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Poultry House Remodeling

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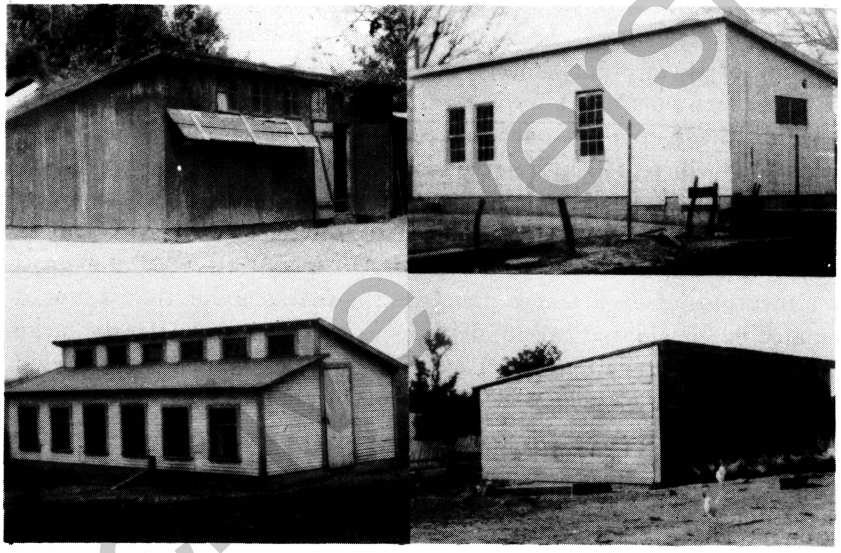

Fig. 1.—Various types of poultry houses that may be improved by inexpensive remodeling methods.

Poultry houses need not be expensive to provide comfortable laying quarters. Cost alone is not a reliable measurement of efficiency. They may be relatively costly and fail to provide comfortable quarters, while low cost houses of varying type and appearance may adequately fill all the necessary requirements essential to secure high winter egg production, and maintain a profitable level of summer laying.

There are numerous types of buildings on many Missouri farms that in their present forms are completely inadequate for use as poultry houses. Some of these were originally constructed for

poultry but now, as seen in the light of present knowledge and recent progress in the field of proper housing, these old buildings possess serious faults.

COMMON HOUSING PROBLEMS

The common, practical objections to many of these buildings include well founded complaints of excessive height, a lack of sufficient depth, and unnecessary length. These faults result in houses that are unusually cold and difficult to ventilate in winter months and permit the development of unhealthful inside drafts. In numerous instances the inadequacy of buildings constructed for poultry is not realized. Many such buildings fail to receive due credit for outbreaks of colds, roup and other diseases causing adult bird mortality and resulting in lowered production.

Many of these older type laying houses can be inexpensively remodeled into comfortable quarters. Low shed-roof cattle shelters, machine sheds, general purpose barns and other buildings can also be cheaply converted into satisfactory poultry buildings.

The possibilities of existing structures frequently may be overlooked or underestimated because individuals may be carrying a mental picture of their "ideal house." Irrespective of the good qualifications of such a new structure the fact remains that it would usually be considered unsound business to invest a relatively large sum in a new structure when existing buildings can be remodeled to serve just as efficiently at a fraction of the cost.

ESSENTIALS OF A GOOD POULTRY HOUSE

A comfortable house may take any number of varying appearances dependent upon the type of roof, dimensions, type of ventilation, and other factors. Invariably, however, efficiency will depend upon the basic considerations of depth, length, height of ceiling, size and location of windows, wall and ceiling construction, kind of floor, and the type of ventilation system.

Ventilation.—Under practical farm conditions the open front* system of ventilation is most satisfactory in addition to being less expensive and requiring less attention than any other type. Poultry requires an abundance of fresh air, supplied without draft. Many houses without this system of ventilation present the problem of too infrequent change of air. The open front, which is usually 30 inches in height, and extends the length of the south side of

*By open front is meant a south front with open spaces that may be covered with muslin frames of convenient size, or cloth curtains which may be dropped in bad weather.

the house, also furnishes a means of permitting the entrance of direct sun light.

