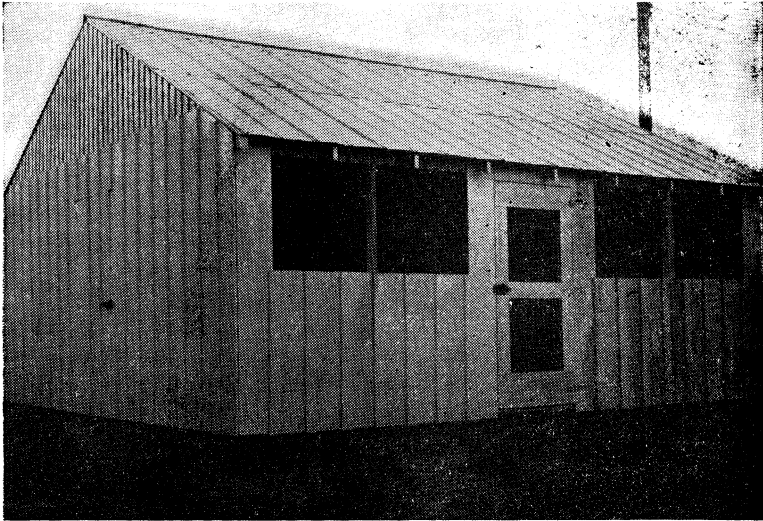


Oklahoma Houses For Laying Hens

By R. B. THOMPSON



The A. and M. Straw-loft Chicken Home, developed by the poultry department of the Oklahoma Agricultural Experiment Station especially for Oklahoma conditions. This bulletin gives plans for building this and other types of houses, and suggestions for remodeling older ones.

OKLAHOMA AGRICULTURAL EXPERIMENT STATION

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OKLAHOMA HOUSES FOR LAYING HENS

By R. B. THOMPSON

Head, Department of Poultry Husbandry

Requirements demanded of the modern hen are in such excess of the requirements demanded of the wild hen by nature that it has been necessary to put hens in houses. Nature required the hen to produce eggs for the purpose of reproduction only. She was required to produce a few eggs, she lived in the open, had an abundance of fresh air, was free to go where she pleased, and the survival of the fittest rule determined whether or not she could live through to another season. The modern business hen is required to lay at least six times as many eggs as the hen in nature laid. For the benefit of her owner she is confined, given to eat what he sees fit for her to have, and his judgment determines whether or not she is to survive through another season of production. From nature's point of view she is weakened and lacking in vigor, which has been sacrificed for heavier production. Unless precautions are taken to safe guard her health, and protections are provided, these additional demands will be more than the hen can meet. Where the hen in nature produced eggs during a short season in the spring each year, the modern hen, in order to produce the number of eggs required to justify her existence, must produce them during all seasons of the year. To provide her with uniform conditions so that this distribution of eggs through all seasons may be secured, it is necessary to have a good poultry house.

Considering a poultry house from the standpoint of the hen, it should give her comfort and permit her to be happy. It should provide a condition satisfactory to the hen because she spends most of her time there. It is where she is given the most care and it is where she goes to seek safety. These things tend to create a condition which gives a hen comfort. For a hen to return the greatest egg production it is necessary that she should have not only a satisfied stomach but she must have a contented mind. Egg production is hard labor for the hen; and to do hard physical labor day after day, happiness and contentment are essential.

From the standpoint of the hen, the henhouse should be thought of in the terms of a hen home. The word home implies all that can be desired in the way of comfort, contentment, cheerfulness, happiness, and safety.

From the standpoint of the poultryman, the house should be economical to construct and maintain, convenient to work in, and so arranged as to require a minimum of labor for operation. It should be constructed so that it will be easy to control vermin, rats, and other pests.

REQUIREMENTS OF A GOOD HOME FOR HENS

The requirements of a good poultry house can be worked into many styles of construction. The two styles which permit all of the requirements of a poultry house are the shed-roof and the even-span house. Details of a house of each type are given later in this bulletin. Before attempting to build either style, however, the requirements which must be met by any poultry house need to be understood.

Ventilation

Pure air is a necessity in a hen house. It has been determined by experiments that chickens use approximately 10 cubic feet of air per pound live weight each hour. It is not possible to construct economically a house which has more than 30 cubic feet of air space per hen. This is less than enough air for each hen for one hour. During the day time it is not so essential that the air change so often, for all of the hens will not be in the house at one time. At night, however, when the hens are on the perches, it is necessary for the air in the house to change completely at least once each hour. When pure fresh air is limited in a poultry house it results in loss of vigor and a lowering of the vitality of the chickens.

The poultry house should be open to permit this exchange of air, but should not permit the air to come into the house in such a way as to create drafts that will be damaging in winter, although beneficial in Oklahoma summer time. For winter use the openings of a poultry house should be on only one side. With three sides closed there are no currents of air other than those coming from one direction. During winter, cracks or openings in these three sides would create drafts which would be disastrous to the health of the fowls.

Summer drafts or cross currents of air are essential in Oklahoma and for this purpose openings are used in the back of the house above as well as below the droppings board. These openings allow the admission of air that is not possible with the double wall and ceiling scheme of back ventilation. A direct current of air over the hens on hot summer nights is refreshing, permits comfortable rest, and prevents loss of hens from heat.

Partitions are needed in large or long houses to control ventilation. Whenever the length of a house is more than one and one-half times its depth, there should be solid division partitions extending from the back wall for at least two-thirds of the depth of the house. A house 20 feet deep and 30 feet long without a partition may be safe and satisfactory some years but a partition 12 feet long from the back wall making two separate roosting compartments 15x12 feet will help to make the house safe for any winter. Poultry house rooms 20x20 feet are safe. A house 20 feet deep and 40 feet long without partition will surely bring trouble.

Sunlight

Sunshine is as important in a poultry house as is fresh air. This is particularly true where the hens are confined to the house. Recent im-

portant discoveries of the power of the ultra-violet ray have demonstrated the value of sunlight. In Oklahoma this is not a great worry to poultrymen, for only at rare intervals for short periods is it necessary to confine hens to the poultry house.

The house should be provided with openings or windows so the sunlight can be used in keeping the house clean and dry. The moisture in a poultry house depends upon the temperature and rate of exchange of air. A poultry house that is not well ventilated and does not admit sunshine will soon become damp. Wet concrete or dirt floors in poultry houses are caused more by poor ventilation than by seepage. Dampness in a poultry house is likely to be detrimental to the health of hens and to their production. The hens themselves give off a great amount of moisture. It has been estimated that in 24 hours 100 hens will give off 18 pounds of moisture in their droppings and 9 pounds of moisture in breathing. During the day the air is capable of holding this moisture; but at night in poorly ventilated poultry houses the moisture condenses on the walls, ceiling, and interior fixtures of the house. Moisture in a poultry house is far more detrimental than low temperatures.

Size

A poultry house for a small flock is more expensive to construct per hen than a poultry house for a large flock. A floor space of 400 square feet in a poultry house will provide necessities for 100 to 125 hens. This 400 square feet of floor space is most economically constructed in a square house. A square unit 20x20 feet is about the maximum size for economical construction and operation. It is also a desirable size so far as ventilation and comfort for the hens are concerned. In building a house for more than 100 to 125 hens it should be divided into rooms by partitions. Partitions are used to control ventilation and prevent drafts. A 20x80-foot house divided into four rooms is an ideal unit for 500 hens.

Location

The poultry house is preferably located on a gradual south slope with the open front facing south. South fronts are not an absolute necessity. In some situations of prevailing winds and storms an east front is as good or better than a south front. If the house is located on flat land, the foundation should be high enough to permit grading to the house to make a slope for rapid drainage. The location should be on soil that can be cultivated and is suitable to produce crops. Enough shade for the comfort of the hens is essential, but it is not desirable to locate a poultry house in woods where the shade is dense. Neither should it be located on the side of a hill so steep as to make it impossible to cultivate the soil frequently, or so rocky that it is not possible to grow crops. Well drained, open soil is the most desirable, although heavy soils may be used to good advantage if on suitable slope and if properly cultivated and cropped. Pure sand or very sandy soil is not particularly desirable for poultry.

Openings for Sunlight and Air

One square foot of opening for glass and one square foot of ventilator for each 15 to 20 square feet of floor space are satisfactory for a shed-roof poultry house. For even-span houses, one square foot of open front for each 15 to 20 square feet of floor space is satisfactory. Glass or glass substitute should be on frames hinged or fitted with screen hangers to permit opening or removal at times when they are not needed.

