying stock.

The colony system is used when a relatively small number of chicks are to be brooded in 1 house, and also when a small number of layers are placed in 1 house.

Colony houses are either stationary or portable, the majority being constructed on skids so that they may be moved from place to place. The most important advantage of this method is that there is less danger from disease. The disadvantages are increased costs of building, labor and management.

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The intensive system is used when a large number of chicks or layers are to be kept in 1 house. The advantages of this system are that building costs and labor requirements are lower. However, the disadvantage is that there is a greater opportunity for the spread of disease.

The semi-colony system is the system midway between the colony and the intensive type.

In the State are found all 3 systems and also combinations of the 3. The most prevalent practice seems to be the use of the colony system for brooding baby chicks and growing pullets. All 3 systems are used for managing the layers.



Fig. 3.—Small portable trapnest house. Note wire trap fronts, overhang, outdoor feeders and waterer.

### THE SITE FOR THE POULTRY HOUSE

The poultry house should be located on well drained soil with a southern or southeastern slope.

In the construction of the poultry house thought and consideration should be given to its relationship to other buildings and the central feed and water supply, so that unnecessary labor will not be required. In locating poultry buildings, consideration should be given to exposure, soil, drainage, shade, protection and convenience. The future development of the flock should be borne in mind. It would be most desirable to

make a complete plan of the poultry farm as you expect to have it eventually, so that all buildings are located conveniently.

## POULTRY HOUSE ESSENTIALS

In constructing poultry houses the following features should be considered: (1) Economy, (2) convenience, (3) ventilation, (4) protection from heat and cold, (5) protection from vermin, (6) sanitation, (7) sunlight, (8) sufficient space for fowls and (9) dryness.

**Economy** in building poultry houses is very important. However, it does not pay to use a poor grade of lumber. Use only sound lumber. The lasting qualities must be considered in figuring on economy. Poultrymen in the State are using both dressed and rough lumber for construction. It is advisable, however, to use dressed lumber for the dropping boards, nests, and perches. This will allow easier control of lice and mites and permit the dropping boards to be kept more sanitary.

Construct houses as plain as possible. Fancy trimmings and unnecessary furnishings do not increase efficiency and are not economical.

**Convenience** in a poultry house is likewise desirable. All the fixtures inside the house should be arranged to make the work easy and efficient. The nests should be arranged so that the hens can easily enter and the attendant can remove the eggs.

The perch poles should be removable.

**Ventilation.**—Poultry can stand and need plenty of fresh air, but this should not be in the form of drafts. An open-front house with ventilators at the rear provides a sufficiency of ventilation and protection. The ventilators at the rear of the house near the top may be hinged at either top or bottom and open out. These ventilators are made about 8" to 10" wide and run the full length of house, being divided into convenient lengths if the house is long.

Also ventilators at either end of the house may be provided. See Figures 1, 2, 16 and 17.

Upper ventilators should be placed at least from 12 to 18 inches above the perches, while floor ventilators are below the dropping boards. Both types may be used in the same house.

Drafts directly on the birds are conducive to colds and roup. A house that is poorly ventilated is damp, close and unhealthy for poultry.

**Protection from heat and cold** is another factor for consideration. The house should be constructed so that heated and impure air may escape. With brooder houses, muslin curtains should be available for protection and in some types of brooder houses insulation is desirable.

**Rats and mice** should be kept out. Cement floors or wooden floors high enough off the ground to prevent hiding places will keep out the vermin. If rats and mice are present, covers should be provided for the mash hoppers.

**Sanitation** is essential for success with poultry. Construct the dropping boards so that they may be easily and thoroughly cleaned. Matched lumber is desirable to prevent the droppings from going through the cracks to the floor. Sprinkling a small amount of sand or some other type of drying material on the dropping boards will make them much easier to clean. At the Poultry Laboratory, University of Florida, and at the Florida National Egg-Laying Test sawdust is used.

Construct the water and mash hoppers so they can be kept clean and sanitary.

Properly constructed floors will assist in keeping the house sanitary.

**Sunlight** in the poultry house is a good disinfectant and is essential to the health of the birds, particularly young chicks. The house should be constructed so that plenty of sunshine will enter. This is secured by facing it to the south or southeast.

**Sufficient space** should be provided in the house. It is advisable to allow plenty of roosting space and floor space to obtain best results. Florida poultrymen generally supply from 2 to 4 square feet of floor space per adult bird, depending on the breed and method of management. From 8 to 10 inches of roosting space is ample.

**Dryness** in a poultry house is desirable if the health of the fowls is to be preserved. Damp houses favor the development of roup, pneumonia and other diseases. With an abundance of ventilation, plenty of water drainage away from the house, and properly constructed floors, the poultry house should be dry.

### **TYPES OF HOUSES**

Houses used most extensively in the State are either even-span or shed-roof types.

The houses should be fairly deep. Narrow houses are more expensive and at the same time are undesirable because good

ventilation is almost impossible without causing direct drafts to blow over the birds. The depth of the house will be influenced by the length.

The front of the house should be high enough to allow the sunlight to penetrate into the interior, but there should be protection against driving rains that would make the house wet. Sunshine is a good disinfectant.

In deep houses it is desirable to have light underneath the dropping board. This can be furnished by having windows in the rear of the house below the level of the dropping boards.

#### TYPES OF ROOFS

Several types of roofs are being used on poultry houses. Careful consideration should be given to the roof, for it is one

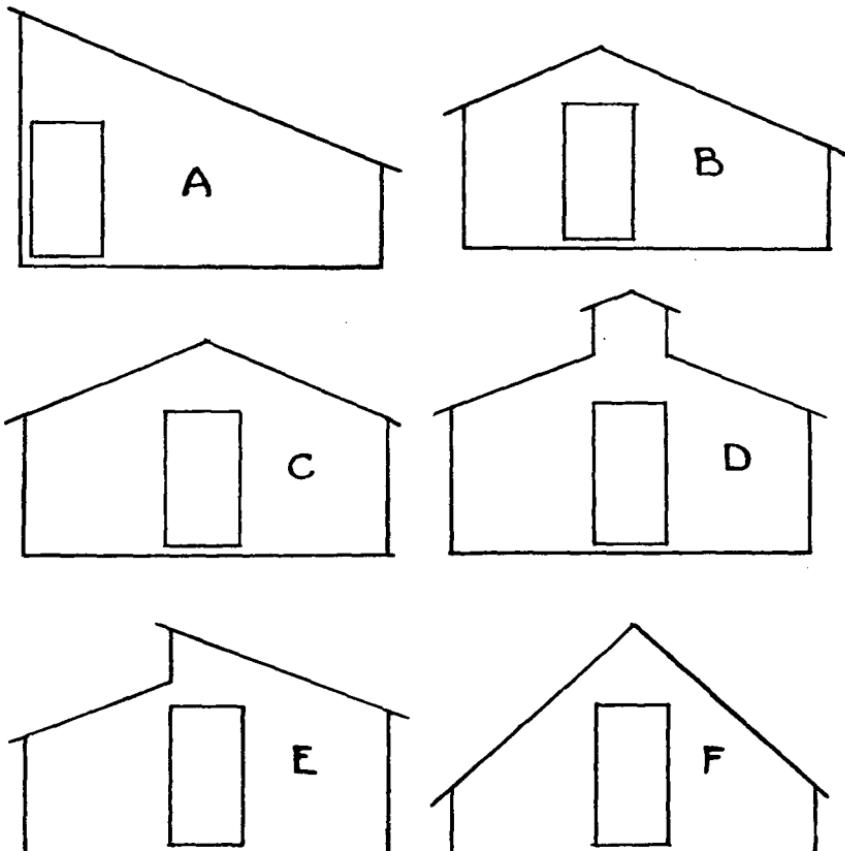


Fig. 4.—Types of roofs for poultry houses. A, shed-roof; B, two-thirds span; C, even-span; D, monitor; E, semi-monitor; F, A-shaped.

of the most expensive parts of the house. The type of roof will affect the building cost. Roofs should be constructed so that they are water-tight, of course.

Figure 4 shows the various types of roofs used. The 2 most common types in use in Florida are the shed-roof and the even-span.

### **TYPES OF FLOORS**

The essential features of a good floor are: (1) Dryness, (2) smooth, hard surface which can be easily cleaned, (3) proof against rats and mice, (4) economy of construction. Floors should be so constructed that they are higher than the outside ground.

The types of floors used are:

1. Cement or concrete—permanent, sanitary and easy to clean.
2. Wood—use tongue and groove lumber and have it off the ground (18 to 24 inches).
3. Dirt—used in some places but not as satisfactory as either the wood or concrete. If a dirt floor is used it is advisable to remove 6 inches of the surface material about every 6 months and replace with fresh dirt. Avoid using sand, as it soon becomes a good breeding place for fleas.
4. Wire—see page 16.

### **BUILDING SUGGESTIONS**

#### **CONSTRUCTING THE HOUSE**

The framework consists of the foundation, the sills which are placed upon it to support the building, the joists which support the floor, the studs or uprights which rest upon the sills, the plate which is on top of the studs, and the rafters which rest on the plate.

When wooden floors are used they should be about 18" to 24" above the ground. Concrete floors are placed directly on the ground, with a sufficiently raised site to insure drainage. The sills which are usually 2"x4" or 4"x4", depending on size of the house, are placed on wooden posts, stones, concrete supports, or directly on the concrete walls to which sills are bolted. In portable houses the sills serve as runners and are usually of 4"x6" material. Floor joists are made of 2"x4" or 2"x6" material, depending upon span. They are spaced from 16" to 20" apart. Spans of 12 feet or more should have center supports.

The studding is of 2"x4" material and is toenailed to the sill. The plates are either 2"x4" or 4"x4" (usually made by spiking 2 2"x4"s together).

Rafters are usually of 2"x4" material where span is not more than 12 feet or 2"x6"material where the span is over 12 feet.

### FLOORS

Both wood and concrete are used for floors. Wooden floors are of matched tongue and groove flooring. Concrete floors have a tendency to be damp, especially where poor under-drainage exists. Tar paper cemented at the joints or 4" to 6" of crushed stone, gravel or hard cinders beneath the floor will aid in keeping the floor dry. Waterproofed concrete, as explained later, will aid.

### WALLS

Walls usually are constructed of siding or flooring nailed directly to studding, and 1"x6" material is most commonly used for siding. It is necessary to add about 20% to total square surface in order to get the number of board feet needed. This is necessary on account of allowance for matching of materials. Vertical siding of 1"x10" or 1"x12" boards with 3" battens to cover cracks is used also.

### ROOFS

Sheet metal, shingles and prepared roofing material are the ordinary types of coverings found on poultry house roofs in Florida. Wooden shingles are usually laid 4" to 5" to the weather. Where laid 4½" to weather, 1,000 shingles will cover approximately 125 square feet. Roofs are usually given a pitch of from  $\frac{1}{4}$  to  $\frac{1}{3}$ , that is the vertical distance from the plate to the ridge is from  $\frac{1}{4}$  to  $\frac{1}{3}$  the total width of the house.

### CONCRETE

Concrete, due to its permanence, ease of cleaning and disinfecting, resistance to the gnawing of rats, and fireproofness, is a very desirable material to use for poultry house floors.

**Proportioning.**—The purpose for which concrete is to be used determines the various proportions of cement, sand, coarse aggregate and water used. The fewer air spaces or voids in the concrete, the stronger it will be. However, in much of our poultry house construction it is not economical to make the

maximum strength concrete. Volume measure is used in designating the proportions of the material used in a mix. The first number given in the proportion is cement, second sand and third coarse aggregate. Hence a 1-2-4 mix would mean 1 part cement, 2 parts sand and 4 parts rock or gravel. Portland cement is sold in bags containing 1 cubic foot and weighing 94 pounds, which make it very convenient in proportioning. When no coarse aggregate is used the mix is called a mortar and is used principally for surface coating where considerable wear is likely to occur. In poultry house construction the 1-2-4 and 1-3-5 are the principal mixes used, the former in walls and thin floors, the latter for floors and foundations. The 1-2 mortar is used for top coating on floors.