Dimensions of House.—An open front house should have a minimum of 20 feet of depth to permit change of air without the development of draft over the roosts. In houses of less depth the open front system of ventilation offers some difficulties, as do many other systems. Attempts to ventilate shallow houses without drafts usually result in an inadequate exchange of air, accumulation of excessive moisture, unusually heavy mortality, and lowered production. An extremely long, narrow house also has the disadvantage of requiring more labor to care for a flock than would be necessary if the birds were housed in a more nearly square building.

Height of Ceiling.—If poultry buildings were constructed solely for the comfort of the birds a ceiling height of 3 to 4 feet would be sufficient. However, they must be constructed to permit head room and ease of movement for the caretaker. After this requirement has been filled, by providing a 6½ or 7 foot ceiling, additional height is undesirable because it increases the space to be heated by the birds and permits the warm air to rise to a height where it has little value in keeping the birds warm. This results in a colder house and also increases construction costs.

Windows.—Provisions for light, in addition to that supplied by the open front, must be made. Enough light should be admitted to make every section of the house accessible and cheerful. Windows should be placed on all sides of the house and their size should be limited to prevent excessive loss of heat during the winter. Approximately 1 square foot of window glass should be provided for every 15 square feet of floor space.

Wall and Ceiling Construction.—The walls of the house should be of tight construction, particularly on the north, east and west sides, in order to prevent cross drafts and to insure maximum warmth in winter. Insulation of tightly constructed walls, normally has not proved of sufficient additional value to justify its cost. However, most heat loss occurs through the roof. Consequently, insulating material on the ceiling represents a sound investment to conserve heat in winter and to exclude it more effectively during the hot summer months. The use of straw as insulation material is recommended. A straw loft composed of 10 to 12 inches of settled straw also serves to reduce the ceiling height. When the roof of a building is too low to permit a loft the use of straw to fill the space between the rafters is desirable for insulation purposes.

Floors.—Floors must be dry and should be constructed to enable easy thorough cleaning and effective disinfecting. Thin-section concrete floors are the most durable and sanitary type floor and are the cheapest to install. Dirt floors are usually damp, require more frequent changing of litter, and they cannot be effectively disinfected with the most powerful antiseptics known. Wooden floors have a higher initial cost, require repairs, and are also difficult to disinfect.

TYPES OF HOUSES REQUIRING REMODELING

Many houses possess serious faults, among these are:

1. Poor foundations and floors which result in a damp condition;
2. Side walls that are not tightly constructed which permit drafts;
3. Faulty roof construction;
4. Poor lighting;
5. Ineffective ventilation.

These faults can be corrected and many advantages obtained by inexpensive remodeling. Very frequently the capacity of the house may be increased from one-third to one-half. The number of birds a building will accommodate may be calculated by allowing 3 square feet of floor space per bird for Leghorns and other light breeds and 4 square feet for those of the heavy breeds. Figures 2 and 3 illustrate the method followed to increase housing capacity and provide comfortable quarters.

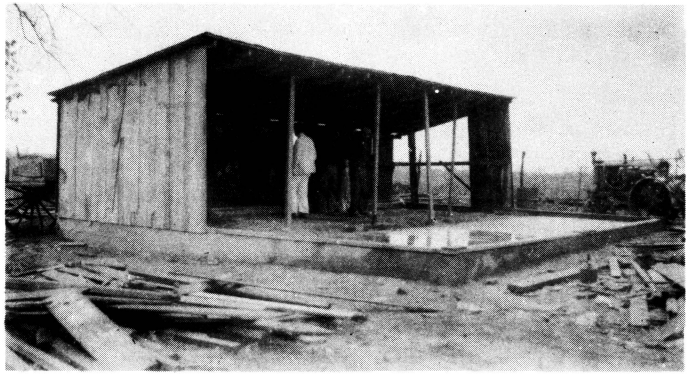

Fig. 2.—Remodeling narrow shed type house.

Many poultry houses will not house the number of birds that their owners desire to keep. In other instances the number of birds that can be kept and adequately housed represents a flock of uneconomical size for the production market eggs and poultry.