In the back of the house, under the droppings boards, it is desirable to have one square foot of opening for glass for 40 to 50 square feet of floor space. Above the droppings boards in the back of the house there should be doors to open for circulation of air over the roosts during the hot summer nights. These doors must be constructed so that they can be closed without cracks during the winter months. During winter months the front of the house should have no opening less than four feet above the floor.

Curtains on the front of the house are undesirable except in rare emergencies of extreme freezing weather or driving storms, and should be used then for the minimum time possible. The shed-roof house with louver or shutter front eliminates the curtains, and where a louver or shutter is used it should never be entirely covered. If in extremely severe winter weather it seems advisable to cover the shutter, always leave an open space at the top of the shutter. Special care should be used to take off the covering as soon as the emergency has passed. Covering the louver or shutter cuts off the ventilation and increases the moisture of the house.

The Straw Loft

It is possible to build a semi-straw-loft into a properly built shed-roof house. The ceiling for the straw loft in any house should not be less than 6½ feet from the floor. In shed-roof houses, the low part of the roof can be insulated by nailing 1x4 slats, 1½ inches apart, across the rafters and stuffing straw between them and the roof. Straw in the loft over the level part of the ceiling should be 10 to 12 inches deep.

The straw in a straw loft need not be changed except under exceptional conditions and rare occasions. There are straw-loft houses where the straw has not been changed for 20 years and longer. There is a 14-year-old straw loft on the A. and M. poultry farm. Vermin will not infest a straw loft. Rats and sparrows are the chief troubles, but they can be controlled without much difficulty. A straw loft must have open ventilators above it to permit a constant flow of air from the house through the straw and out through the open ventilators.

Floor

A concrete floor is recommended for poultry houses, because it eliminates trouble with rats and is easy to keep clean. If the house is properly ventilated, a concrete floor will not be cold or damp.

A concrete floor is best poured after the foundation and before the

house is built. By building the outer forms for the foundation, and filling the central portion with rock, soil, tile or dirt, the floor and foundation may be poured at the same time. A band of $\frac{3}{8}$ " concrete reinforcing steel should be in the foundation. A floor 2" thick is adequate for a chicken house if poured on an untamped 2" cushion of fine sand. The floor should not be finished with a top coat. A straight edge to level it with the foundation, then floated and struck with a smoothing trowel leaves a satisfactory top finish. It is satisfactory to pour the floor in two, three or four sections if desired.

Floor Litter

Straw or other litter should be kept on the floor during the entire year. There are two acceptable methods of using floor litter. One is to put a light covering on the floor to start with and add new litter as that is broken up. In this method it is not common to clean the floor more than two times in a year. It is common in this method to start with one to two inches of sand on the floor and a light covering of litter, such as straw, shavings, ground cobs, or what have you. This practice works so long as the floor and litter is dry but not dusty. This method frequently finds litter 10 to 14 inches deep when the house is cleaned.

The second plan is to cover the floor with three to five inches of litter and, when it is broken up fine and is dirty, to clean it up and start all over again with clean, new litter. This method requires four to six cleanings a year.

Dust is detrimental to the health of hens. When sand or litter is dry and dusty enough to fill the air when hens scratch, it is well to sprinkle the litter lightly with water.

Under either method of managing the litter it is best to feed grain to hens in troughs. Feeding grain to hens in the litter on the floor or on the ground in the yard has many dangers and should be discontinued as a farm practice.

Litter should be changed at once if it becomes soaking wet from any cause or a serious epidemic develops.

Roof

On a shed-roof house, composition roofing should be used. Shingles may be used, but if used should be underlaid with saturated felt and laid on solid sheeting. Otherwise wind will blow under them, and possibly snow and rain. A more expensive but also more permanent and a better roof is V-crimped or corrugated galvanized iron. This should be laid on solid sheeting and should have a layer of 15-pound saturated felt between it and the sheeting.

An outstanding advantage in economy gained by straw-loft houses is the possibility of using galvanized iron for the roof without the necessity of solid sheeting. One by six sheet strips on 24-inch centers is suitable for sheeting on either even-span straw lofts or the semi-straw-loft in the

shed-roof house. Caution must be used at the eaves of straw-loft houses to shut out sparrows with one-half inch hardware cloth between the plate and the sheeting. In the shed-roof houses this space between the top of plate and sheeting should be filled by extending the wall boards to join the sheeting, and in addition snow shoes should be fitted between the rafters. Two-inch, lead-headed, screw-type, galvanized nails should be used with galvanized iron roofs on chicken houses.

THE OKLAHOMA A. AND M. HOMES FOR HENS

Both the Oklahoma A. and M. 20x20 shed-roof home for hens and the Oklahoma A. and M. 20x20 even-span straw-loft home for hens meet the requirements of a good chicken house. The shed-roof home can be built with a semi-straw loft for best satisfaction. The shed-roof house back wall must be 5 feet and the front wall 10 feet high. Other heights will lead to many complications. Side walls of the even-span straw-loft home are 7 feet high, from one inch below floor level to top of the plate.

The droppings boards are 30 inches from the floor, 6 feet from front to back, and extend the entire width of the house. The perches are 1x2-inch strips nailed on top of a frame covered with 1½- or 2-inch mesh poultry netting and are 16 inches apart from center to center, the back perch being 12 inches from the back wall.

Should a droppings pit be desired it should occupy this same space, with the perches constructed as for droppings boards but set 15 to 18 inches above the floor. A solid wall is built from the front of the perch frame to the floor. The value of droppings pits in Oklahoma has not been observed and their use is not encouraged.

The feed hopper, nests, and water stand are 18 to 24 inches from the floor. There is no obstruction on the floor of the even-span straw-loft house except the center leg at the front of the droppings boards. The shed-roof house has this same leg and also two posts to support the roof. The ceiling of the even-span straw-loft house is suspended from the rafters. This clear floor space gives ample opportunity for convenient arrangement of feeders, water stands and nests.

The windows in the rear of the house have a three-fourths inch stop on the inside; and, should severe storms make it necessary, a batten is nailed over the cracks on the outside. The openings above the perches are filled with solid wooden doors hinged so as to be opened during the summer. The glass sash below the droppings boards are also hinged on the side to open like a door. One-inch mesh poultry netting covers the inside of all the window openings. The bottom half of each window is used for exit of the hens when they are using the north yards to the house. The one-inch mesh poultry netting on these openings is placed on frames which are hinged to swing in and up when the windows are used for exits.

EVEN-SPAN, STRAW-LOFT TYPE HOUSE

In 1927 an old uneven-span house on the Experiment Station Poultry Farm was equipped with a straw loft. Observations of this house were used to develop the Oklahoma A. and M. 20x20 even span straw loft home for hens. The first of these houses was built in 1931 on the Experiment Station Turkey Farm at Perkins and is used for turkey hens.

The first house of this type used for chicken hens on the Experiment Station Poultry Farm was built in 1937. It is now in its fifth year of use and has proved to be satisfactory. The 20x20-foot floor plan is substantially like the shed-roof house floor plan and allows the same arrangement of perches, droppings boards, nests, feeders and water stands. The board and batten construction with galvanized roof is followed.

Plans and bill of material for a 20x20-foot Oklahoma A. and M. straw loft home for hens are given on pages 9 to 19. For larger houses it is not difficult to add material for the items and parts of the house needed to make a house 20x40 or 20x60 or larger. A house 20x70 feet is recommended for farms where a profitable economic unit of 300 hens is desired. A house 20x70 feet in size will provide three rooms 20x20 each for hens and one room 10x20 feet for feed and service.

Construction of the even span straw loft house can be of the same type as for the shed roof house (see pages 20 and 21) except that corner studs are used, the back and front walls are the same height, and the roof is even span.

It is difficult to discuss the details of construction of this straw-loft house. Careful study of the plans and isometric drawing in this bulletin should make the building of this house quite simple. (See pages 13 to 19.)