**Quantities of Material.**—To determine the amount of various materials needed for any piece of concrete work it is necessary to compute the volume of concrete needed. Then from the amounts of materials needed per unit volume of particular mix used, the amount needed for a particular job can be computed. Remember that the concrete is not the sum total of the quantities of the various materials used, but is less, due to the small particles filling the air spaces between the larger particles. Table 1 gives the amounts of ingredients that under average conditions will give 1 cubic yard of concrete of the various mixes.

TABLE 1.—MATERIALS FOR 1 CUBIC YARD OF CONCRETE.

Proportions			Cement Bags	Sand Cu. Yds.	Gravel Cu. Yds.
Cement	Sand	Gravel			
1	1	---	19.2	0.74	-----
1	2	---	13.5	1.00	-----
1	1½	3	7.64	0.42	0.85
1	2	4	6.00	0.45	0.90
1	3	5	4.67	0.53	0.87
1	3	6	4.25	0.48	0.95

Suppose the amount of concrete needed for a particular job would be 54 cubic feet and the mix a 1-2-4. From Table 1 we see that it requires 6 bags of cement, 0.45 yards of sand and 0.90 yards of rock per yard. Fifty-four cubic feet being 2 cubic yards, we would need 12 bags of cement, 0.9 cubic yards of sand and 1.8 cubic yards of rock or gravel.

For 1-course floors in poultry houses the 1-2-4 and 1-3-5 mixes are most generally used. The thickness of the floor is governed by the foundation on which it is to be laid. If a good foundation, such as clay, is to be used then a 3" floor would be sufficient but in other cases 4" of concrete would be safer. For 2-course floors the first course is usually constructed of from 2½" to 3¼" of a 1-3-5 mix and the top ½" of a 1-2 mix. This gives a smoother surface finish under ordinary conditions than the 1-course floors.

**Mixing and Placing.**—The materials used in making concrete should be thoroughly mixed before being placed in form. This can be done by either machine or hand. In machine mixing the materials are placed in a mixer in the proper proportions, water is added and the materials are mixed for about 2 minutes. In hand mixing the sand for a batch is usually placed on a mixing board of sufficient size. The cement is then spread over the sand and both are thoroughly mixed. After a uniform color is obtained part of the water needed is added and the mass is again stirred. Then rock and remaining water are added and mixed until the mixture is uniform. It is then ready to be placed in the forms, that are well made and braced.

**Consistency.**—The amount of water used in mixing has much to do with the strength of concrete. An excess of water will weaken the concrete while too little water will make it hard to mix and place. A good rule to follow is to use just as little water as possible to get a workable mix. The amount per bag of cement will be governed largely by the amount of moisture in the aggregates. The amount generally required is from 5 to 6½ gallons per bag of cement used.

**Waterproofing.**—One of the essentials of a poultry house floor is dryness. Therefore ordinary concrete will need something to prevent moisture coming through it unless some materials such as gravel or cinders are placed beneath it to remove the water. A very effective as well as inexpensive method of waterproofing the floor is to add 15% as much hydrated lime as cement to the mix. This aids in filling up the floor spaces and thereby renders it more waterproof. There are many commercial waterproofing materials on the market, most of which are good and may be used with safety.

**Curing.**—The ultimate strength of concrete depends to a great extent upon the proper curing of the concrete after it is placed. This is done by protecting it from the sun and supplying plenty

of water during the 7 days just after it has been placed. After the concrete has been troweled to a surface finish it should be permitted to get its permanent set, which will occur within 10 hours after placing in a temperature of at least 80 degrees F. After that time it should be kept moist for several days. This can be very conveniently done by covering the concrete with sand or burlap and wetting it 3 or 4 times daily for 7 days.

#### PAINTS AND WHITEWASH

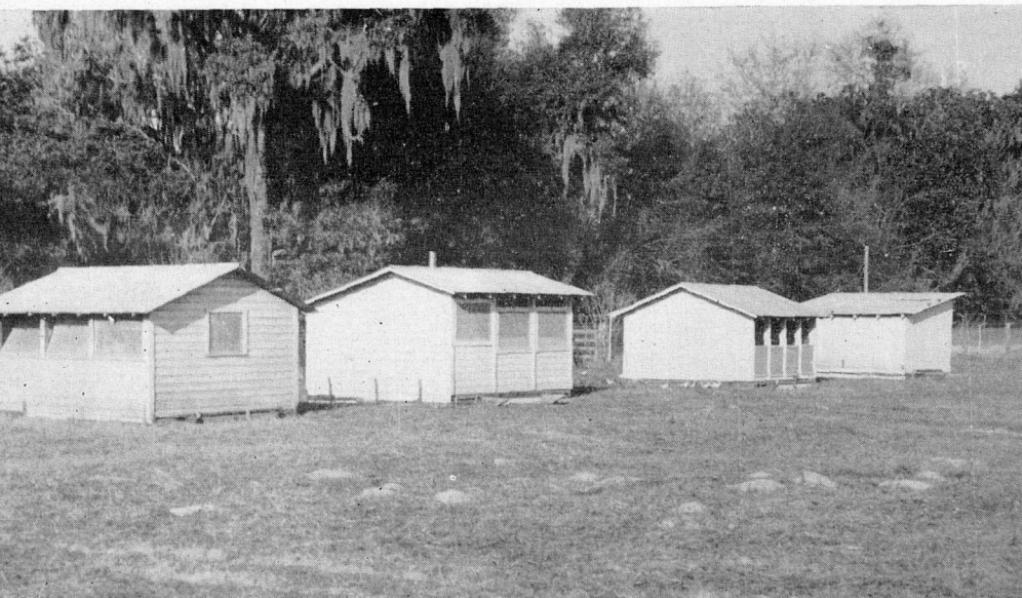
Paints add greatly to both the appearance and durability of wooden structures. Outside oil paints should be used on exterior surfaces. Surfaces to be painted should be clean and dry before being painted. Unpainted wood should first have a priming coat consisting of  $\frac{1}{2}$  linseed oil and  $\frac{1}{2}$  stock paint. Whitewash, while not as durable as oil paint, is much cheaper and can be used to advantage in improving the appearance of poultry houses.

Ordinary whitewash is made by slaking quick lime and allowing it to stand for 1 hour after slaking. Thin to desired consistency for spreading.

Whitewash for interior work may be made as follows: (1) Slake 38 pounds hydrated lime in 15 gallons water; (2) mix  $2\frac{1}{2}$  pounds of rye flour in  $\frac{1}{2}$  gallon cold water, then add 2 gallons boiling water; (3) dissolve  $2\frac{1}{2}$  pounds common salt in  $2\frac{1}{2}$  gallons hot water. Mix solutions 2 and 3 and pour into solution 1. Stir vigorously until thoroughly mixed.

A good outside whitewash may be made by (1) slaking 38

Fig. 5.—Four different types of colony brooder houses.



pounds of quick lime in 12 gallons of hot water; (2) dissolving 2 pounds common salt (sodium chloride) and 1 pound of zinc sulfate in 2 gallons of boiling water. Pour solution 1 into solution 2, then add 2 gallons of skimmed milk and mix thoroughly.

### BROODER HOUSES

Well constructed brooder houses are essential in raising and managing baby chicks. They should face to the south or south-east, and be placed on well drained soil.

Brooder houses are generally of 2 types, stationary and portable. The average size is 10'x12' to 12'x14'.

A concrete floor is desirable for a stationary house while a wooden floor, of tongue and groove lumber, is desirable for a portable house. The floor should be constructed to be warm and should be free of drafts.

Portable houses should be constructed on skids or runners (4"x6"), and should be light in weight, strong and durable.

The walls should be tightly constructed of drop siding or tongue and groove material. Some poultrymen are using rough lumber and ceiling the cracks.

Fig. 6.—Tractor moving colony brooder house.



The roof should be made waterproof, using either metal, shingles or roofing paper.

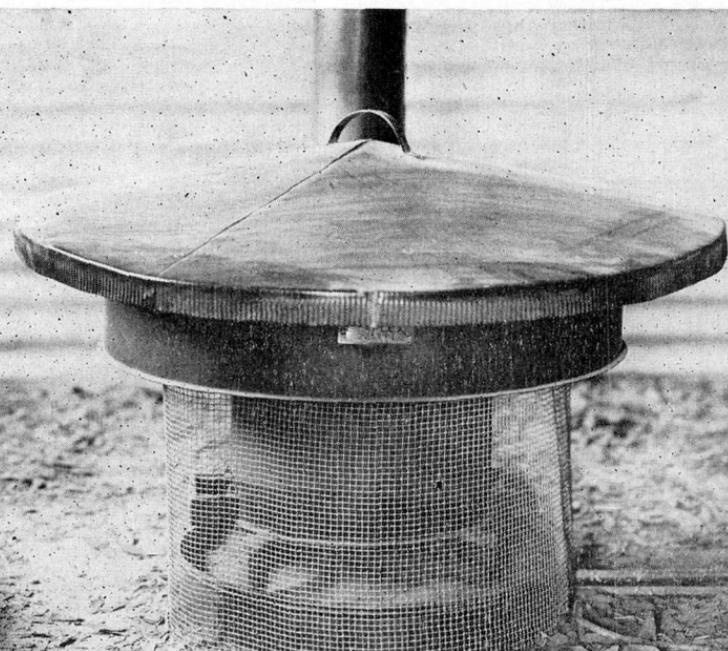
Ventilation in the brooder house can be secured by having an opening in front, the opening varying with the house. Windows in the front will help in furnishing light and ventilation. A ventilator in the rear of the house near the plate also is desirable and can be opened or closed as desirable to suit weather conditions and age of chicks.

A brooder house should be constructed so that it can be kept warm during winter and cool during summer. It should be easy to ventilate in winter and well ventilated in summer. Enough floor space for the number of chicks to be brooded should be provided. (See Tables 2 and 3.) About  $\frac{1}{2}$  square foot of floor space should be provided for each chick on the brooder floor.

**Brooder Stoves.**—There are several types of brooder stoves, designated either as the canopy or drum type. Oil, wood, electricity, coal and gas are used as sources of heat. In Florida the first 3 are the most popular.

**Wire Floors.**—It is more sanitary to raise chicks on wire frames than to use litter. The frames can be constructed of

Fig. 7.—Drum-type oil-burning brooder stove.



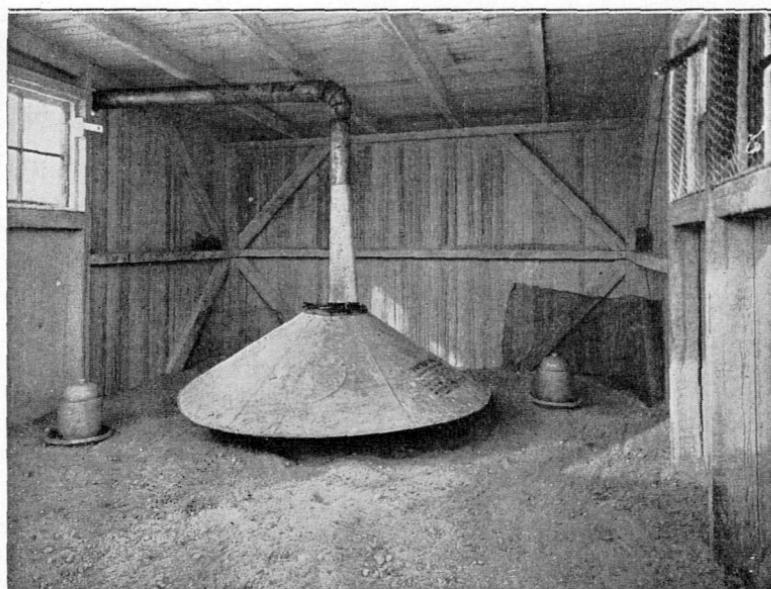


Fig. 8.—Interior of brooder house, showing colony brooder stove.

TABLE 2.—MORTALITY OF CHICKS AS AFFECTION BY THE NUMBER BROODED TOGETHER.\*

Number of Chicks Per Unit	Number of Units	Average Number of Chicks	Percent Mortality
100-400 .....	7	231	15.4
400-800 .....	12	717	14.2
800-1,200 .....	22	1,012	18.3
1,200-1,400 .....	9	1,309	20.9

TABLE 3.—DEATH RATE OF CHICKS AS AFFECTION BY FLOOR AREA ALLOWED.\*

Floor Area per 100 Chicks	Number of Chicks	Chicks Died	Percent Died
35 sq. ft. or less .....	73,077	19,254	26.3
35-50 sq. ft. .....	25,371	4,122	16.2
50 sq. ft. or more .....	25,044	3,484	13.1

\* From California Agricultural Extension Circular 28, Brooding and Pullet Management, by W. E. Newton and M. W. Buster.