A flock of 250-300 birds at the beginning of the poultry year in October or November represents the smallest flock for economical market production. Such a unit justifies the purchase of neces-

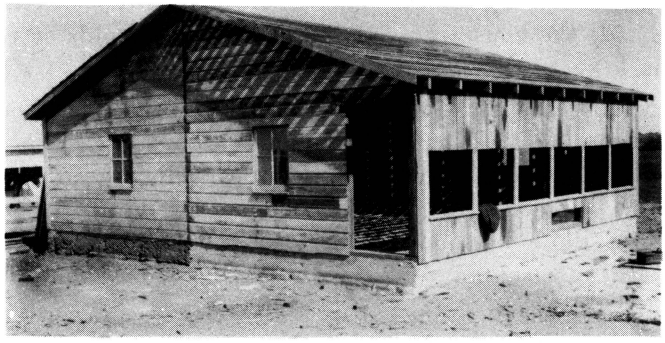

Fig. 3.—Another shed type house being remodeled.

sary brooding and other types of equipment. It also normally insures a sufficiently large source of income to occupy a place in the planned operation of the farm and home business and is more likely to receive the attention necessary for success.

Many structures not previously used for poultry housing such as low shed-roof cattle shelters, machine sheds, and small general purpose barns can be remodeled into satisfactory laying quarters.

Remodeling to correct the faults previously mentioned with specific reference to different types of houses is discussed in the following paragraphs.

THE SEMI-MONITOR HOUSE

The semi-monitor house (Fig. 4) at one time was considered a very good house. However, in actual use it has been found to pos-

Fig. 4.—Semi-monitor house before remodeling.

sess several undesirable features directly affecting the health and comfort of the flock. The high ceiling and large amount of space above the birds makes a cold house. The heat loss through the top row of windows is excessive. When these windows are open for ventilation purposes, or are broken or not tightly fitted, serious drafts inside the house cause the development of colds or roup and result in lowered egg production.

Remodeling the Semi-Monitor Poultry House.—This house may be quickly remodeled as indicated in (Figure 5). The top row of windows should be placed around the wall, spaced four to six feet apart, to secure the required amount of light. In the north wall these windows should be placed below the droppings platform. In the east and west sides they should be about three feet above the floor.

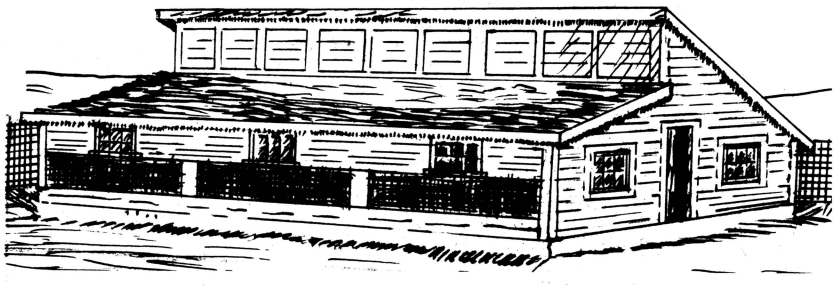

Fig. 5.—Semi-monitor house after remodeling.

The partition and as many studs as possible should be removed. Material taken from this useless center partition can be used to board up the openings where the top row of windows has been removed. A 30-inch open front for ventilation and light should then be constructed along the south side at a height of 18 to 24 inches above the floor. The length of the open front should be determined by providing 1 square foot of opening for each 15 square feet of floor space.

If the lower section of this type of house does not provide adequate head room the roof on this portion should be raised to form a gable-roofed house. This will necessitate boxing in a space left along the south wall instead of boxing in of old window space as suggested in the previous paragraph. This procedure makes it possible to place windows above the open front. A semi-monitor house remodeled in this manner would then resemble the house shown in Figure 10.

The inside height can be reduced by installing a straw loft to provide a 6½ to 7 foot ceiling. In those portions of the house which

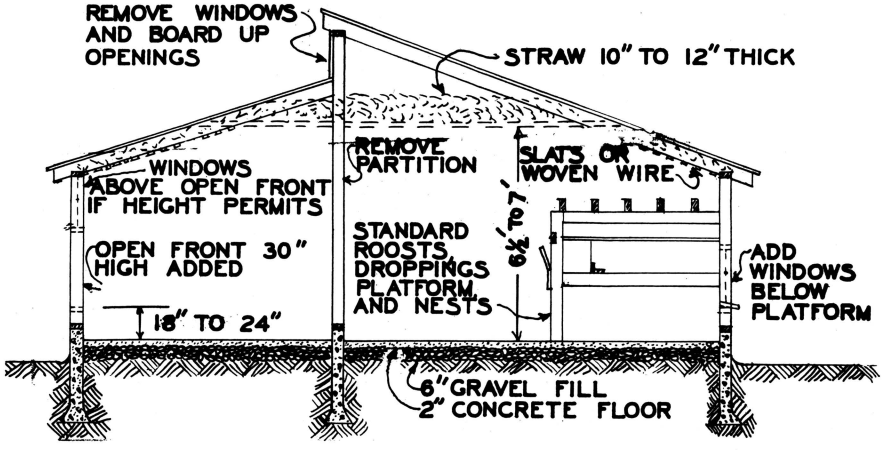

Fig. 6.—Details of remodeling semi-monitor house.