BILL OF MATERIAL**For 20x20-foot A. and M. Straw Loft Chicken Home**

Sides		5—1x2-12 Door and window stops and frames for window screen
2—2x4-16 Nail ties		12 ft. 1" mesh poultry netting 30" wide
2—2x4-18 Nail ties		2—4-light 10x12 glass single sash, 24"x29"
20—1x12-16 Boxing and doors		2 pr. heavy 6" strap hinges for doors
12—1x4-16 Battens		2 door latches
4—2x4-14 Studs		2 pr. 4" strap hinges for sash
2—1x2-14 Door stops		2 sash latches
2—1x6-16 Door braces		
4—2x4-20 Plate and sill		
3 pair heavy 6" strap hinges		
2 door latches		
17—1x4-14 End slats		
20 ft. 1" mesh poultry netting 48" wide for inside end slats		
Back		Front
10—1x12-14 Boxing and doors		3—2x4-20 Plate and sill
2—2x4-12 Nail ties and headers		3½—2x4-14 Studs
10—1x4-14 Battens and door braces		1—2x4-18 Nail tie
3—2x4-14 Studs		5—1x12-12 Boxing and door bottom
3—2x4-20 Plates and sill		2—1x12-14 Boxing
		5—1x4-12 Battens
		3—1x2-14 Door stop and frame hanger

- 6—1x2-12 Cello-glass frames
- 3—1x6-14 Door frame
- 1—1x4-16 Cello-glass frames
- 4 sets screen hangers
- 18 ft. 1" mesh poultry netting 36" wide
- 6 ft. 1" mesh poultry netting 30" wide
- 1½ pr. heavy 6" strap hinges
- 1 door latch

Ceiling

- 47—1x4-20 Ceiling slats
- 7—2x4-20 Ceiling joists
- 8 ft. ½" mesh hardware cloth 24" wide between rafters at plate

Perches and Dropping Boards

- 8—2x2-10 Perches
- 5—2x4-10 Perch frames
- 1—2x4-20 Front droppings boards support
- 2—1x4-10 Front perch frames
- 20 ft. 1½" mesh 15-gauge poultry netting 60" wide for under perches
- 4 pr. heavy 6" strap hinges

- 17—1x8-16 Shiplap Droppings boards

Roof

- 18—2x4-12 Rafters
- 13—1x6-16 Sheathing
- 20 pieces 6-ft. galv. roofing
- 20 pieces 7-ft. galv. roofing
- 20 ft. ridge
- 2—2x4-16 Top nail tie for ends
- 21—1x4-14 Ceiling hangers and rafter braces

Nests

- 6—1x12-14 Tops, bottoms, partitions and ends
- 10—1x4-14 Fronts, jump perches, perch brackets and nest back
- 2—2x4-12 Support brackets

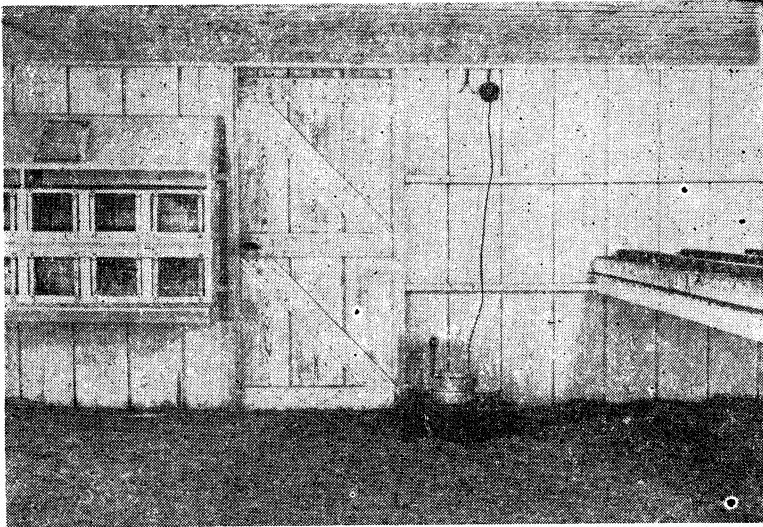
Floor and Foundation

- 4½ yards concrete for 2" floor on sand cushion and 3½"x24" foundation walls with corner footings
- 2—50" lengths of ¾" steel



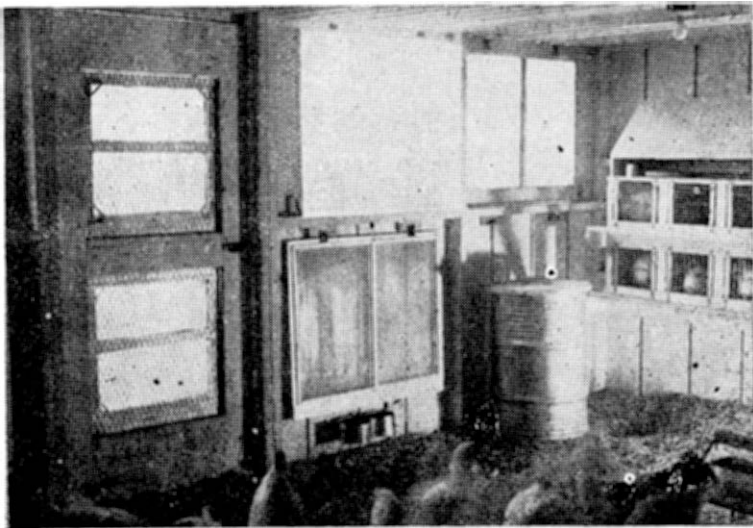
(Even-span House)

North or back and west side showing doors and sash for summer ventilation and slatted end above straw loft. Front (south) and west side are shown on the front cover of this bulletin.



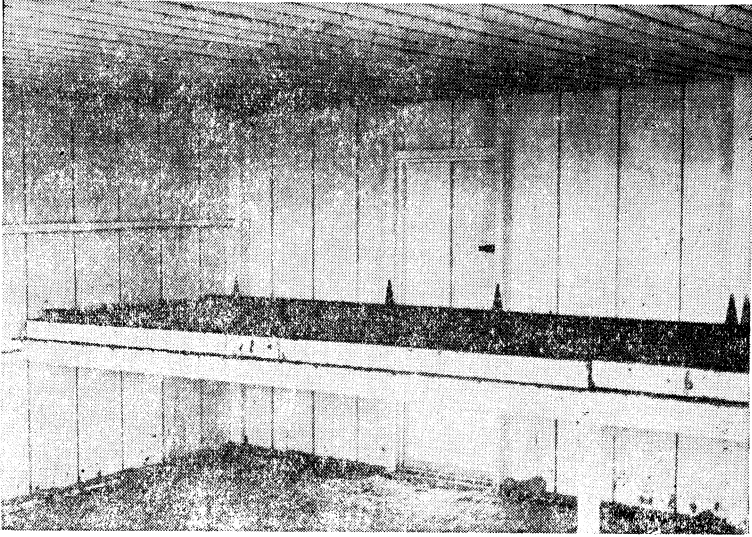
(Even-span House)

West side showing location of nests, construction of door, nail ties, water bucket, perches and droppings board. Nests are ordinary nests with trapnest fronts attached to them.



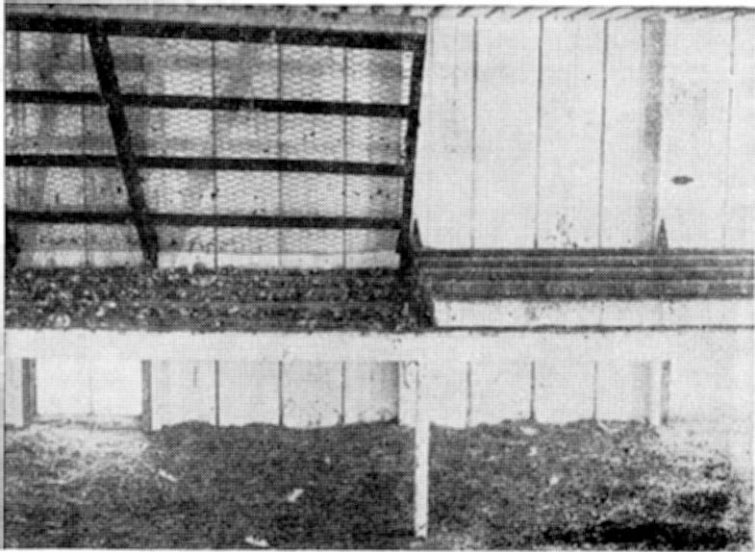
(Even-span House)

Southwest corner showing cellophane covered frames in opening, and on hangers when not in use. Feed storage can is also shown.