1"x4" material on edge. The edges are beveled so that the surface collects very little droppings. The frames are made to

suit the size of house and small enough that they can be removed for cleaning. Sufficient supports to prevent sagging of wire and to allow facilities for walking in the house should be provided. The supports should be not more than 2 or 3 feet apart either way. The frames are covered with  $\frac{1}{2}$ " mesh hardware cloth.

**Wire Sun Porch.**—After poultry have been raised several years on 1 location the soil becomes contaminated, and it is desirable to keep the young chicks off the ground. Wire-floored platforms (about  $\frac{3}{4}$ " to 1" mesh hardware cloth) are built in front of the house to get the chicks out in the direct rays of the sun and so that the droppings will pass through. The sun parlor is enclosed by wire on all sides and top. The frame is of 1"x3" material, sides 24" high, and sides and top are covered with 1" mesh poultry netting. Some use a concrete platform that can be easily washed with a hose to prevent contamination.

The sun parlor generally has floor space equal to  $\frac{1}{2}$  or more of that inside the brooder house.

#### **HOME-MADE BRICK BROODER STOVES**

In Western Florida home-made brick brooders have come into use and seem to be giving satisfaction. They are easily constructed. The following method has been suggested for their erection and operation.

**Bill of Material.**—150 bricks, new or used, 25 pounds of lime,  $\frac{1}{2}$  sack cement,  $\frac{1}{3}$  yard sand, 5 heavy iron rods, 3 or 4 joints of 6-inch stove pipe, 1 joint with damper, 1 piece of tin or other metal 12"x16" for door, and 1 roof flange.

**How to Build.**—A mortar mixture of 1 part lime, 1 cement and 2 sand is used. Make mortar joints  $\frac{1}{4}$ -inch thick and break joints with bricks. Lay bricks on flat side. After 6 rows of bricks are up lay irons across top to support a seventh layer of brick entirely across the top. The cap bricks should be placed  $\frac{1}{4}$  inch apart. A thin mortar about 3 inches thick should be run over entire top.

Angle iron, heavy wagon tires, road scraper blades and similar materials make splendid cross bars to support the cover layer of bricks and mortar. Arrange these bars so as to support the ends of the cap bricks.

Enough lengths of stove pipe should be used to project the pipe above the roof about 2 lengths, or sufficiently to secure

proper draft. The damper should be placed in the first length of pipe.

Secure a piece of sheet metal or an old stove door 12"x16" in size, which will fit very closely against the face of bricks so that operator can regulate draft. It is an added convenience to attach a light chain or wire from the door through a pulley or staple which may be placed in the roof. A weight attached to the other end of this wire enables the operator to raise and lower the door more readily when it is hot.

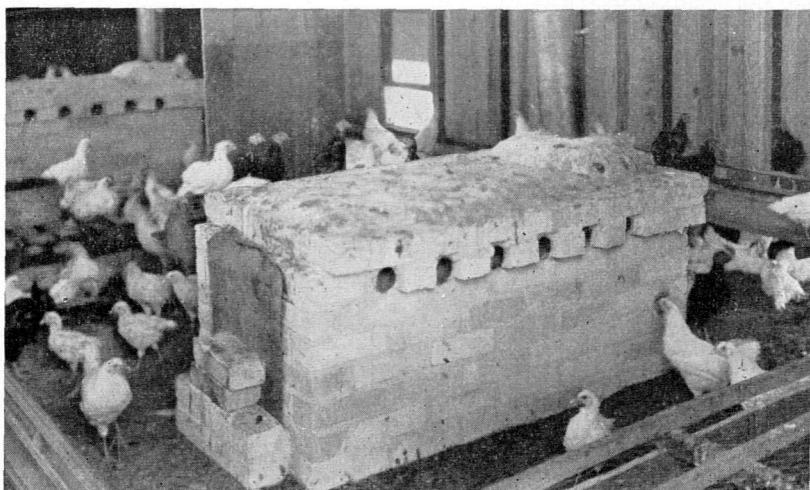


Fig. 9.—Home-made brick brooder stove, which is inexpensive, easily constructed and satisfactory.

A properly placed roof flange should remove any danger of fire starting around the roof. Cut the roof away 3 or 4 inches from stove pipe and insulate with tin or asbestos as a special precaution.

#### FARM BROODER

This brooder was designed primarily for Florida general farms and backyard poultry keepers, either where broilers and fryers are raised on a small scale or to start pullets. This brooder will accommodate from 50 to 75 chicks for the first 5 or 6 weeks. For complete details of construction see Circular 70, *A Simple Farm Brooder and Finisher*.

The heat may be supplied by a kerosene lamp underneath, as illustrated in Figure 10, or electricity may be used, in which case the bulbs or heating units are placed in the top section.

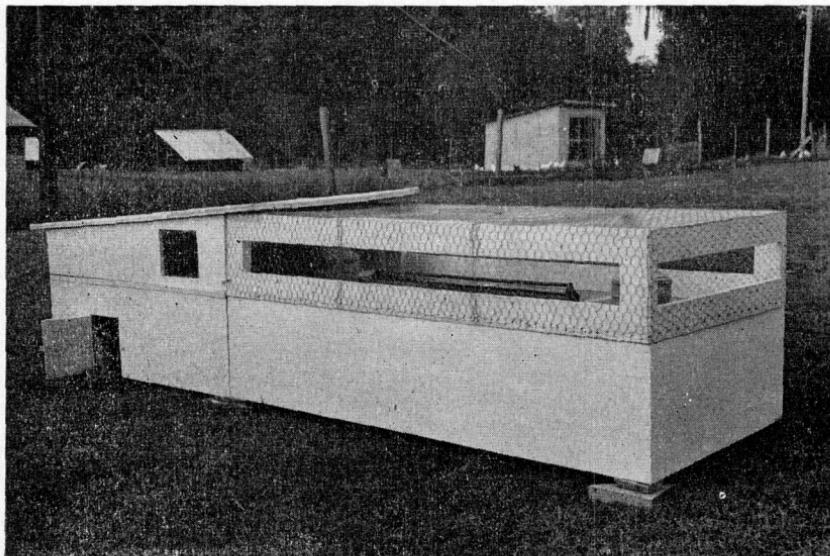


Fig. 10.—A complete farm brooder 3' x 10', including brooding and sunporch units. Note lamp, feeder and waterers.

#### BATTERY BROODERS

Brooding chicks in batteries is the latest development in brooding. It employs a battery of wire-bottom chick trays, 1 above another. Under each tray is a metal pan which collects the droppings. The feed and water vessels are on the outside of the tray and this makes it impossible for the chicks to contaminate them with their droppings. It is recommended that when chicks are started in battery brooders, at least 10 square inches of floor space be allowed for each chick. (Fig. 11.)

There are many types of battery brooders on the market. The principal ones are (1) heated compartments and (2) unheated compartments. In the former type, each compartment is heated and the heat is regulated by a thermostat. This type generally has 2 sections, 1 warm and 1 cool. In the latter type the room is heated and a fan is stationed in the room to circulate the air.

Battery brooding appears to be very successful for the first few weeks. With advancements in types of brooders and methods of management, perhaps they will be used for a longer period. They are being used for the production of broilers and fryers. The length of time that pullets can be kept in the batteries for best results is variable. Most poultrymen have

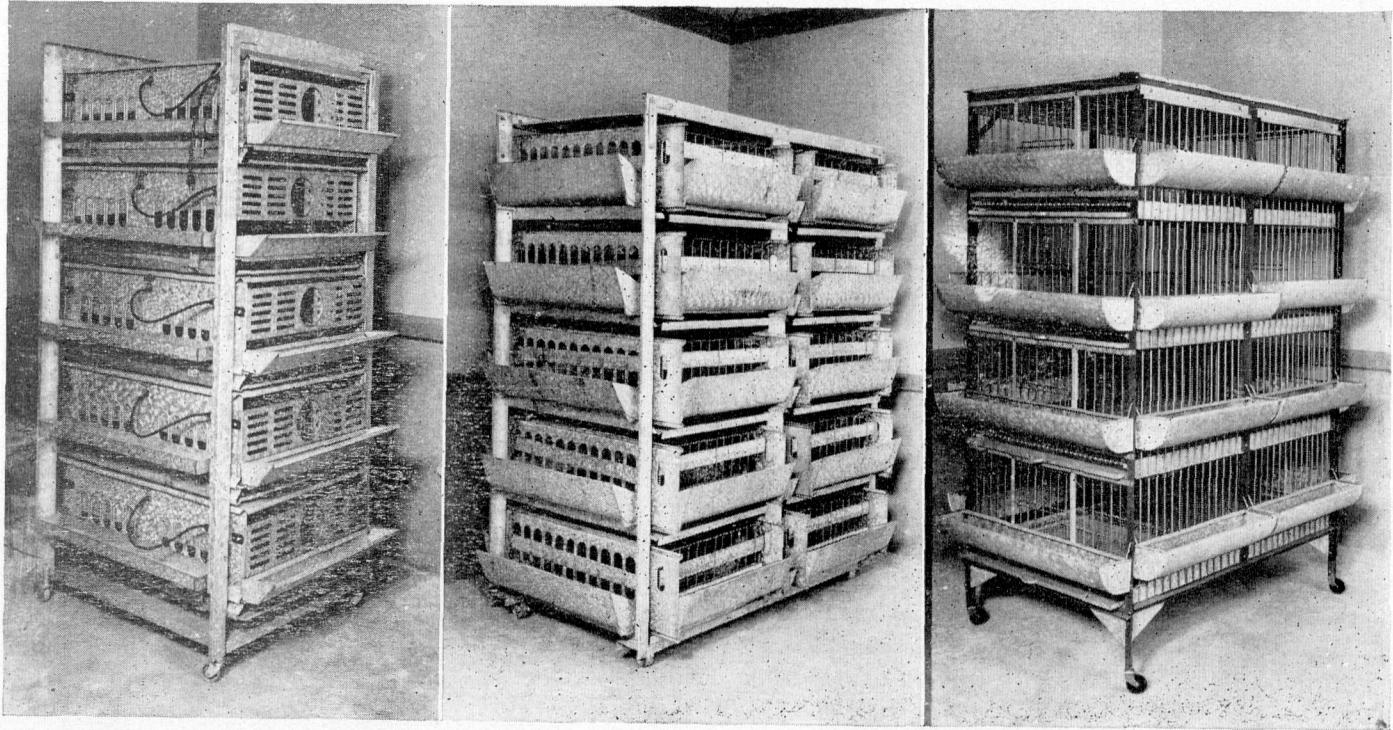


Fig. 11.—Types of starter, grower and finishing batteries.

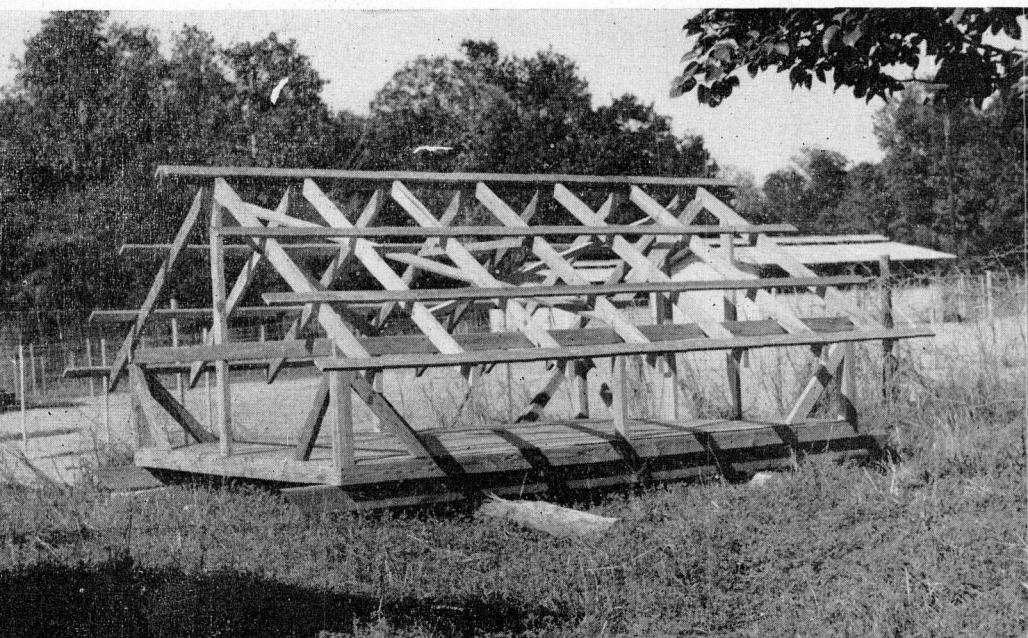


Fig. 12.—Summer shelters or range houses on bermuda sod.

found it undesirable to keep pullet chicks in batteries longer than 3 weeks.