lack height for this purpose the areas between the rafters should be lined or packed with straw held in place by poultry netting, old woven wire fencing, or strips of lumber. (See Figure 6). The depth of the straw in the loft proper should range between 10 and 12 inches of settled material, but should not exceed this amount.

LONG NARROW SHED TYPE POULTRY HOUSE

The long narrow shed type house is not satisfactory because its lack of depth makes it difficult, if not impossible to ventilate properly. In addition the extreme length is conducive to the development of inside drafts and the labor involved in caring for the flock is excessive when compared to that required in a more compact structure.

Remodeling Long Narrow Shed Type House.—In remodeling a house of this type its length can be reduced and its width increased to produce a house just half as long but twice as wide. This can be accomplished by cutting the house into two equal parts. One portion should then be moved in front of the other section and the high sides placed together.

In so far as strength of the building will permit the major portion of the high side walls and excess studding should be removed. A 30-inch open front, to be covered with 1-inch mesh poultry netting, should then be constructed on the south exposure of the house. A

straw loft should be installed where height permits and the rafters lined with straw in the lower sections. If the height of the original north or back side of the house permits, windows should be

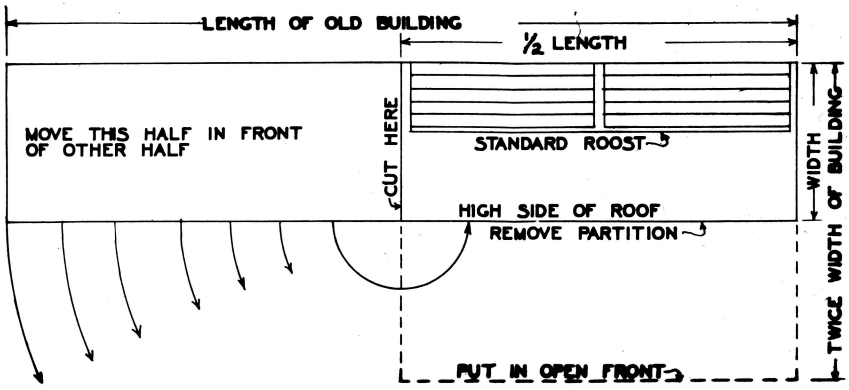

Fig. 7.—Remodeling long, narrow shed type house.

placed at three or four foot intervals along the newly constructed south side directly above the open front. In addition the windows removed from the high side walls can be placed on the north, east and west sides of the house as indicated in (Figure 10) to aid in securing effective distribution of light. The droppings platform may logically be constructed from the surplus siding and studding material.

REMODELING OTHER SHED TYPE STRUCTURES

The remodeling of the other shed type structures of shorter length and having front elevations varying from 6½ to 10 feet is

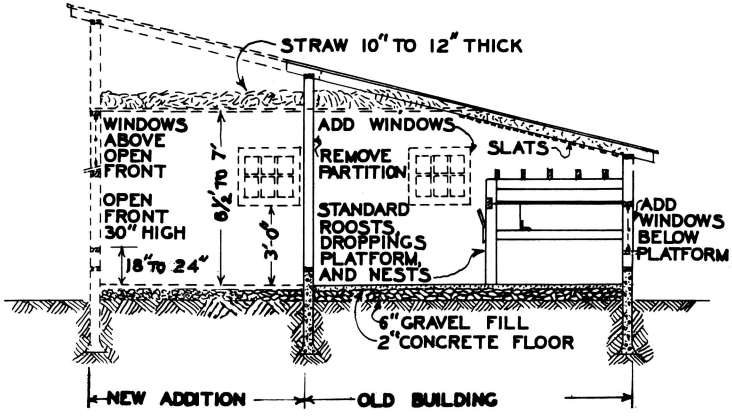

Fig. 8.—Remodeling low, shed type house.