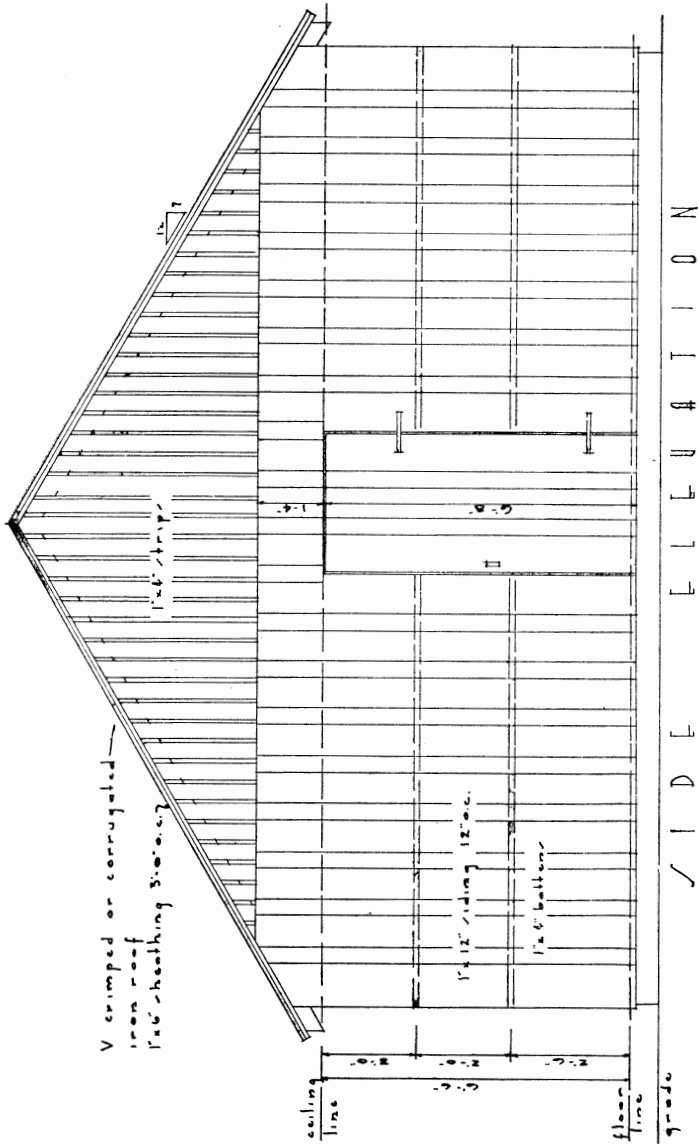
(Even-span House)

Northwest corner showing door and sash for summer ventilation, droppings board and perches.

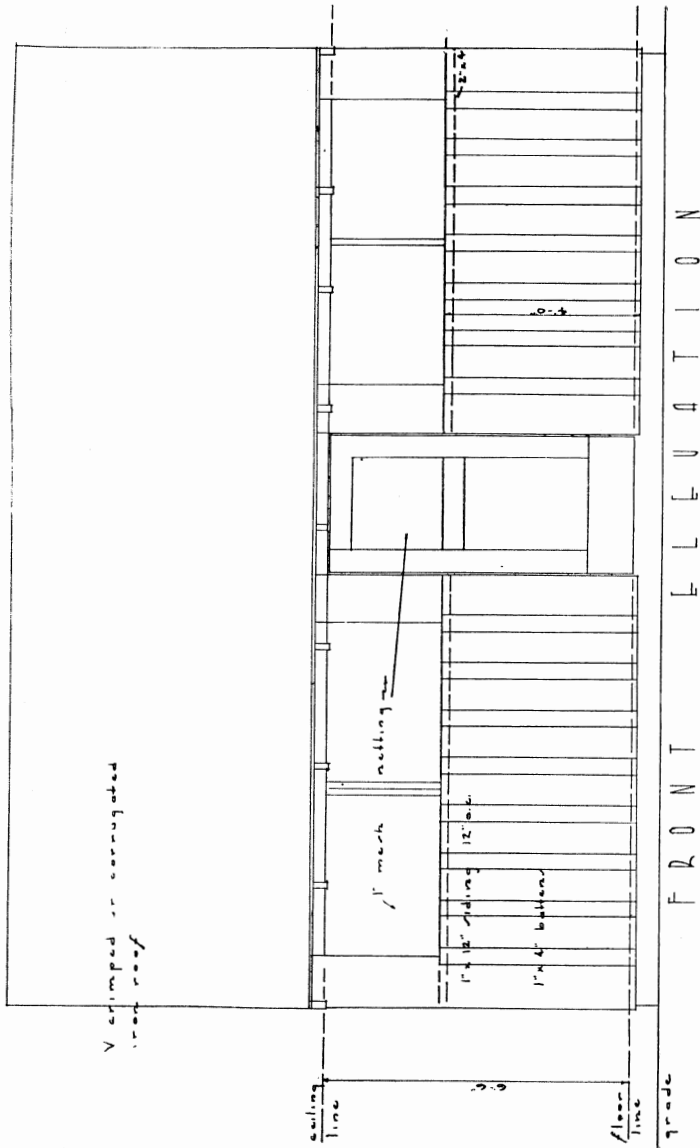


(Even-span House)

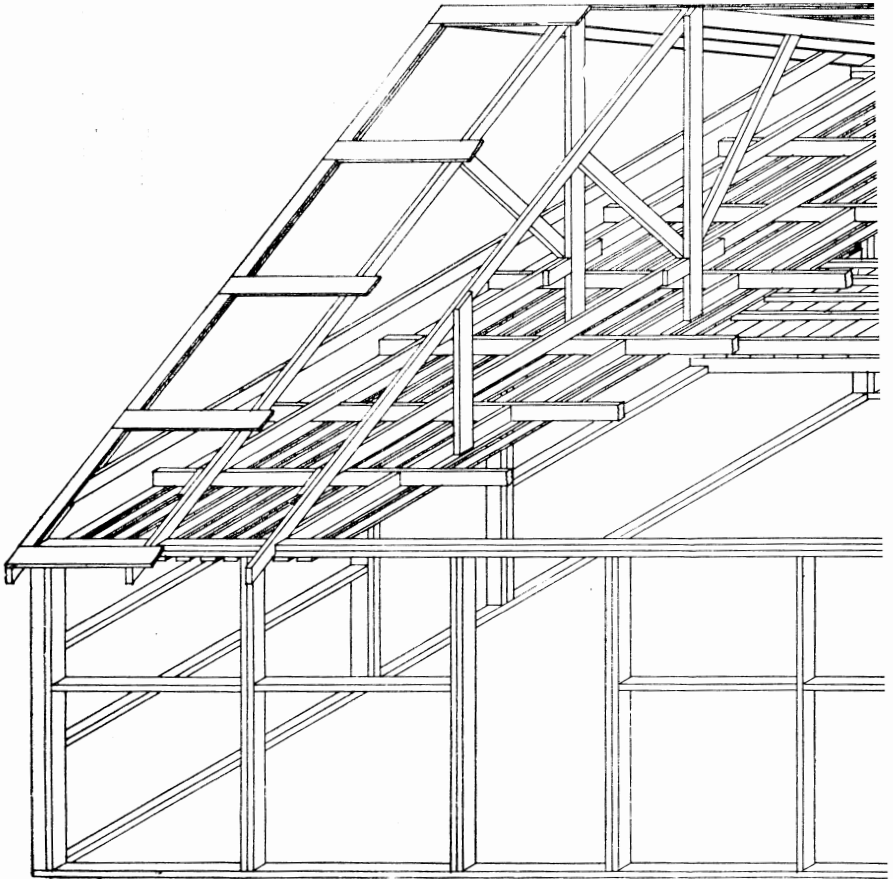
One half of perches raised to clean droppings board.