After chicks are removed from the battery brooder they can be put in either colony or long-type brooders until they are ready to go on range.

Fig. 13.—Framework of summer shelter.



## SUMMER RANGES AND SHELTERS

When the cockerels are marketed, cull the slow, runty pullets and all birds not likely to develop into profitable layers. Place the remaining pullets on a range that is clean and with a moderate amount of shade and a good supply of green feed.

Provide a suitable light movable summer shelter with a good circulation of air. Do not crowd. (See Figs. 12, 13 and 19.) These shelters are about 8'x10' or 10'x10' with wire on all 4 sides, perches and a wire floor (1" mesh poultry netting). Sometimes a wooden floor with screening under the perches is used.

Keep young chicks and growing pullets away from old birds.

## LAYING HOUSES

Laying houses may be movable or stationary. If they are to be portable they should be placed on runners so that they can be moved from place to place. All laying houses should be inexpensively but well equipped with labor-saving devices.

The floors in the laying house may be dirt, wood or concrete. Wood or concrete floors are better.

Laying houses are generally open-front. Some have a 4-foot opening while others have the entire front open. This will

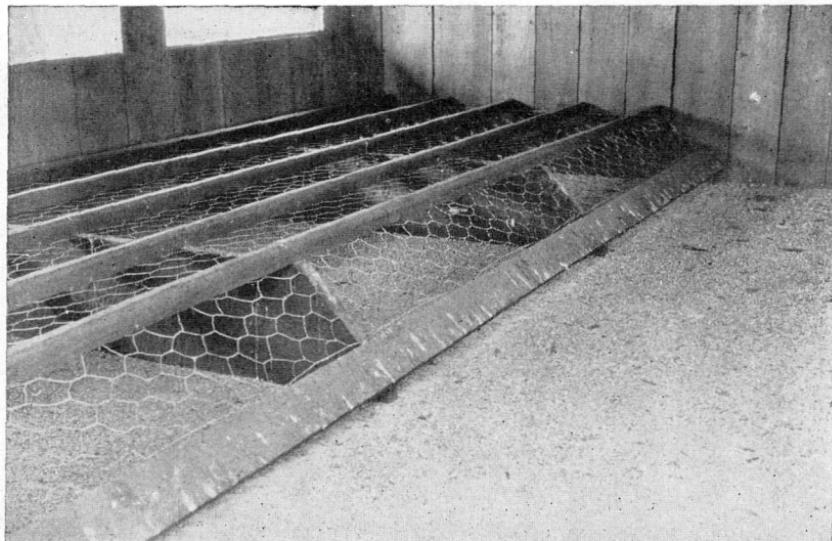


Fig. 14.—Interior of colony house for pullets. Note arrangement of perches, wire under perches, and openings.

allow plenty of sunshine and ventilation for the house. Ventilators should be placed in the rear of the house just under the plate or below the dropping boards or both. If a gable roof is used ventilators at peak should be constructed. (See Figs. 1 and 2.)

The sides of the house should be tightly constructed so as to prevent any drafts on the birds. In central and northern Florida the houses are constructed more tightly than in southern Florida. An abundance of fresh air in poultry houses is essential.

#### BUILDING THE LAYING HOUSE

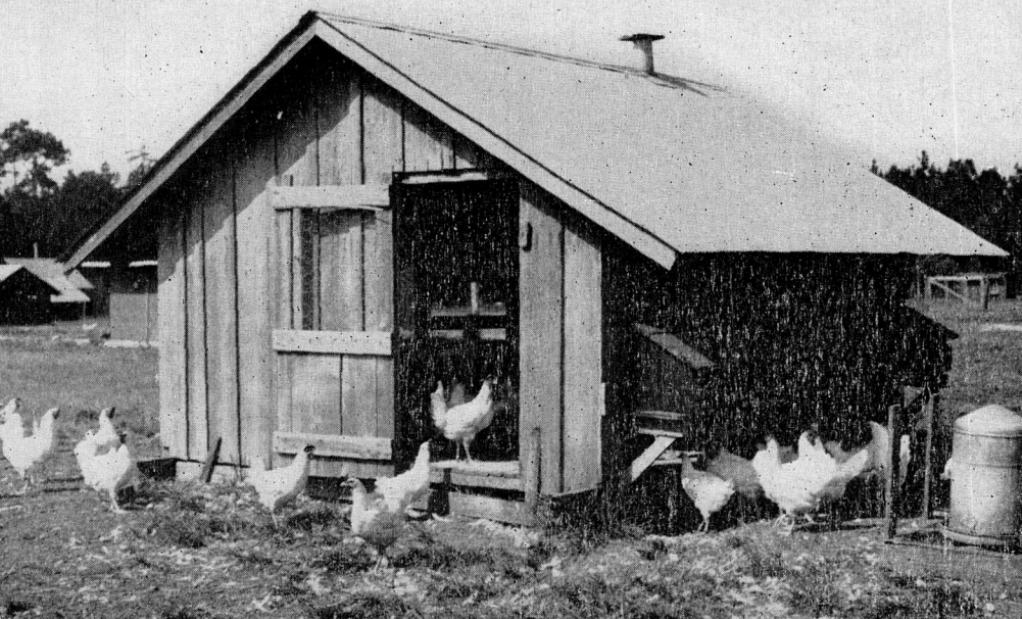
The following suggestions are given to assist in the construction of a poultry house.

#### SUGGESTED DIMENSIONS OF SHED-ROOF TYPE POULTRY HOUSES

Depth, Ft.	Length, Ft.	Height in Feet	
		Front	Rear
12	10	7 -7½	4½-5
14	12	7½-8	5 -5½
16	16	8 -8½	5 -5½
20	20	8½-9	5 -5½

Overhangs or drips are suggested on shed-roof type houses. The drip should be 2 feet to 2½ feet at an angle of 45 degrees. Even span houses are constructed so as to have a front and

Fig. 15.—The all-purpose house being used as a laying house.



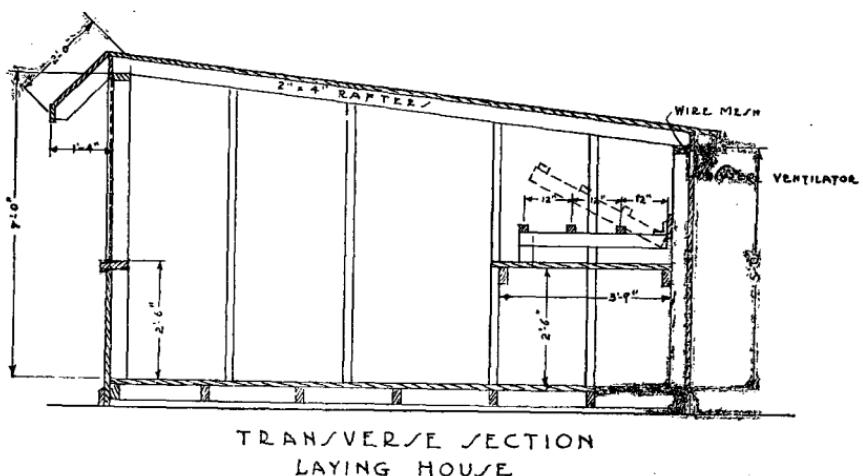
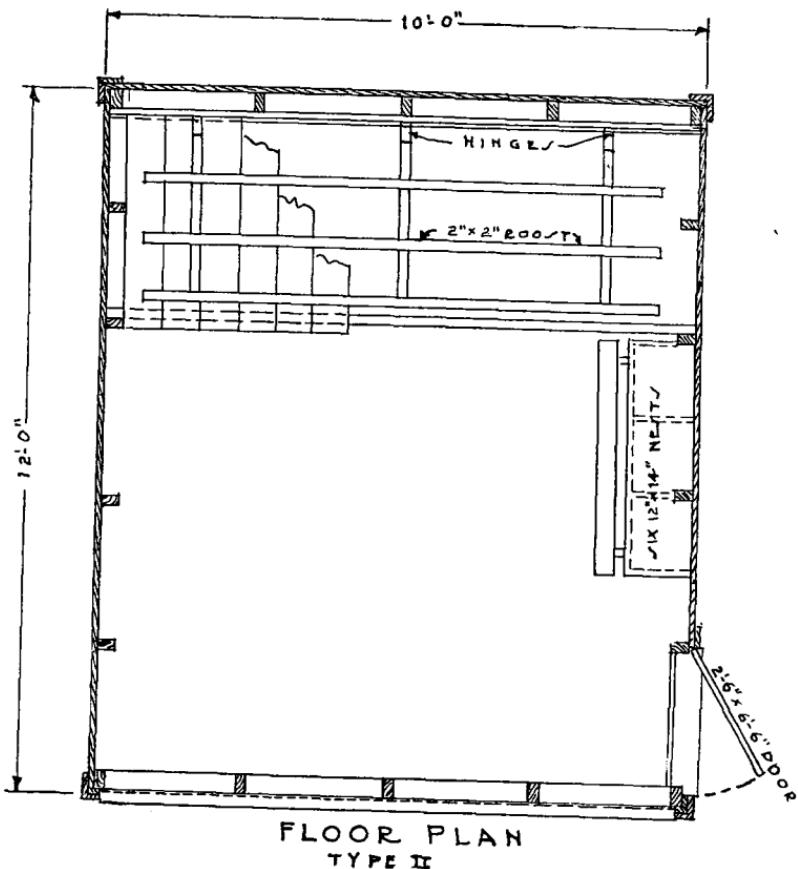


Fig. 16.—Plans for shed-roof laying house, 10'x12', with drip.

rear height of 7 to 8 feet and the peak 10 feet. The depth ranges from 16 to 18 feet and the length from 32 to 48 feet.

The fronts are boarded up  $2\frac{1}{2}$  to 3 feet and the remainder screened with poultry wire.

Rear ventilators just under the plate are 6 to 12 inches wide and hinged. Ventilators below the dropping boards are furnished by means of glass windows 2'x2' which can be slid back and forth. The opening is covered with 1-inch mesh wire. Openings in either end of the even-span house near the peak are sometimes found to provide better ventilation.

#### **ALL-PURPOSE PORTABLE HOUSE**

The all-purpose portable poultry house is in use on many farms in the State as a brooder house, range house and laying house. It is a 10'x12' house built on skids and can be used for the small farm flock or as a unit on large farms. Figures 15 and 18 illustrate this type of house. For additional information write for Circular 50, Portable All-Purpose Poultry House.

#### **POULTRY EQUIPMENT**

**Dropping boards** should be constructed of tongue-and-groove material. The boards should be laid from front to rear to facilitate cleaning. The boards should be horizontal and parallel with the floor. They should be about  $2\frac{1}{2}$  to 3 feet off the ground, and should extend 9 to 12 inches beyond the front and back roosts.

**Dropping pits** are now being used in many poultry houses in place of dropping boards. Dropping pits are easily constructed at lower cost than dropping boards. Perches are about 18 inches from the floor at the rear and 12 inches at the front, or they may be horizontal. The perches are seldom placed over 2 feet above the floor. Wire is placed under the perches to keep the chickens out of the droppings. A board or wire frame is used at the front of the roosting section. This will keep the birds from getting into the pit under the perches.