frequently necessary and desirable in order to increase the housing capacity and solve ventilation problems related to insufficient width. The diagrams shown in Figures 8, 9, and 10 illustrate the methods

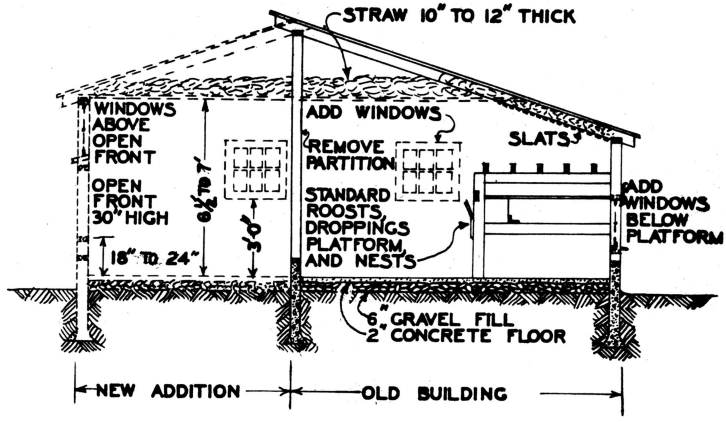

Fig. 9.—Remodeling medium height shed type house.

of accomplishing this, involving the principles previously given. Suggestions on construction details of all types of remodeling will be found on following pages.

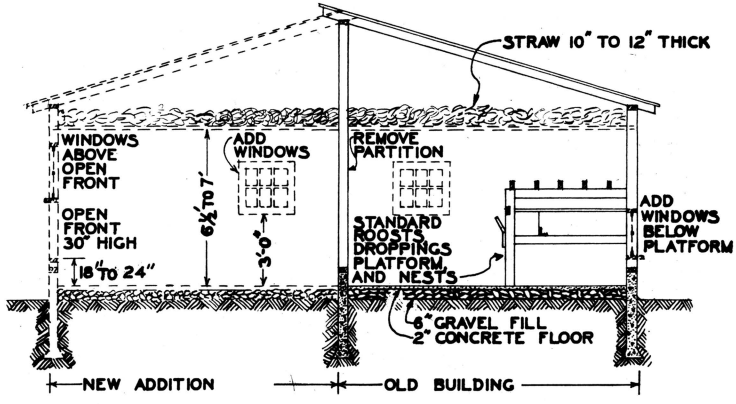

Fig. 10.—Remodeling high shed type house.

REMODELING THE GENERAL PURPOSE BARN

Small general purpose barns may be remodeled as indicated in Figure 11. The old interior equipment including stalls, partitions, feed boxes, etc., should be removed. A straw loft ceiling should

be constructed at a height of 6½ to 7 feet. This will usually consist of packing straw between the joists supporting the second floor.

Windows should be installed below the droppings platform on the north side and at about a 3-foot height on the east and west sides and also above the open front to be constructed on the south exposure.

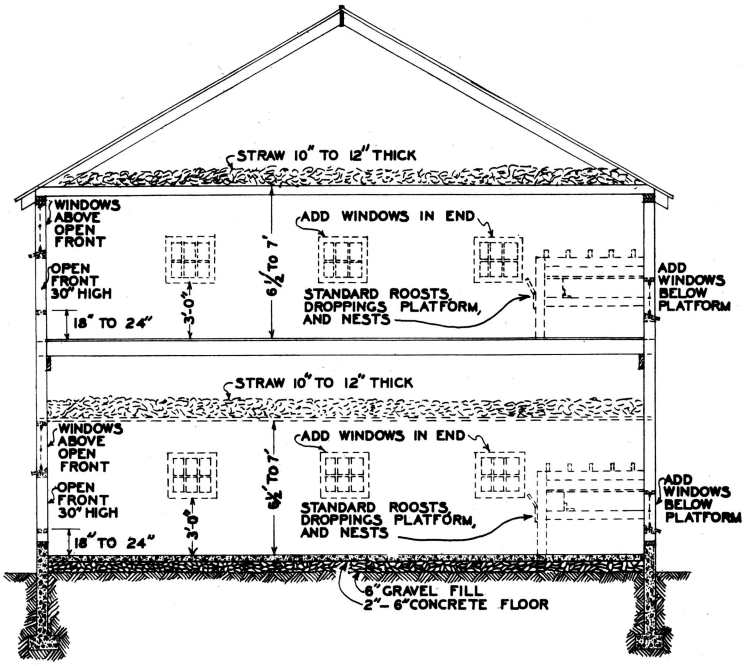

Fig. 11.—Remodeling general purpose barn.