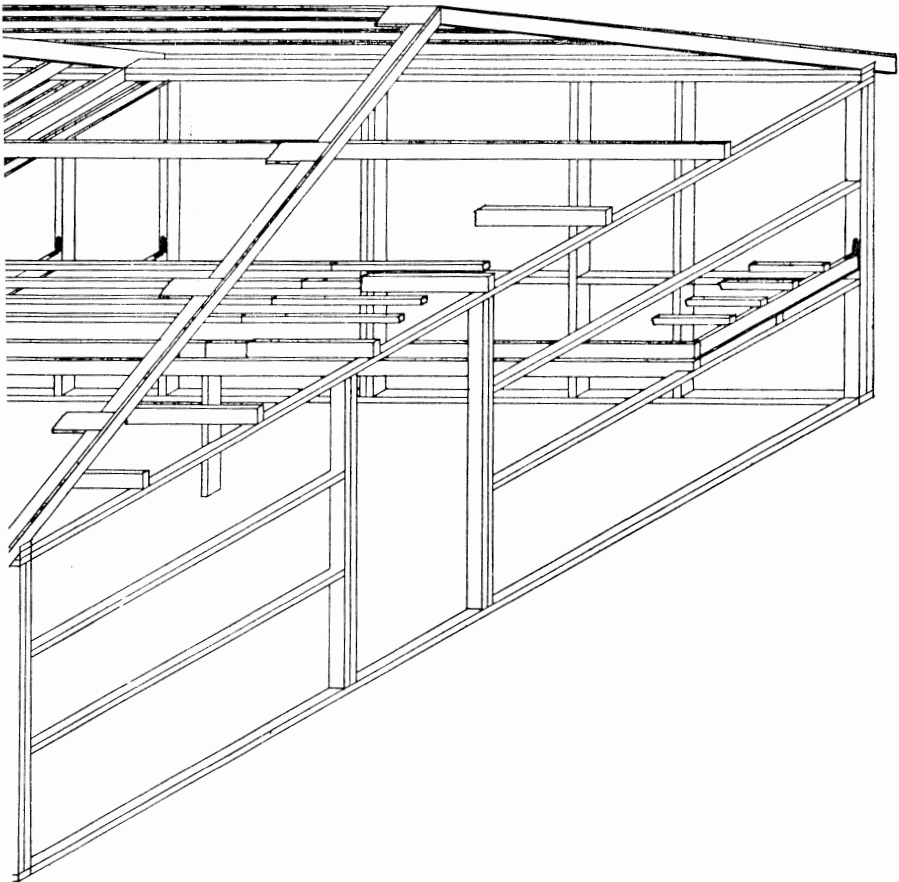
(Even-span House)



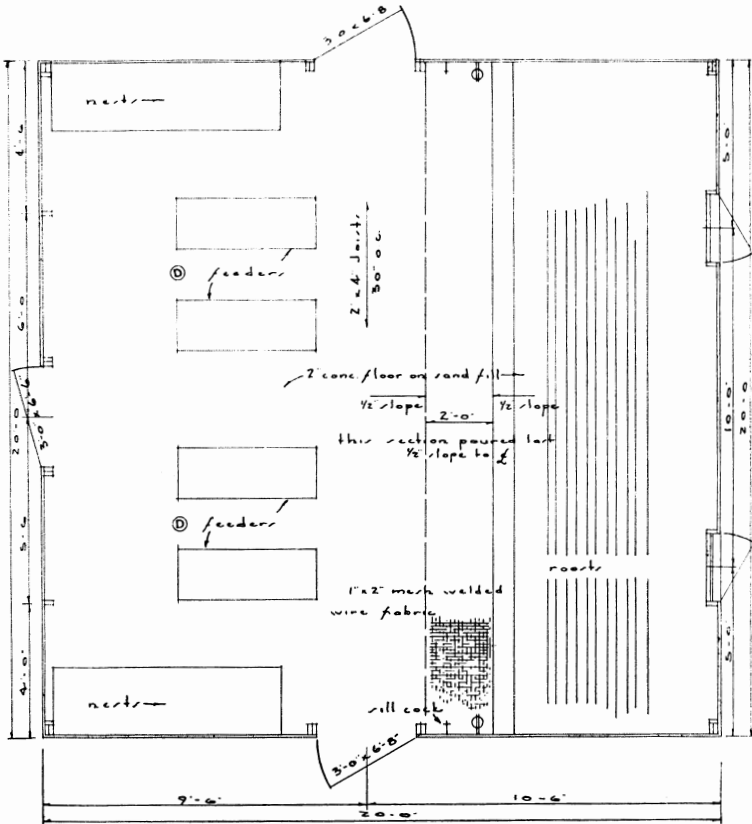
(Even-span House)



Framework details (isometric)

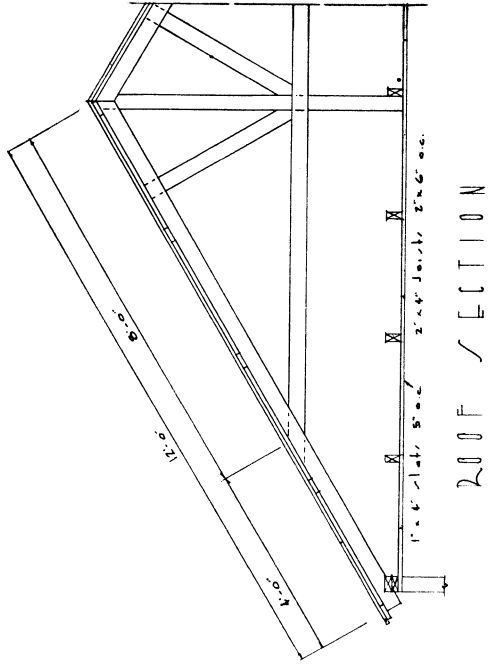
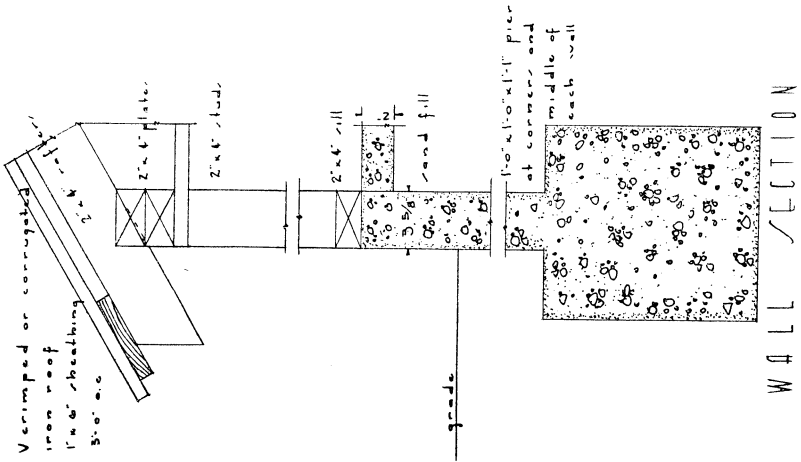


span type A. and M. Home for Hens.



P L A N

(Even-span House)



SHED-ROOF TYPE HOUSE

The shed-roof house is a long time popular type chicken house. It is the most simple type to build. Too frequently the details of design used in shed-roof houses are faulty. There are eight common faults in design:

1. A roof too flat or without enough pitch.
2. Front too low and back too high.
3. Installation of ventilation flues, double ceilings, and back walls with trick ventilator doors, to offset improper roof pitch.
4. Insufficient openings for light in the front.
5. Front openings too near the floor.
6. The house too shallow from front to back.
7. Roof not insulated to control temperature and condensation of moisture.
8. Roof too low for worker to walk in upright position to front of droppings boards.

To insure proper circulation of air and ventilation, the back wall of a shed-roof house 20 feet deep should be 5 feet from floor to top of plate and the front wall should be 10 feet from floor to top of plate. A shed-roof house 20 feet deep with a 6-foot back wall and 8-foot front wall has a roof that is entirely too flat.

The roof of a shed-roof house should have a solid shiplap sheathing for any kind of roofing unless a semi-straw loft is used. In this case a 1x6 sheathing on 24-inch centers can be used with galvanized iron roofing. Shingles on a shed-roof chicken house are not recommended.

Construction of a shed-roof house can be simple and inexpensive, or very expensive, as desired. A simple, inexpensive but efficient house can be built with 1x12 boxing on 12-inch centers for front, back and sides. The seemingly large cracks left between boxing boards in this construction are covered with 1x4's used as battens.

With the boxing and batten construction, no corner studs are used and the only studs are at doors and windows and in long runs of wall. The door and window studs are set to exact measure so that boxing boards can be nailed flush with the openings, and doors and windows are hung without additional frames or casings. It is best to use 1x2 strips as door and window stops in this construction.

Nail ties or wall girts, if spaced carefully, serve as supports for droppings boards and nests. In the corners the nail ties should lap and not butt together. In the back wall the nail tie should be so spread that it will be the thickness of a 2x4 below the header between the studs for the back window below the droppings boards.

The original of the Oklahoma 20x20 shed-roof home for hens was built at the Experiment Station Poultry Farm in 1923. This house is constructed with 1x12 boards and 1x4 battens for sides, front and back. Stud

and siding construction can be used but the cost is increased and it is not possible to make as tight a single wall as with boxing and battens. In the original house the ventilator in the front of the house was the slanting type and extended to 18 inches of the floor. Experience discarded this type ventilator for the flat, staggered-opening ventilator, and the bottom of the ventilator was raised so that now it is 48 inches from the floor. Aside from this, the addition of the semi-straw loft is the only change made in the original shed-roof house. The old type front ventilator opening was found to be too low and let too much cold wind onto the floor. For the semi-straw loft the ceiling for the straw is at a level with the bottom of the top windows. Part of the ventilator and all of the top windows are above the straw. This allows escape of heated air under the roof in summer and regulates ventilation in winter. (See illustration, page 28.)