In general, perches over a dropping pit are lower than those with dropping boards.

**Roosts.**—Removable roost poles should be provided for the hens. They should be placed on the same level (horizontal) to prevent the birds from crowding to the top poles. Lumber 2"x2" or 2"x3" should be used with the sharp corners rounded. These

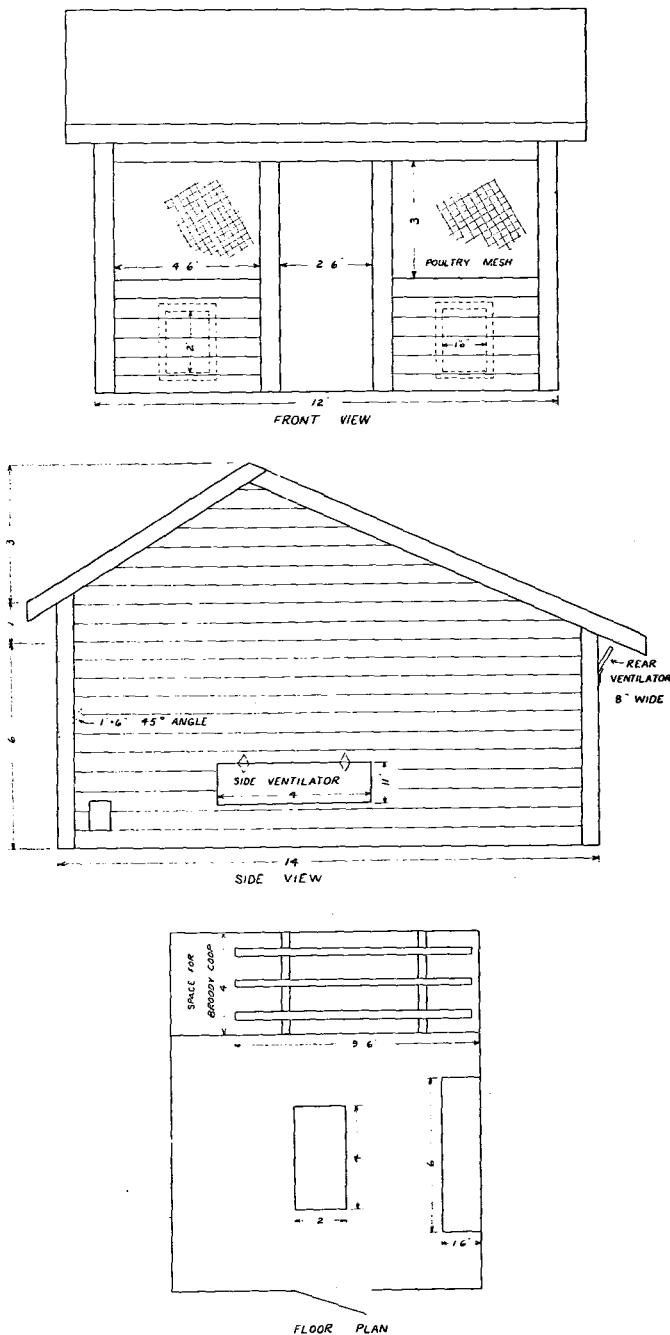
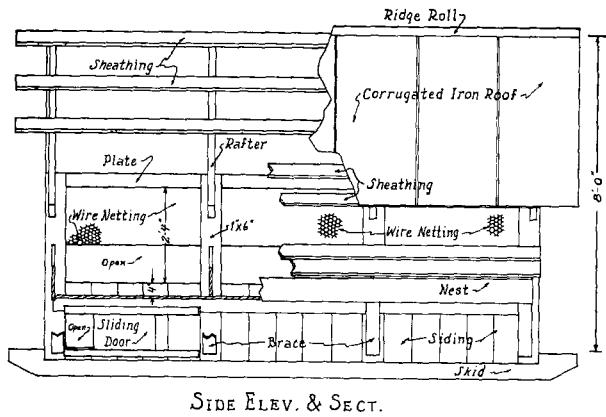
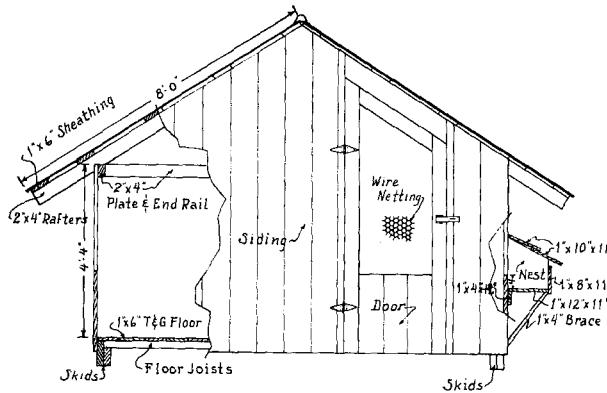


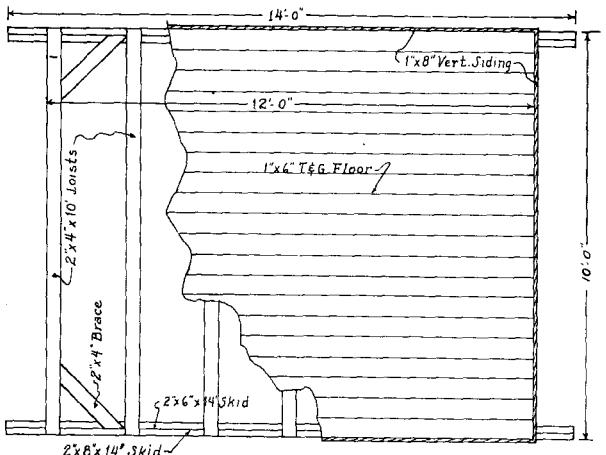
Fig. 17.—Plans for a two-thirds span laying house.



SIDE ELEV. &amp; SECT.

{Scale  $\frac{1}{2}": 1'-0"$ }

END ELEVATION &amp; SECTIONS.



FLOOR &amp; JOIST PLAN

Fig. 18.—Detailed plans for the all-purpose or  
“3-way” poultry house.

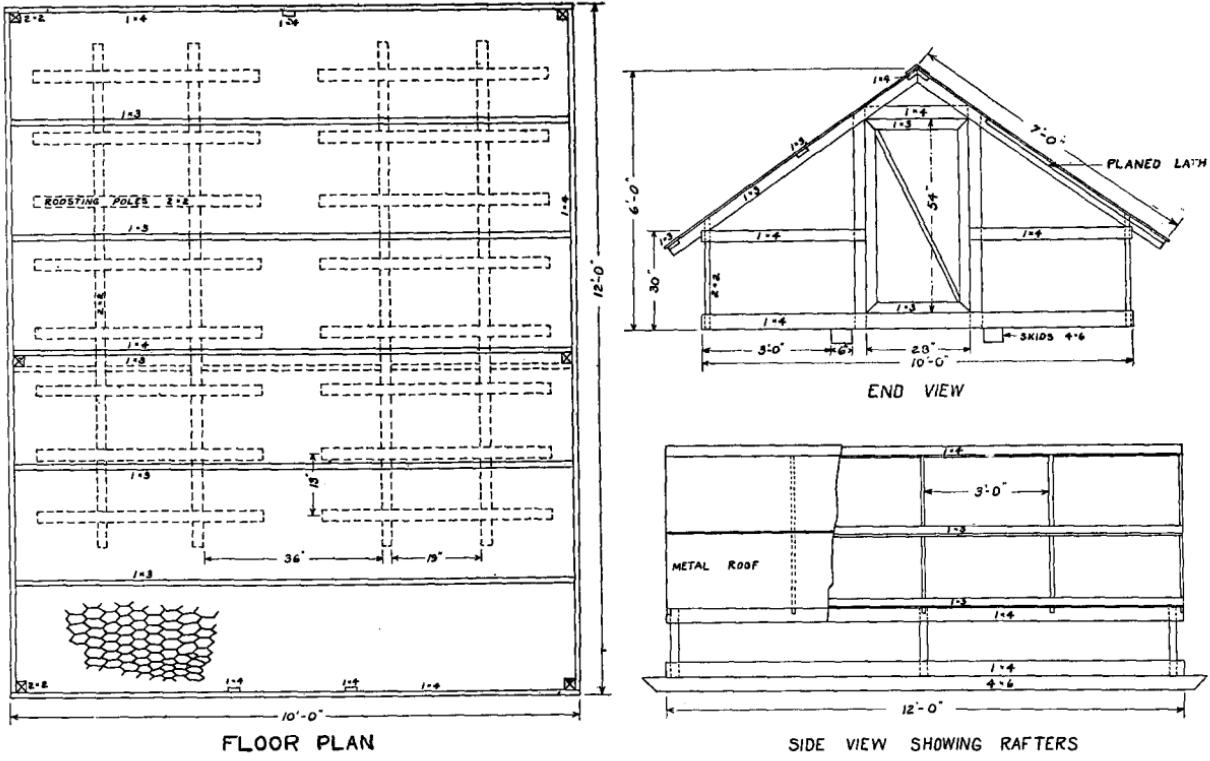


Fig. 19.—Plans for desirable type summer shelter.

roosts are generally placed 6 inches above the dropping boards and are supported either by wires from the roof or by a frame resting on the dropping boards. In the latter case, it is well to use hinges so as to raise the perches when cleaning the dropping boards. (Fig. 16.) From 8 to 10 linear inches (8" for Leghorns and 10" for New Hampshires) are allowed per bird for roosting space. The roosts are placed 12 to 16 inches apart. Wire (1½" heavy mesh poultry netting) should be stretched below the roosts to keep the hens out of the droppings in order to promote health and cleanliness.

Roost poles should be made in sections about 5' or 6' in length for ease in handling. Roost poles should also be provided for the chicks. It is most desirable to get the chicks to roost as early as possible. Roost poles for chicks are generally constructed of 1"x2" lumber on edge, the sharp corners rounded. Also 1" mesh poultry netting should be fastened under the perches. A great many poultrymen slope the chick perches. Do not have the high part of slope more than 12" from the floor at the back and then have it taper gradually to the floor. This will get the chicks up off the floor, which will allow better ventilation.

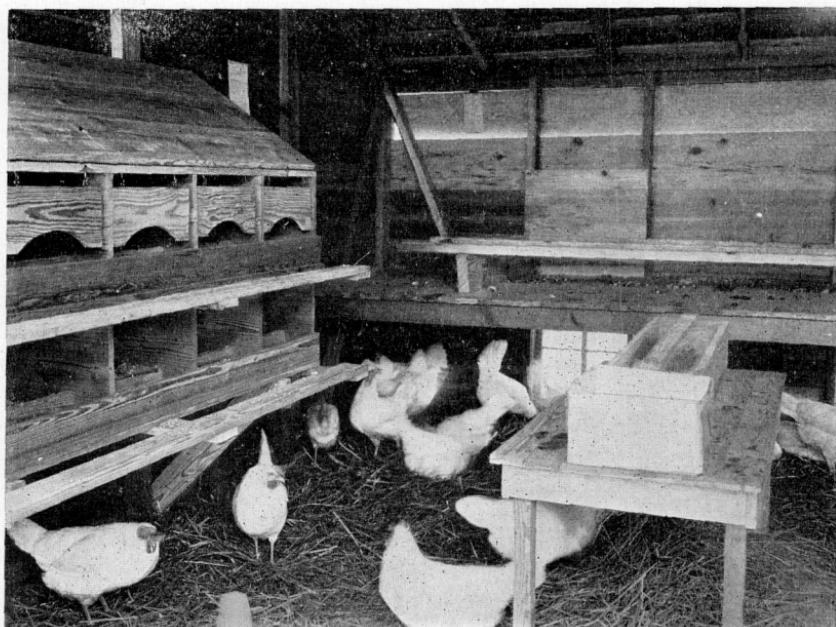


Fig. 20.—Interior of laying house at Florida National Egg-Laying Test.