Frequently the same procedure may be followed to convert the hay mow into second story quarters. Provisions to allow the birds access to the yards is not necessary. The laying flock housed on the second floor would remain in confinement.

REMODELING CONSTRUCTION PRINCIPLES

Foundation.—The foundation is a very important part of any building. Prospective years of usefulness of the building will influence the amount of justifiable investment toward permanent construction. However, considering the advantages of an inexpensive thin-section concrete floor, the slightly increased cost of a solid masonry foundation wall is justifiable. Savings in the cost

of litter, labor in maintaining sanitary quarters, and efficiency of disinfecting a concrete floor will justify this expense if the building has five years of prospective usefulness.

If a wooden floor is to be used, masonry piers made of brick, stone or concrete may be built instead of a solid masonry wall. However, a means of preventing air circulation under the floor should be provided during the winter months. The footings for these piers should be placed below the frost line on firm soil.

In some instances it may be necessary to raise the structure and construct the foundation under it. In other cases the foundation can be built and the structure moved on it.

The height of the foundation should be sufficient to permit the making of a 6 to 8 inch inside fill of coarse material such as rock or gravel. This is necessary to enable the thin-section concrete floor to be built well above the outside ground level.

Floor.—Poultry house floors, unlike floors in most other farm buildings are not required to carry excessive weight. The former practice of building concrete poultry house floors 3 to 6 inches thick has been proved unnecessary. A floor made of $1\frac{3}{4}$ inches of good quality concrete laid on a 6 to 8 inch coarse, well settled and packed fill, produces a most satisfactory type of construction at very low cost.

The construction of this type floor requires 2 to 3 sacks of cement for each one hundred square feet of floor space.

The fill must be 6 to 8 inches above the outside ground level. It may be composed of rock, gravel, chat, or earth. Rock, gravel or chat are the most desirable. Coarse clean fill material is preferable because it allows the concrete to penetrate and thus adds to its strength. The fill must be well tamped to eliminate the possibility of settling after the concrete is poured. If a dirt fill is used it is very important that it be soaked and tamped and allowed to settle. Such a fill should be covered with over-lapping sheets of heavy roofing paper to insure a dry completed floor.

Strength in concrete depends upon its quality. Dirty sand and gravel, excessive amounts of water, and too little cement used in the mix can only result in an unsatisfactory product.

Necessary essentials of quality concrete construction include:

1. Clean materials accurately measured.
2. Minimum use of water (not to exceed 5 gallons per sack of cement).
3. Thorough mixing for at least one minute in the mixer.

4. Sufficient sand in the mixture to enable smooth troweling.
5. Slow curing which may be accomplished by keeping concrete damp for five or six days after pouring.

Figuring Materials.—One wagon box load will supply material for 55 to 60 square feet of fill to a height of 6 to 8 inches.

If sand and rock are utilized to make the concrete they should be used in the proportion of 1 part cement, 2¼ parts sand and 3 parts rock. A 1¾ inch floor of this type requires approximately 2½ to 3 sacks of cement, ¼ yard sand and ⅓ yard rock (not over 1-inch size) for 100 square feet of floor.

If clean bank run gravel containing enough sand to permit smooth troweling is used, the proportion should be 1 part cement to 4 parts gravel. A 1¾ inch floor of this type requires 2½ to 3 sacks cement and ½ yard gravel (not over 1-inch size) for 100 square feet of floor.

Method of Construction.—In securing a comparatively even and level fill it is convenient to draw a chalk line on the foundation walls at the height desired for the finished floor. In locating this line the floor should slope gently from the rear of the house to the front to facilitate cleaning. Allow ½ inch to 1 inch slope for each 10 feet of depth or width in the house. The fill may be made within about 2 inches of this line dependent upon the type of fill material used. If the fill material is clean and will allow the concrete mix to penetrate into it to a depth of ½ to 1 inch, the thickness of the floor above the fill may be reduced slightly.