Plans and bill of material for the Oklahoma A. and M. 20x20 shed-roof home for hens are given on pages 21 to 28.

During the development of this shed-roof semi-straw-loft house a series of temperature readings were taken at the same time in different houses at different stages of development. With an outside temperature of 1 degree below zero the floor temperature in the original house was 8 degrees. In the house with new front but without semi-straw loft it was 9; and in the house with new front and semi-straw loft it was 15. At the same time the temperature on the perches of the same houses in the above order was 5, 10 and 18. The temperature comparisons give quite an advantage in hen comfort to the semi-straw-loft house.

BILL OF MATERIAL

For 20x20 Shed-roof Laying House

Foundation

12 sacks cement
1.5 yards sand
3 yards gravel or stone

Floor

3 yards fine sand for floor cushion
12 sacks cement
1.5 yards building sand
3 yards gravel or stone

Lumber

Sills, 4—2x4-20 ft.
Front studs, 3—2x4-20 ft.
Back studs, 1—2x4-20 ft.
End studs, 2—2x4-16 ft.
Center posts, 2—4x4-8 ft.
Plates, 2—2x4-20 ft.
Rafters, 11—2x4-24 or 18—2x4-12 ft. and 4—2x4-24 ft.
Nail ties, 6—2x4-14 ft.
Nail ties, 3—2x4-20 ft.
Window sills, 1—2x6-16 ft.

Center stringer, 2—2x4-20 ft.
Front and back 12—1x12-16 ft. boxing; 12—1x4-16 ft. battens
Sides, 17—1x12-16 ft. boxing; 17—1x4-16 ft. battens

Roof (When semi-straw loft is not used)

39—1x8-14 ft. shiplap
20—1x8-16 ft. shiplap
5½ rolls roofing paper

Roof (When semi-straw loft is used)

17—1x6-16 ft.
20 pcs. 12-ft. galvanized iron roofing

Front Wind Baffle and Ventilator

8—1x4-16 ft.
16 ft. 1" mesh poultry netting 43" wide

Windows

Back, 2—10x12-4 light sash, plain rail
 Front, 3—10x12 light windows, plain rail
 14 ft. 1" mesh poultry netting 36" wide
 12 ft. 1" mesh poultry netting 27" wide

Doors

9—1x8-14 ft. shiplap
 3—1x6-12 ft. braces on doors

Droppings Boards and Perches

4—2x4-20 ft.
 17—1x8-12 ft. shiplap
 4—2x4-12 ft.
 8—1x2-10 ft. perches
 20 ft. 2" mesh poultry netting 72" wide

Water Platform

4—1x2-12 ft.

Nests

Tops, bottoms, sides, partitions,
 8—1x12-12 ft.
 Fronts, jump boards, and supports,
 10—1x4-12 ft.

Hardware

3 rim locks or barn door latches for doors
 3 pairs 6-in. strap hinges for doors
 10 pairs loose pin butts or screen hangers for windows
 8½x8-in. carriage bolts for foundation anchors

Paint

2½ gallons mixed house paint

For Semi-straw Loft, add

2—2x4-20 ft.
 48—1x4-10 ft.
 480 linear ft. 1x4

BILL OF MATERIAL**For 20x70 Shed-roof Laying House**

Three 20x20 rooms for chickens and one 10x20 service and feed room.

Foundation

4½ yards sand
 35 sacks cement
 9 yards stone or gravel

Floor

10½ yards fine sand for floor cushion
 10½ yards stone or gravel
 42 sacks cement
 6.0 yards building sand

Lumber

Sills, 11—2x4-20 ft.
 Front studs, 11—2x4-20 ft.
 Back studs, 4—2x4-20 ft.
 End and partition studs, 5—2x4-16 ft.
 Center posts, 7—4x4-8 ft.
 Plates, 7—2x4-20 ft.
 Rafters, 32—2x4-24 ft.
 Window sills, 3—2x6-16 ft.
 Nail ties, 20—2x4-14 ft.
 Nail ties, 10—2x4-20 ft.
 Center stringer, 7—2x4-20 ft.

Front and Back

44—1x12-16 ft. boxing
 44—1x4-16 ft. battens

Sides

17—1x12-16 ft. boxing
 17—1x4-16 ft. bats

Partitions

45—1x8-16 ft. shiplap

Roof (When semi-straw loft is not used)

182—1x8-14 ft. shiplap
 24—1x8-12 ft. shiplap
 18 rolls roofing paper

Roof (When semi-straw loft is used)

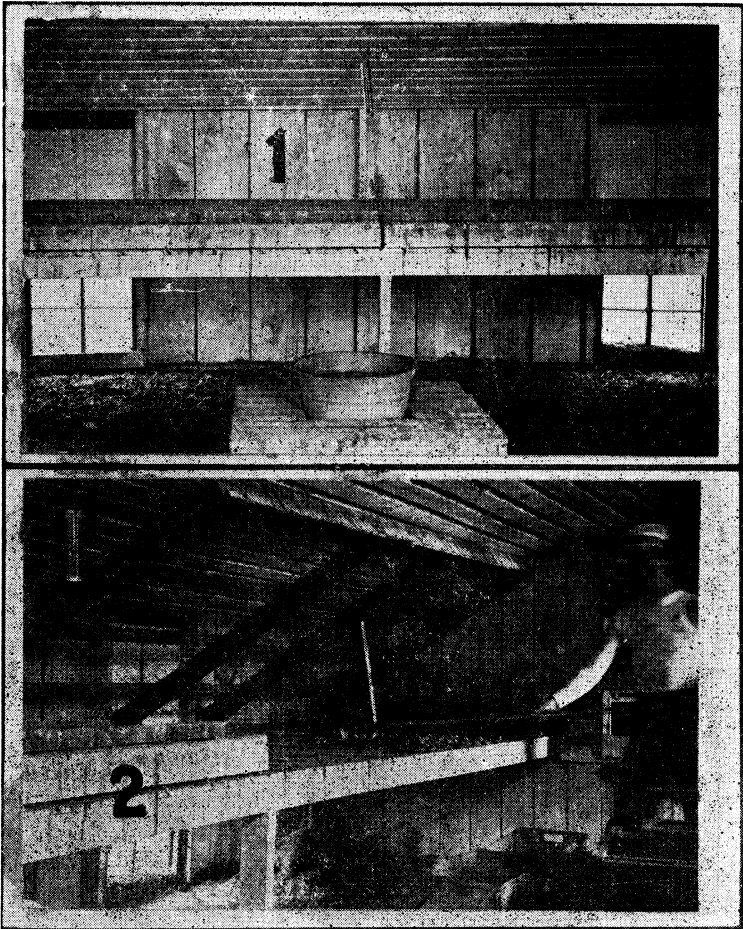
60—1x6-16 ft.
 70 pcs. 12 ft. galvanized iron roofing

Front Wind Baffle and Ventilator

24—1x4-16 ft.

Windows

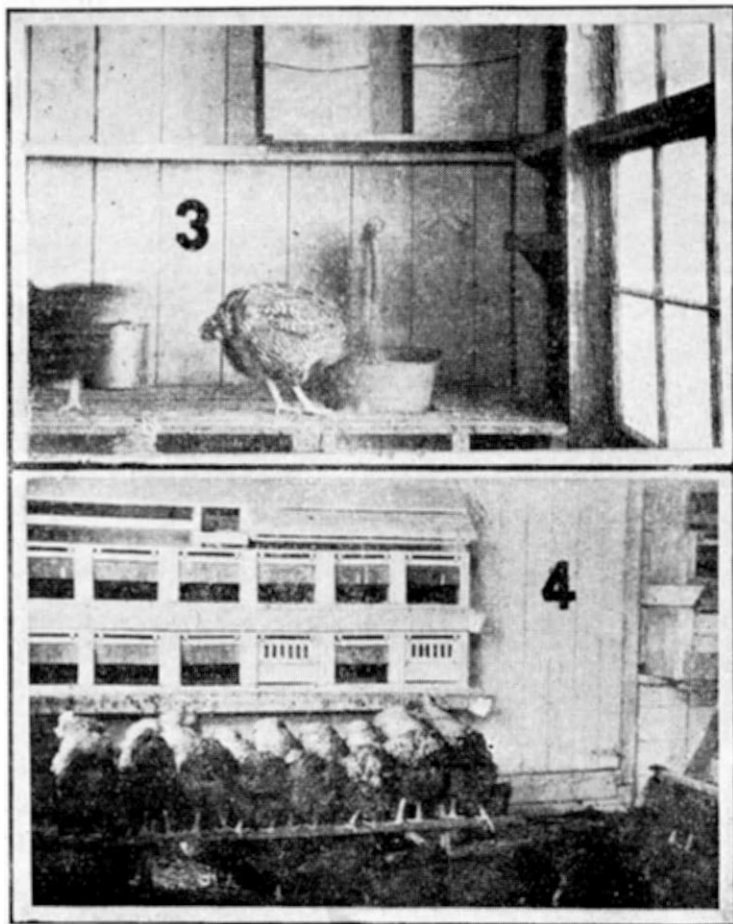
Back, 6—10x12-4 light sash, plain rail
 Front, 11—10x12-12 light windows, plain rail



(Shed-roof House)

1. Water bucket on slatted stand and inside view of back windows with summer ventilating doors above droppings board. This shows the north side of the house. Boxing is used with 1x4 for battens. Each 1x12 is centered in a 12-inch space. This often leaves a crack of as much as one inch, but this is covered with the batten and a strong, tight wall is the result.