**Nests** should be easily accessible to both hens and caretaker, economically constructed and easily cleaned. Nests should be roomy, movable, easily cleaned, cool, well ventilated, dark and conveniently located. A dark nest is preferable; there will be less scratching in nest, less egg breakage and less egg eating. Nests can be located on the end walls or in front. For Leghorns and other light breeds nests 12"x12" and for Rhode Island Reds and other dual-purpose breeds nests 12"x14" or 14"x14" are sufficient. The nests should be 12 to 15 inches high and the front edge board 4 to 6 inches high to retain nesting material. Plenty of nests should be available for the birds. One nest for every 4 to 6 hens is sufficient.

Nest bottoms are of either wood or wire. When single tiers of nests are used  $\frac{1}{2}$ " mesh hardware cloth (fine wire) or netting may be used for the bottom. This permits more circulation of air and allows droppings and trash to be scratched through the wire netting. This helps to keep the nest clean.

A sloping roof over the nests will keep the hens from roosting on top.

Hinged jump boards in front may be closed to keep hens out of nest at night.

All-metal nests are used quite extensively. They are easier to clean and less apt to become infested with mites.

If a group of nests is built together they should be movable for convenience in cleaning.

Some poultrymen are using orange boxes and egg crates as nests.

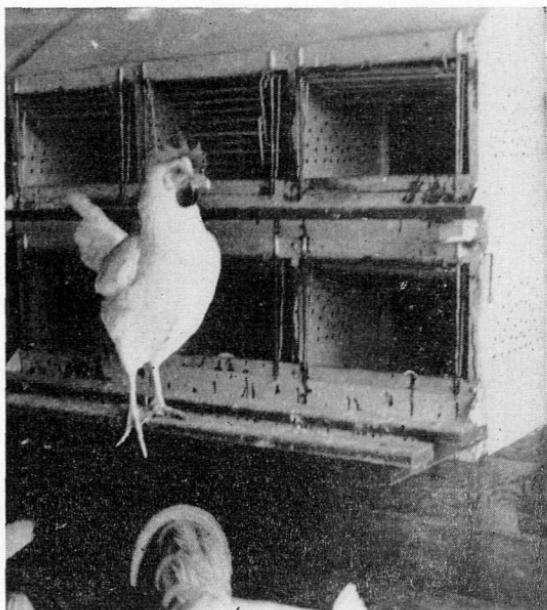


Fig. 21.—A type of trapnest. Note jump board and open-type trapdoor. These nests are well ventilated.

**Trapnests** are the only sure way of telling what the hens will do. They differ from the regular nests in that they are provided with trapdoors. There are several styles of trapnests manufactured by commercial companies, or trapnest fronts may be purchased and attached to the nests. There should be 1 trapnest for each 4 birds. Trapnests are necessary pieces of equipment on poultry breeding farms.

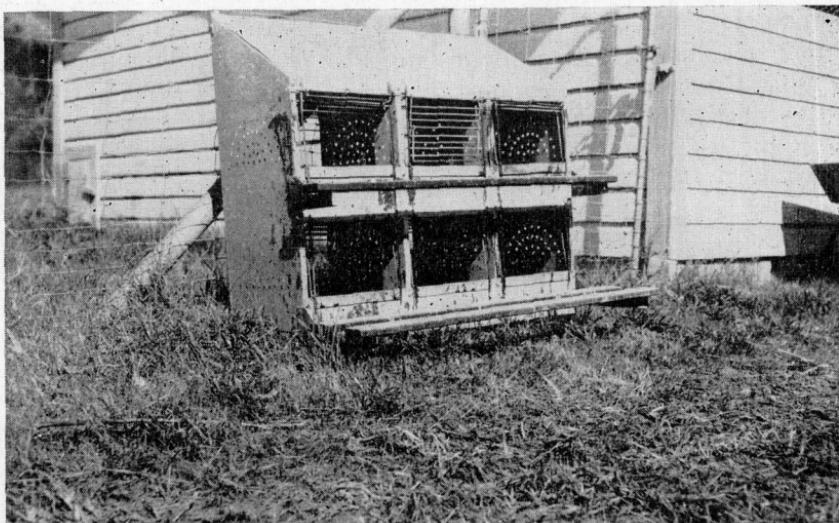


Fig. 22.—A group of 6 metal trapnests.

#### WATER EQUIPMENT

**The water fountain** is a fixture to which careful consideration should be given. It should be constructed so that it can be easily cleaned and disinfected, is easily accessible for the poultry, and is protected from contamination. Water vessels should be placed on stands near the mash hopper.

Plenty of drinking vessels should be available for the chicks. A 1-quart jar for about 30 chicks is satisfactory. In using such a jar, it must be filled at least twice daily. Some find a  $\frac{1}{2}$ -gallon fountain for 50 chicks very satisfactory. (See Fig. 23.)

Galvanized pails are used quite extensively as water vessels for layers. It is suggested that a 12 to 16-quart pail be used, allowing 2 or 3 pails for each 100 to 125 birds.

One hundred hens will drink from 4 to 6 gallons of water per day.

**Stand for Water Pails.**—When pails are used to supply water

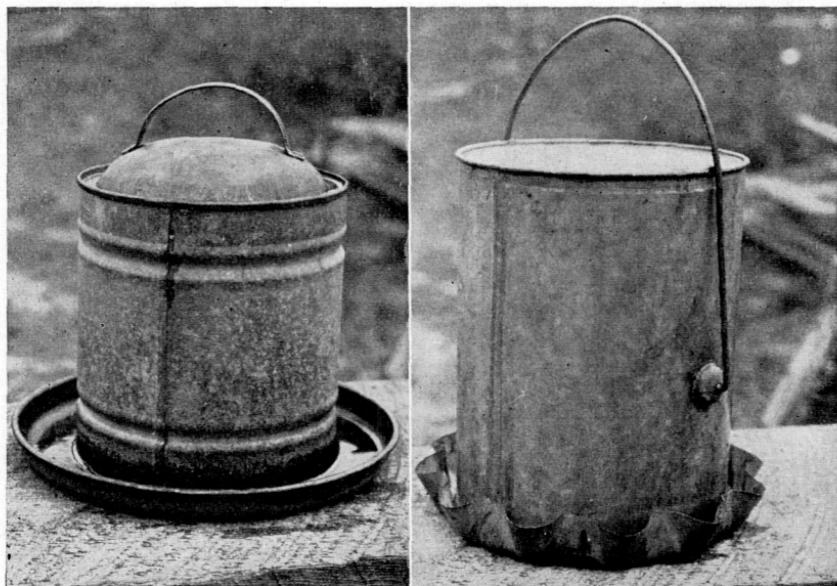


Fig. 23.—Two types of water vessels for growing birds.

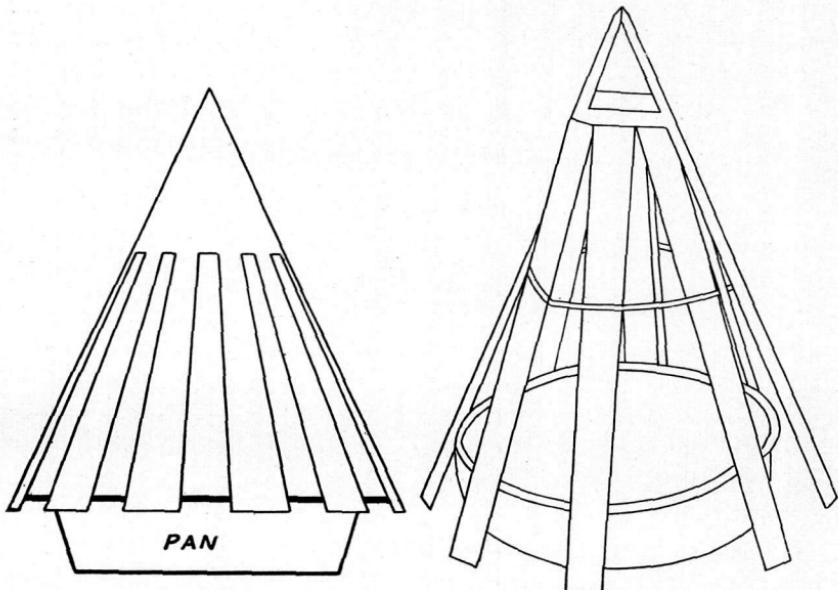


Fig. 24.—Water or milk pan protector.

for the layers, a stand should be provided to keep the pail off the floor. It can be easily constructed as follows: Use 2"x4" for the legs, making them 18" high. The slats which form the top

are 1"x2" strips about  $\frac{1}{2}$ " apart which permit dirt and droppings to work down between them, thus helping to keep the stand clean and dry. The pail is set down about 4". If a pan is used it is well to have a protector over it to keep the birds from walking through.

**Water or Milk Pan Protector.**—A simple, yet very important, part of the water equipment is a protector. It can be made in many different ways as indicated in Fig. 24.

Sometimes it has been found desirable to have a water barrel mounted on skids, especially for birds on range. A small tap is placed at bottom of barrel with a pipe leading from it so that it will drip into a pan which has a protector.

**Screened Platform for Drinking Vessels.**—Such a platform will make it possible to keep the floor or ground dry. One can

be easily constructed. Use 2" x4" for frames and cover with  $\frac{1}{2}$ " mesh hardware cloth. Make frame any desired size.

If screened platform is used in the yard, first make a dry well and put frame over the well. (Fig. 25.)

On the larger poultry farms automatic foun-

Fig. 25.—Water pan on wire platform with cover, used on range for pullets. Dry well underneath wire stand.

tains are used rather extensively. This allows for a continuous supply of fresh running water.

#### FEEDERS

Feeders should be built so that they are easy to fill and to clean and do not waste feed. They should be arranged so that the birds cannot roost on them and should be high enough so that litter cannot be scratched into them.

**Mash hoppers** are essential in all phases of poultry manage-



ment. They should be constructed so as to be clean, sanitary and non-wasting. There are many different types.

**Chick Feeders.**—Chick feeders should be sanitary and non-wasting. There are a number of different types which are easily constructed. One of these is the reel type, which has a reel placed above it so that chicks cannot perch on top and consequently the feed and feeder are kept cleaner. Plans for a feeder 4" wide, 30" long and 1½" deep are shown in Fig. 26. The reel is 1 inch square, and is supported by a heavy wire at each end of the feeder.

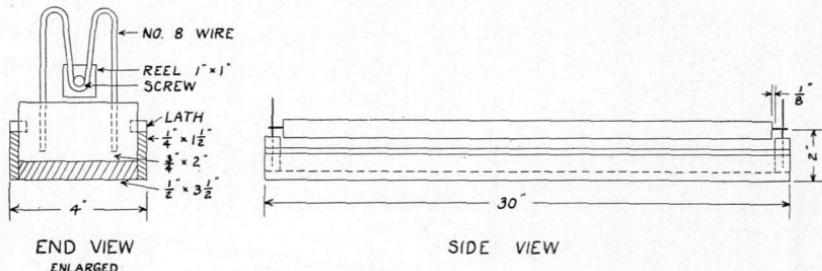


Fig. 26.—Plans for the construction of a reel-type chick feeder. A similar feeder, only larger, can be used for pullets or layers.

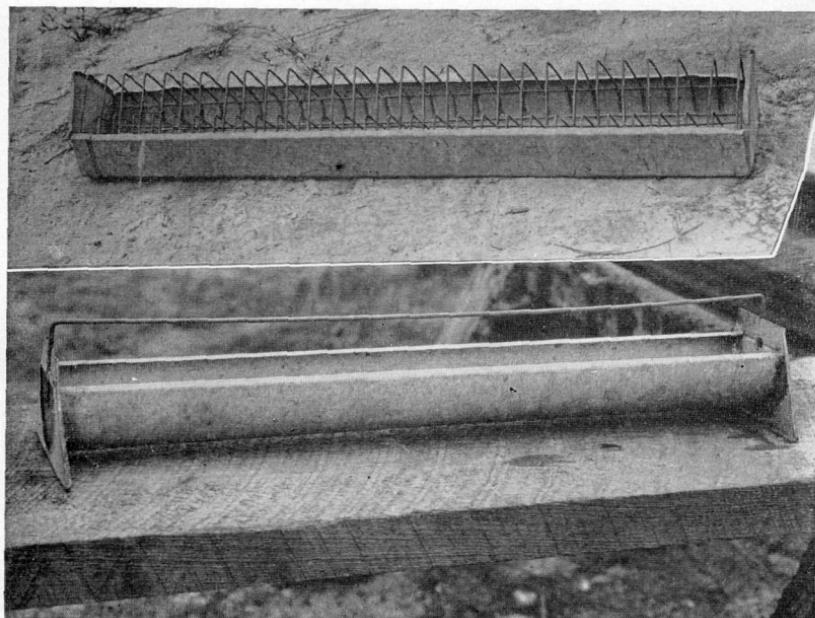


Fig. 27.—Two types of indoor feeders.