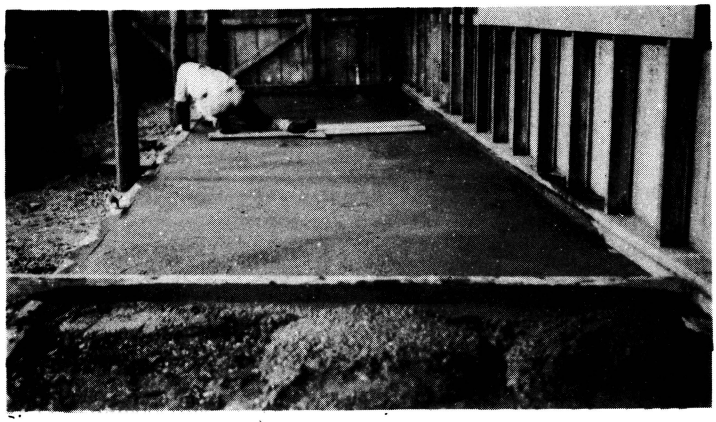

Fig. 12.—Showing fill prepared, forms in place, and details of floating and finishing concrete.

Forms on which a straight edge may be used are necessary to secure a smooth floor. The area should be divided into 10-foot strips

from the front to the rear of the house. Two-by-fours, laid the flat way are used for the forms along both sides of each 10-foot strip. If the floor is to be 2 inches thick, these 2-by-4's may be laid on top of the fill. If the floor is to be of a lesser thickness they may be partially imbedded in the fill.

In order for the concrete to be of uniform thickness over the entire floor, the fill should be brought up to the desired height after the forms are in place. A straight-edged board, supported across on top of the forms, should be used as a gauge. The fill may be smoothed down underneath this board by hand.

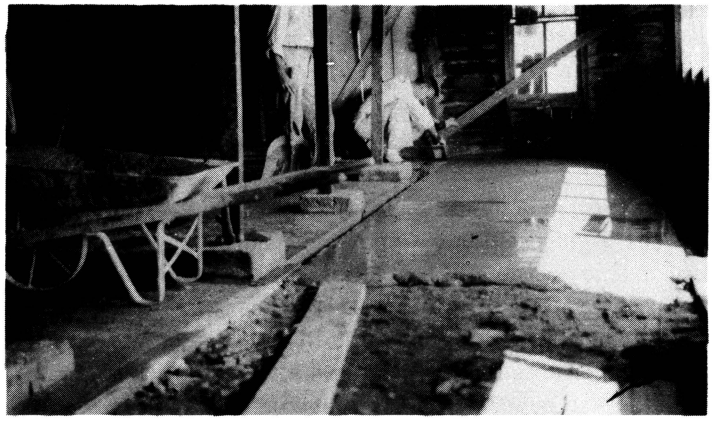

Fig. 13.—Note the consistency of concrete mix and process of removing forms and filling form spans.

After the fill has been smoothed to the desired height, it should be tamped well with a heavy tamper to prevent settling after the floor is built. It is very important that the fill be thoroughly wet down just before the concrete is placed. A straight edge consisting of a 1 x 4 or 2 x 4 can be used to level the concrete to the top of the forms. For best results only sufficient water should be added to the concrete mixture to produce a mushy consistency. Such a consistency is easy to level and makes a strong water-tight concrete. It may also be floated and troweled without bringing an excessive amount of water to the surface of the concrete.

If the concrete is properly mixed, the form along the rear wall may be removed after a 10-foot section 15 to 20 feet in length has been poured. In this way the rear form may be used for the next 10-foot section. However, before the next section is poured the space left by the form which has been removed should be filled with

concrete. In this manner form material requirements are limited to those necessary to lay one 10-foot strip.

The floor should be troweled to a smooth finish just before the final setting of the concrete occurs. In summer this may be within 45 to 60 minutes after placing; in cooler weather up to two hours may elapse after placing.

In order to obtain a smooth level floor the irregularities must first be floated out with a wooden float. The use of a wood float levels the floor and brings a layer of sand cement mortar to the top, which makes it possible to smooth the floor to slick finish with a steel trowel.

If coarse chat, which does not contain enough fine material to make a smooth finish has been used, a finishing course is necessary. The first course should be tamped down ¼ inch below the top of the form about thirty minutes after it is poured. After this has been done the final course of one part cement and two parts sand may be poured and finished as described above.