2. One section of perches, raised and supported by a prop for cleaning the droppings board. This is the northeast corner.



(Shed-roof House)

3. Slatted shelf for water bucket, grit and oyster shell. Supply cans for grain on upper shelf. Note the one-inch mesh poultry netting on the inside of the widow frame.

4. This mash feeder is 5 feet long. Its capacity is 16 hens. Be sure there are not less than four such feeders or their equivalent in each 20x20 foot hen house with 100 hens.

(CONTINUED FROM PAGE 22)

Doors

- 21—1x8-14 ft. shiplap
- 9—1x6-12 ft. shiplap

Droppings Beards and Perches

- 12—2x4-20 ft.
- 51—1x8-12 ft. shiplap
- 42—1x2-12 ft. perches
- 60 ft. 2" mesh poultry netting 72" wide

Water Platform

- 12—1x2-12 ft.

Nests

- Top, bottom, sides and partitions,
- 24—1x12-12 ft.

- Front, jump boards and supports,
- 30—1x4-12 ft.

Hardware

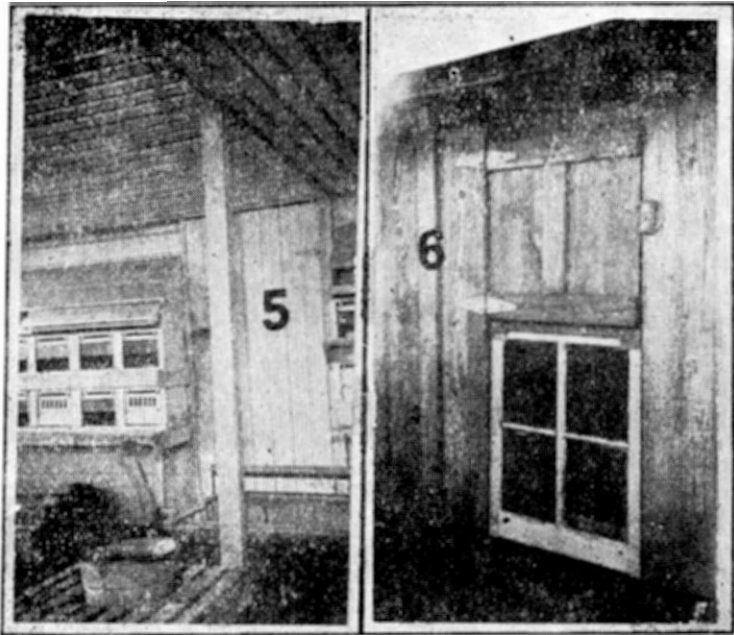
- 9 rim locks or barn latches for doors
- 16 pairs of 6-inch strap hinges
- 32 pairs of loose pin butts or screen hangers for windows
- 48— $\frac{1}{2}$ x8 inch carriage bolts for foundation anchors

Paint

- 6 gallons mixed house paint

For Semi-straw Loft, add

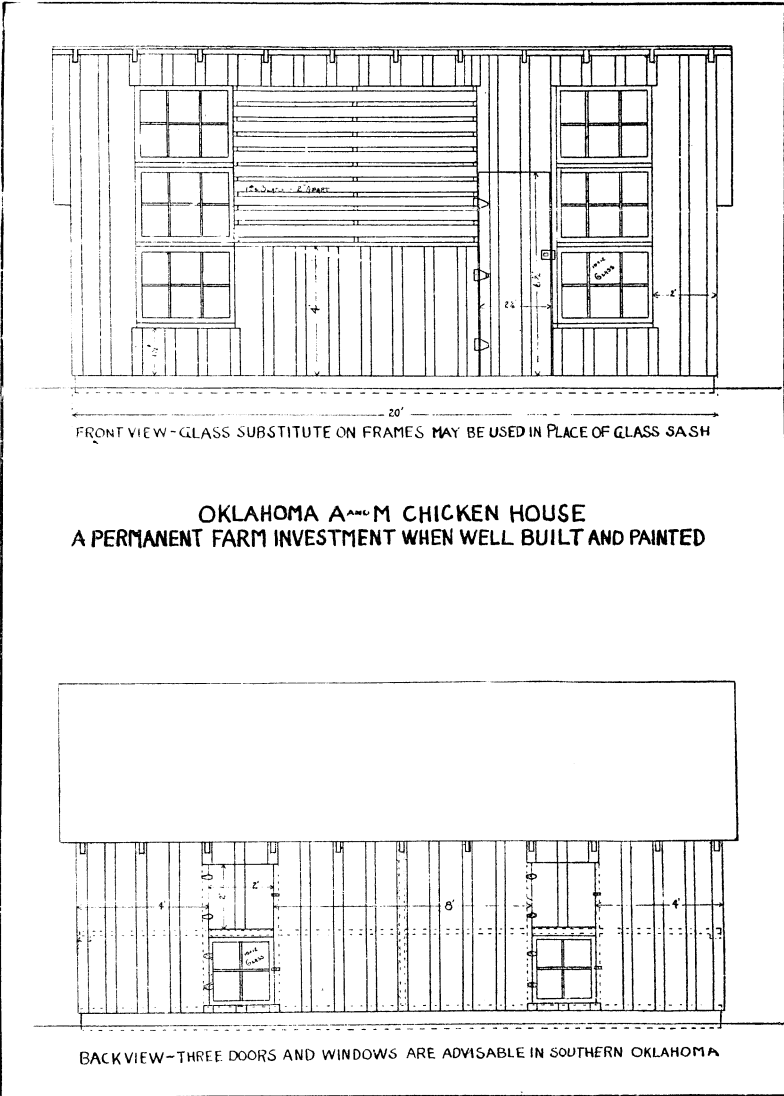
- 6—2x4-20 ft.
- 144—1x4-10 ft.
- 1,440 linear ft. 1x4



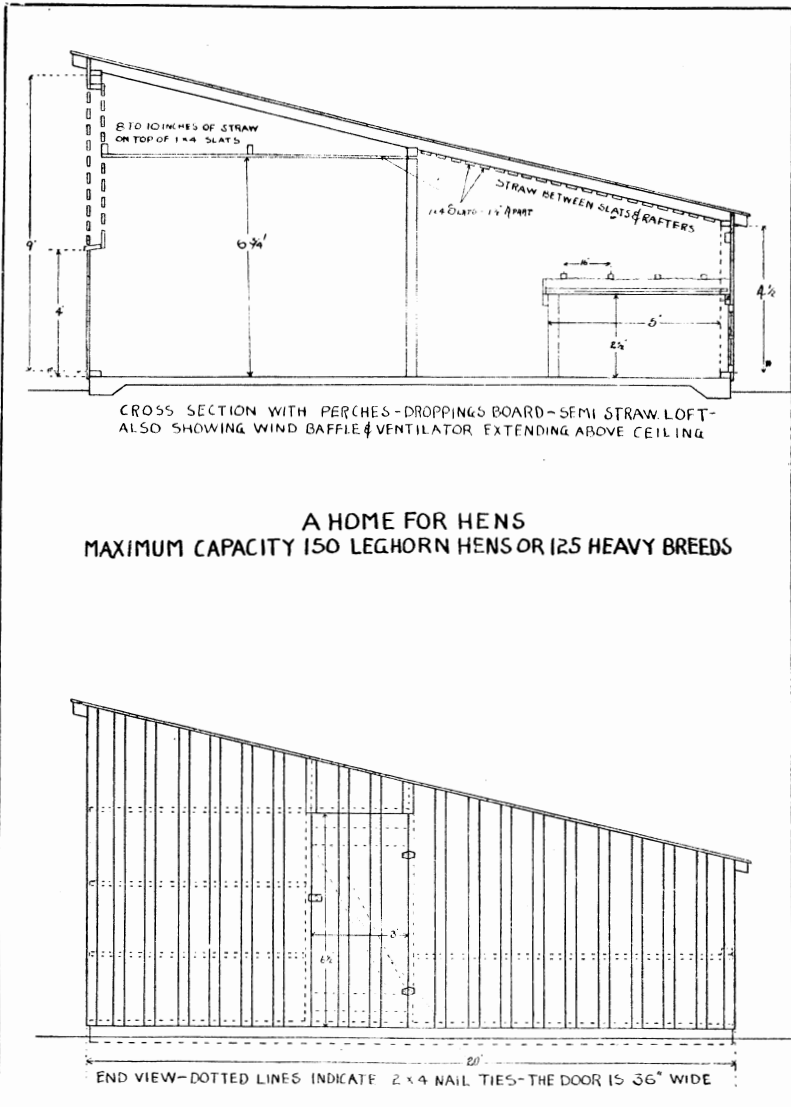
(Shed-roof House)