A similar feeder 6" wide, 4' long and  $3\frac{1}{4}$ " high is used for pullets. The reel for it is  $1\frac{1}{4}$  inches square, and is supported by extra heavy wire.

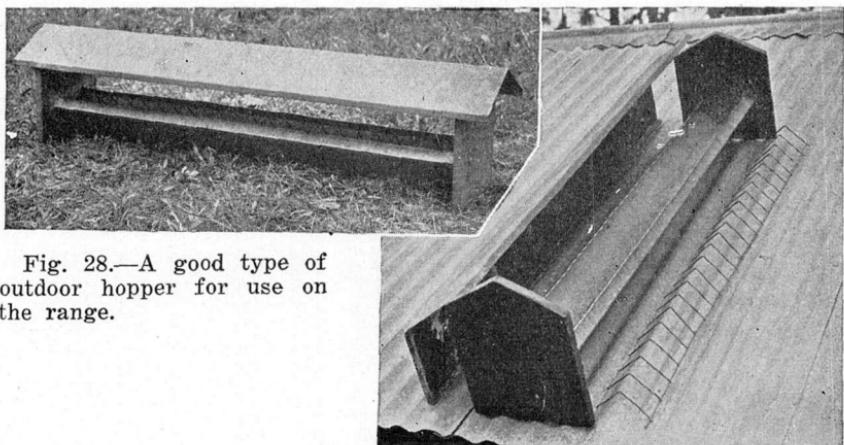


Fig. 28.—A good type of outdoor hopper for use on the range.

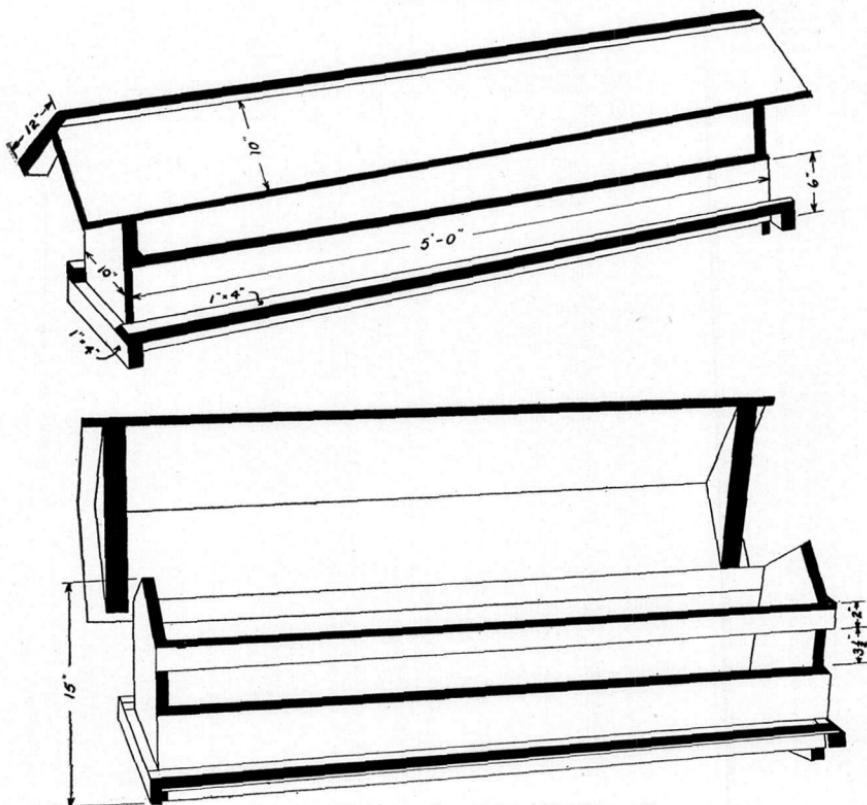


Fig. 29.—A good outdoor feeder.

Another type of chick feeder that is used and is easily constructed is made by taking a board 6" wide and 4' long as the bottom and using  $2\frac{3}{4}$ " boards for sides. Then take a strip of  $\frac{1}{2}$ " hardware cloth  $3'10'' \times 5\frac{1}{2}''$  and set in trough. The wire is placed on top of mash and will prevent the mash from being scratched out.

**Outdoor Hopper.**—This type of hopper is used for growing birds on range. It is so constructed that rain will be kept out. (Figs. 28 and 29.)

**Feeding Space.**—Ample room should be allowed so chicks can

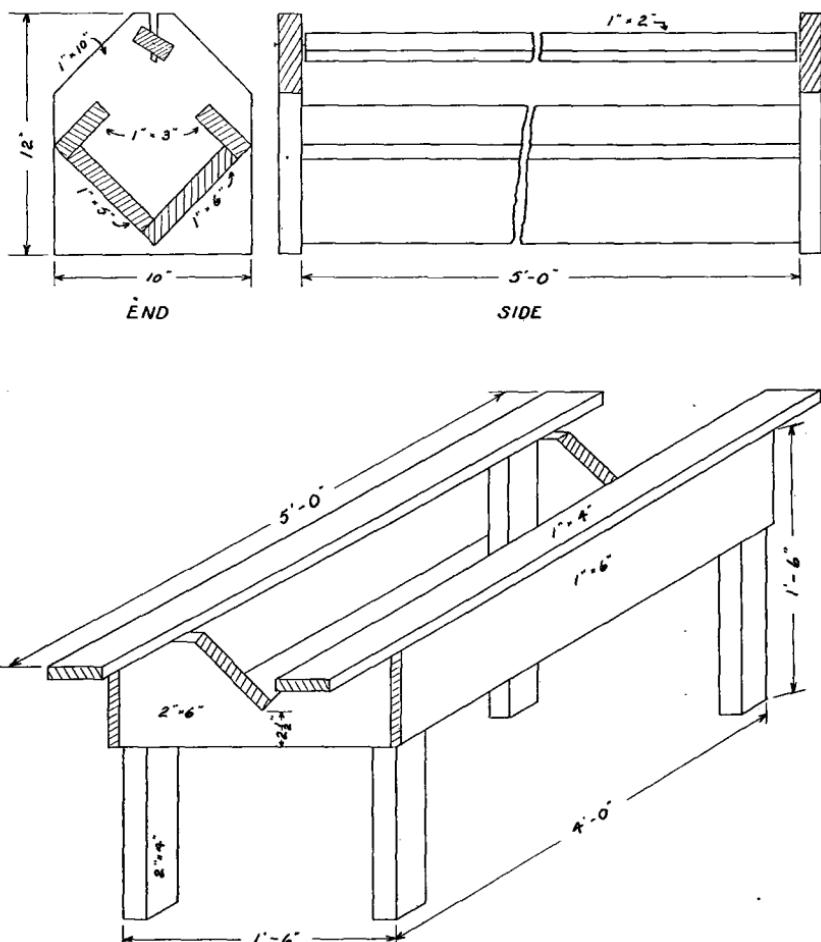


Fig. 30.—Plans for a satisfactory mash hopper.

feed freely. It is recommended that 1 square foot of mash hopper space be allowed for 50 chicks for first 4 weeks, then 1 square foot of space for 25 chicks.

A 3' feeder will take care of 100 chicks for first 3 weeks. More feeders are needed after this time.

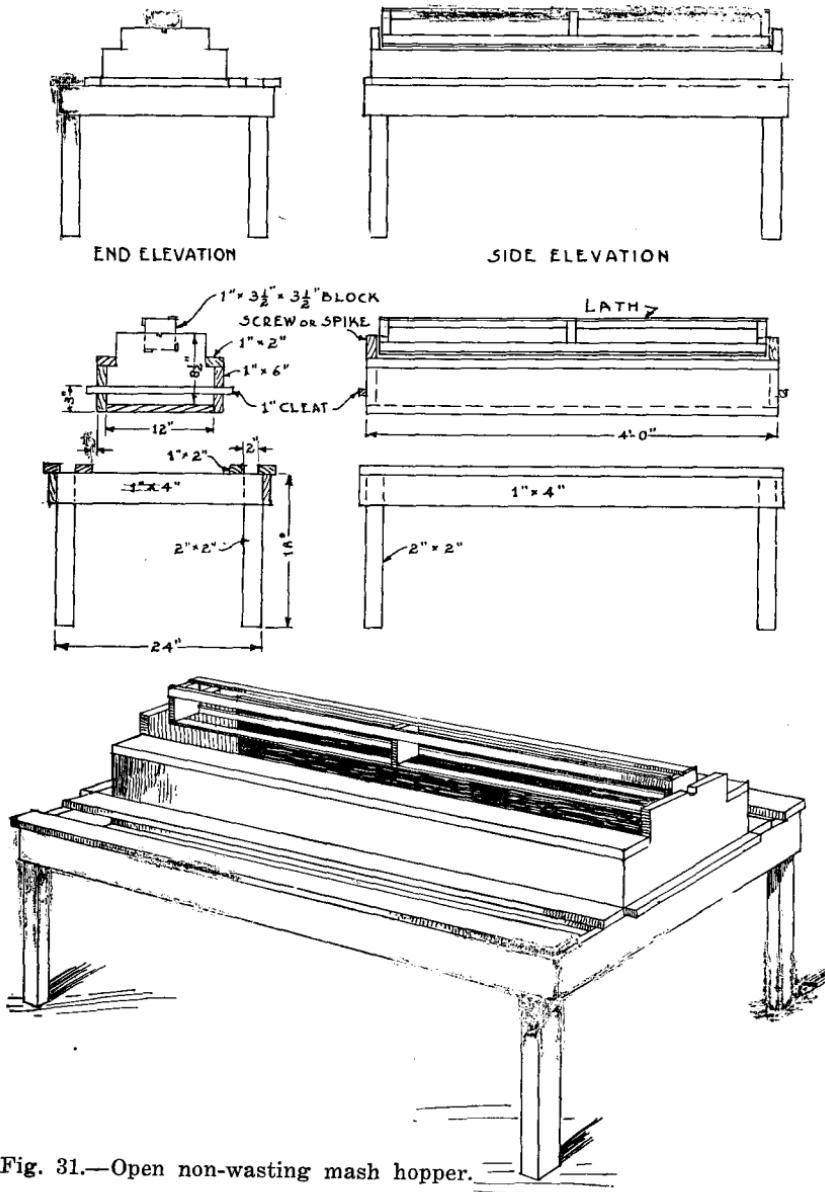


Fig. 31.—Open non-wasting mash hopper.

As a general rule, about 1 inch of feeding space per chick is desirable. For growing birds allow about 2 to 3 inches of feeding space and for laying birds at least 2 to 3 inches.

### DRY MASH FEEDER

#### BILL OF MATERIAL (Fig. 31)

4—2"x2"x18"	2—1"x6"x4"	3—1"x3½"x3½"
2—1"x2"x24"	1—1"x12"x4"	4—plaster lath
2—1"x4"x4'2"	2—1"x12"x8½"	2—2½" No. 10 screws
6—1"x2"x4'2"	2—1"x1"x18"	½ lb. 6d. box nails

**Layers' Mash Hoppers.**—Sufficient mash hoppers should be available for the birds. Approximately 16 to 20 linear feet of dry mash hopper space should be provided for each 100 adult birds. See Figures 30 and 31 for construction of 2 different types of mash hoppers. Hoppers 4 to 5 feet in length are easy to handle.

**An oyster shell and grit hopper** should be provided. Figure 32 shows a suitable type of hopper which will hold large amounts of grit and oyster shell. This material should be kept before the laying and growing stock all of the time.