Slow and proper curing of concrete adds very greatly to its strength. It is particularly important that care be taken in the curing of a thin-section floor. The floor should be kept moist for at least five days after it is poured. This is particularly important in hot, dry weather. The floor should be protected from extreme temperatures. If possible, it is desirable to cover with 1 or 2 inches of water after the concrete has been set for 12 to 16 hours or it may be covered with sacks or straw and kept moist.

Walls.—The walls of a poultry house should be free of cracks and other small openings which would make the house cold and permit drafts. Large cracks in the siding may be covered with wooden or metal battens. Such walls might also be covered with good quality composition roofing.

Side walls which do not justify this expense may be made air tight by packing straw between the studs. It may be held in place by wooden strips, poultry netting or old woven wire. The straw should be removed in the spring and replaced before the following winter.

All windows and doors should fit tightly to prevent drafts. Sheet metal is not recommended for siding material in poultry houses construction because of its high conductivity.

Inch mesh poultry netting is recommended as a covering for the open front and windows. Large mesh wire permits the entrance of sparrows that may infest the house with lice and mites.

Roof.—Prepared roofing, wood or composition shingles laid on wide sheeting are ordinarily used for roof covering. Sheet metal roofs are also very satisfactory if placed on solid sheeting or if used on straw loft houses. In using composition roofing material the sheathing should be laid as close and smoothly as possible. Building paper laid over the sheathing material beneath the roofing will insure an air tight roof.

Straw Loft.—The straw loft is a valuable practical addition to most poultry houses. The straw serves as insulation against winter cold and summer heat. It holds the warm air in winter for a long enough period to be of value to the birds and yet permits the foul air to percolate through it and escape. The straw also absorbs moisture and helps to keep the house dry.

More than 10 to 12 inches of settled straw is objectionable because the foul air will not escape rapidly enough and the straw becomes damp and completely ineffective.

In low roof houses which do not permit the use of a loft, straw is still of value for insulation. When packed between the rafters it keeps the house warmer in winter, cooler in summer and helps to maintain a dry house.

The straw in either instance may be held in place by poultry netting, old woven wire fencing, lath or similar material.

Straw used in this manner will last indefinitely. It will not harbor lice or mites unless sparrows are permitted in the house. Lice stay on the birds and mites remain in convenient crevices where they may gain easy access to the birds at night.

Roosts, Droppings Platform and Nests.—Roosts and droppings platforms should be built in the rear of the house. Roosts should not be excessively high. At least 18 inches of air space should exist above the heads of the birds when perched on the roosts. The normal height of the droppings platform is 3 feet from the floor. The roosts should not be located more than 8 to 10 inches above the platform. They should be level to prevent crowding on the higher perches. In remodeled houses it is well to provide for 18 inches of air space above the perched birds even though this may necessitate building the droppings platform much lower than 3 feet above the floor.

The droppings platform, as well as the roosts, should be built in sections that may be easily removed. Movable interior equipment aids in maintaining sanitary conditions and in the clean up work.

The exposed edges of the roosts should be rounded. They may be best constructed from 2 x 2 inch material. Six to eight inches of

roosting space should be provided for each bird and a 12-inch interval should be provided between roost poles. These rules for roost construction determine droppings platform width. One and

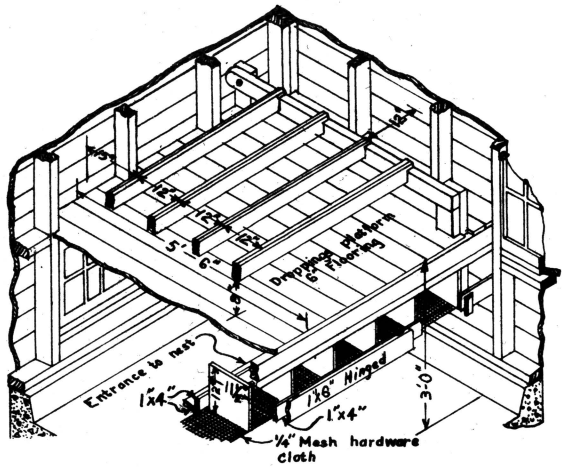

Fig. 14.—Details of roosts, dropping platform and nests.

one-half inch poultry netting tacked to the lower side of the roost poles and extended to the back wall and to the front of the droppings platform is recommended as a sanitary measure to prevent the birds from picking in the droppings and from getting dirty feet that result in greater numbers of dirty eggs.

The nests may be suspended below the front of the droppings platform. One nest should be provided for every four or five hens.

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