Another type of hopper for grit, shell and charcoal can be easily constructed as follows:

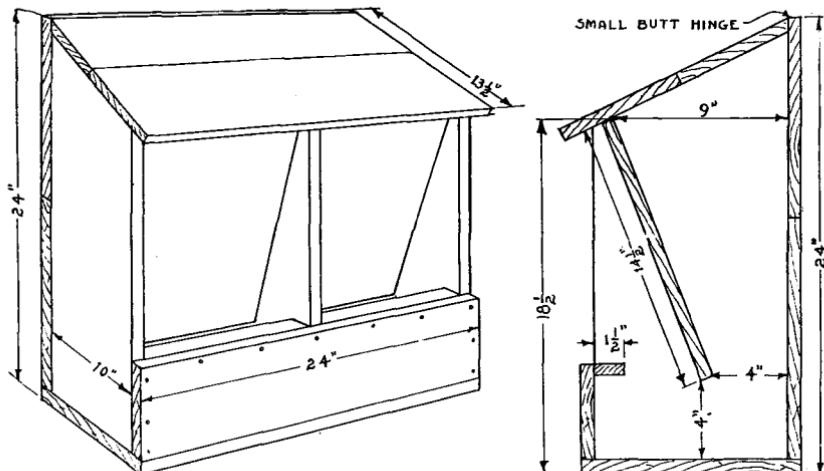


Fig. 32.—Oyster shell and grit hopper

#### BILL OF MATERIAL (Fig. 32)

- 1 pc. 1"x12"x14'—backs, ends, partitions and fronts
- 1 pc. 11"x8"x6'—top and front of trough
- 1 pr. 2" butt hinges.

Construct a box 4' long, 6" wide and 5" deep and divide into 2 or 3 sections and nail to side of house 1' from floor. A lip may be used to check waste.

#### MISCELLANEOUS EQUIPMENT

**A broody coop** is used to break up hens that want to set. This

can be arranged on top of the roosts at 1 end of the roosting space, using the regular dropping board to care for the droppings and utilizing the end, back and roof of the house for 3 of the sides of the broody coop. The other side—the front—and the bottom should be slats about  $1\frac{1}{2}$ " apart made of lath or lattice, or thin strips, or covered with heavy poultry netting. This per-

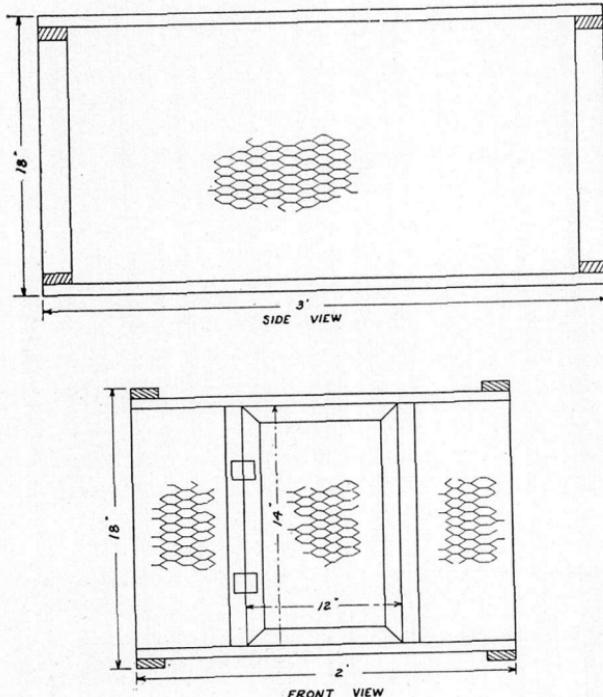


Fig. 33.—Suggestions for a broody coop.

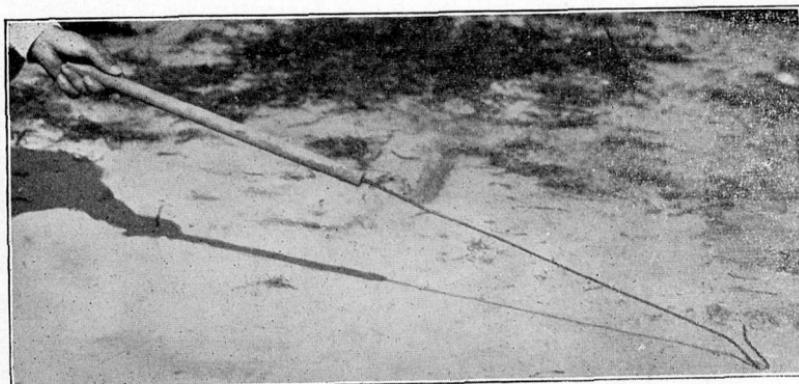


Fig. 34.—Type of hook for catching chickens.

mits constant circulation of air, lots of light, and forces the broody bird to roost on the slats and provides no place for her to make her nest. Provide feeding and drinking vessels for

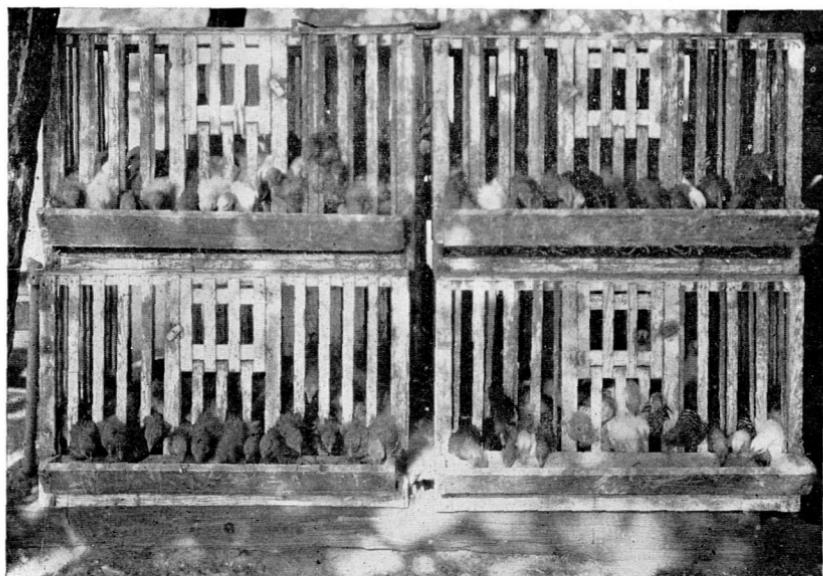


Fig. 35.—Home-made fattening crate for broilers and fryers.

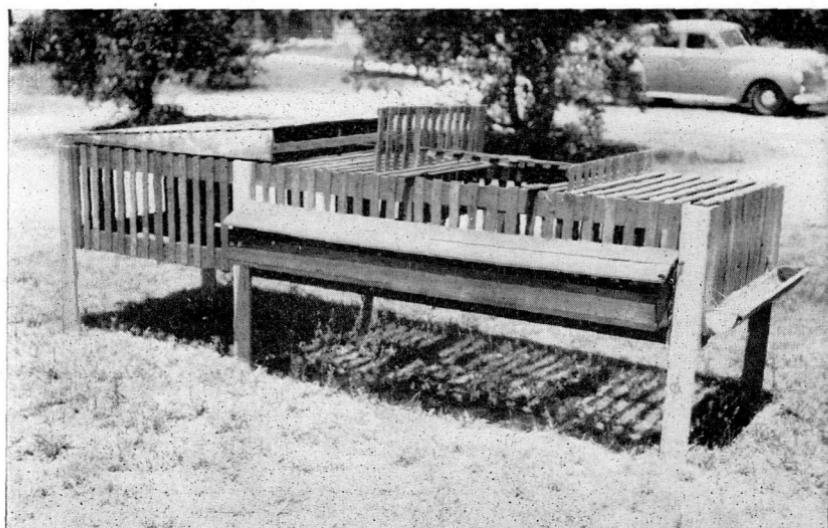


Fig. 36.—Complete finisher, 3' x 10'. Note feeder, waterer, cover, and 2 vertical panels which facilitate catching chickens. These are constructed to slide up and down between the slats.

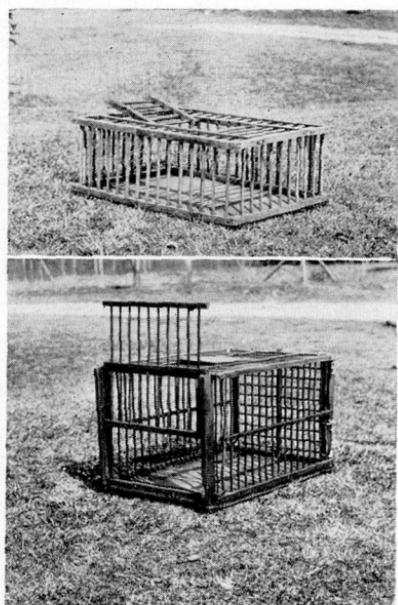


Fig. 37.—Catching crate (below). Note sliding door on lift and hinged door in top. Shipping crate used to haul poultry is shown above.

broody hens. See Figure 33.

**Catching Hook.**—A catching hook is a necessary and useful piece of equipment for the poultry farm. See Figure 34.

**Fattening Crate.**—Birds should be in good flesh before they are put on the market or are used at home. A fattening crate is very useful and can be constructed very easily. Figure 35 will give some suggestions in the construction of a fattening crate.

**The finisher** illustrated in Figure 36 may be used to finish broilers and fryers and fatten hens or roosters. It will accommodate 30 to 35 broilers. The framework of this pen is made of 1"x4" (or 1"x6") material and the floor is covered with 1"



Fig. 38.—The fire gun, carefully used, is satisfactory for disinfecting.

hardware cloth or 1" heavy poultry netting. The top, sides and ends are covered with wooden slats 1½" apart. The framework also may be covered with 2" poultry netting. See Circular 70 for details.

**Catching Crate.**—A catching crate is used often during the year in the management of a flock of birds. Figure 37 illustrates a type that is very satisfactory. There is a sliding door at each end and a hinged door at the top. The other crate illustrated is very convenient in transporting birds from 1 pen to another; in bringing pullets in off the range; or in hauling birds to market.

**Hurdles or wire frames** also are convenient pieces of equipment to have to help in catching chickens. They can be made in frames about 2' to 3' high and 5' or 6' long.

**Cleaning Equipment.**—Tools and equipment for cleaning purposes would include shovels, brooms, scrapers, rakes, spray pump, wheelbarrow or cart, and other needed items.

**Incinerator.**—An incinerator should be a part of the equipment on a poultry farm, so that dead birds can be burned. A very satisfactory incinerator may be made from an oil drum.

**Manure Shed.**—A manure shed can be easily constructed to take care of the droppings and litter which cannot be disposed of when cleaning is done.

**Lighting Equipment.**—Artificial lights are used in laying houses to stimulate fall production of hens, to bring late or slow-

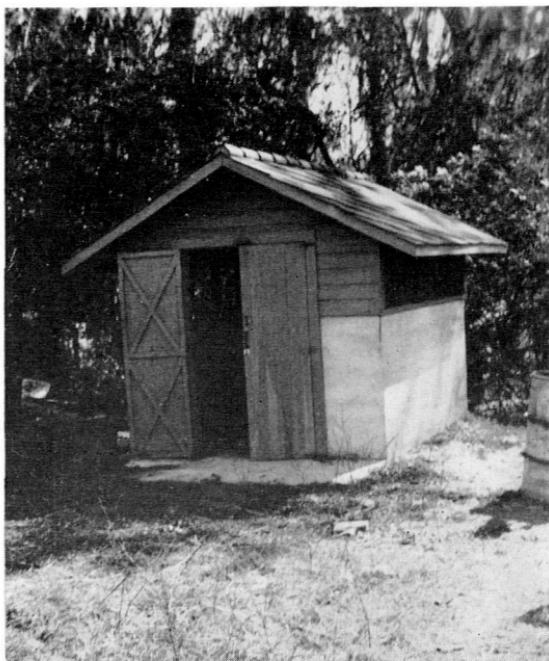


Fig. 39.—Type of manure shed that has been found very satisfactory.

maturing pullets into production, and to delay the molt or hasten birds through the molt.

Forty-watt bulbs are used in a pen that will accommodate 50 to 100 birds. The light should be placed in the center of the pen over the feeders and water stands. Broad, shallow reflectors will throw more of the light toward the floor and on the birds.

Some automatic device should be used to turn on the lights in the early morning.

For all-night lights, 10- to 15-watt bulbs or kerosene lanterns are used.