5. The west side with a view of the semi-straw loft on the south half of the house and straw packed between rafters and slats on the north half of the house.

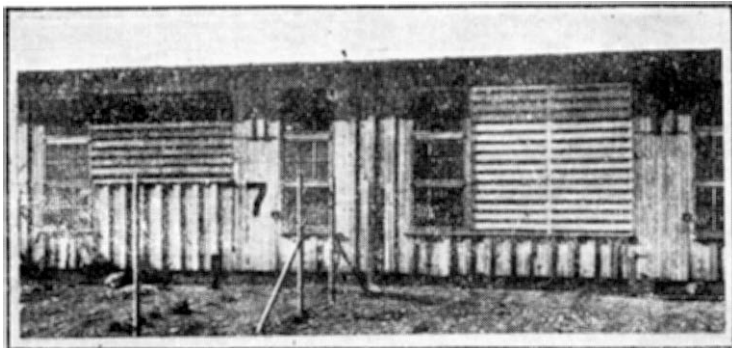
6. In the back of each 20x20 ft. house two windows and ventilating doors like this are necessary. These doors and windows are opened during the summer for cross ventilation, which is especially desirable during hot nights.



(Shed-roof House)



(Shed-roof House)



(Shed-roof House)

7. An important change in the home for hens has been to make the bottom of the front slatted ventilator four feet from the floor as shown at the left. This makes the ventilator smaller. The semi-straw loft is just above the top of the front door which leaves some slatted ventilator above the straw. This is proper because ventilation is needed there as a means of equalizing temperature in the house.

REMODEL THAT OLD HEN HOUSE

Many farms have what is referred to as the chicken house. Some are good and entitled to the name. Others are disgraceful. Often the kind of house on the farm is beyond the control of the tenant, but the way the house is managed is not beyond his control. By the application of a few definite principles and directions, many of these unsatisfactory chicken houses can be improved to the extent of making the farm flock profitable. More good chicken houses are needed in Oklahoma. Even where there is now a house, there likely could or should be an expansion or some remodeling. Consider the following 16 points of improvement and study the possibility of making a hen house out of the chicken house as it now stands.

1. Shape. A square building is good. If the distance from front to back is less than the distance from side to side, the building should be turned half way around and the narrow side used for the front. For large buildings it is best to build partitions from front to back so that each room will be square or deeper than it is wide.

2. Size. Provide at least 2½ square feet of floor space per hen. Four square feet per hen is best. Crowded conditions cause damp houses, colds, roup, uncomfortable and discontented hens, poor egg production, and cannibalism, and usually increase mortality. The labor in caring for birds in crowded houses is greater than in good houses.

3. Ventilation. Fresh air should be supplied at all times, but during fall and winter drafts should not be allowed. Watch where the birds roost

at night and where they group during the day. They will not stay in a draft if they can help it. Prevent drafts, to maintain healthful conditions. During the summer, open the windows back of the roosts to encourage cross circulation if air for the hens' comfort, especially at night. In houses with high ceilings, use straw lofts to bring ceiling to 7 feet of floor. Low pitch shed roofs are best converted into even-span houses—no straw loft but insulated ceiling possible. Long, narrow, shed-roof houses can be cut in two and faced together, making an even-span house. Semi-monitor houses need top windows sealed and straw ceilings installed.

4. Condition. Only one side of the house should be used to admit sunlight and ventilation except during the hot months. All cracks in the walls and all openings between the rafters above the plates should be made tight on the north, east and west to prevent damaging drafts. Use batten, cardboard, prepared roofing, etc., to stop these cracks. It is practically impossible to maintain desirable production throughout the winter months in a poultry house with leaky walls. Have no opening in the open side of the house less than four feet from the floor. Glass widows for light may be as low as two feet above the floor, but keep these windows closed during windy and winter weather.

5. Roof. Galvanized iron without a solid sheeting of shiplap or boxing under it is not desirable for a chicken house roof. Temperature fluctuations are disagreeable to hens. Wide temperature differences between day and night are common in Oklahoma. Iron roofs and iron walls for hen houses emphasize these differences and make hens very uncomfortable. The ideal condition for hens would be perfectly uniform temperature and no drafts or wind. Do not aggravate the hen but use materials and construction to make her more comfortable and therefore more productive. The one way to use galvanized iron for roofing without solid sheeting is with a straw loft or a well insulated ceiling.

6. Light. Direct sunlight acts as a source of desirable Vitamin D and is a disinfectant. Birds are happier in a light house than in a dark one. The openings should be so placed that the sun may shine on every possible square foot of floor space at some time during the day in the winter months. Keep the windows, glass substitutes, and cloth curtains clean for best results. Paint the inside of the house with a white casein or aluminum paint.

7. Roosting Perches. Level perches with a two-inch roosting surface are desirable as they are comfortable and cause the birds to spread uniformly over all the roosting space. Provide at least 8 inches of perch per hen. Place perches at least 12 inches apart—16 inches apart is better.

8. Droppings Boards. Level droppings boards, or a droppings pit, are essential. They save labor in cleaning the poultry houses and aid in sanitation and control of diseases. Place 1½-inch or 2-inch mesh poultry netting below the perches in such a manner as to prevent the hens from coming in contact with the droppings. Diseases and certain parasites are

contracted through droppings. Some folks are replacing droppings boards with pits. This should be discouraged. Pits perhaps are better than nothing but not equal to droppings boards in Oklahoma. Pits tend to increase hazards and promote laxness in house cleaning. Pits create a fly hazard and flies create a tapeworm hazard.

9. Nests. The most desirable place for nests is on the side walls of the poultry house. The nests should not be under droppings boards. They should be on the opposite side of the house from the door to the chicken yard. Nests may be built in tiers with the upper nests covered with a sloping top to prevent chickens from roosting on them. Nests should be about 14 inches long, 12 inches wide and 12 inches high. Provide jump boards in front of each nest. Construct nests so they will be easy to clean and disinfect and with a door to keep hens from roosting in them at night.

10. Ratio of Hens Per Nest. Provide at least one nest for every six hens in the flock. Too few nests causes hens to crowd and break eggs, which soils other eggs in the nest at that time and may cause the vice of egg eating. Dirty eggs are undesirable for market or hatching. Provide plenty of nests and eggs stay cleaner.

11. Floor. A good floor makes the house easier to clean, and aids in sanitation and health of the hens. A concrete floor is best. If it is not possible to have a concrete floor, it is possible and costs nothing but the effort to make the best dirt floor that can be made. Haul into the house enough clay to build the floor six inches above the level of the surrounding yard. Keep the floor dry and free from dust wallows.

12. Hopper or Feeder Space. Supply two inches of feeder space per hen. Two five-foot feeders, open on both sides, are considered adequate for 125 hens. Reduction of feeder space decreases mash consumption, which results in decreased production. Prevent feed waste and contamination by proper construction of the feeder.

13. Feeder Location. For the convenience of the operator, keep the feeder in the house in the light and within ten feet of a water container. The feeder should be placed on a stand 18 to 24 inches high.

14. Water Supply. Keep fresh, clean water near the mash feeders at all times. Supply cool water during the summer and prevent water from freezing during the winter. Warm water encourages greater consumption during cold weather. Do not force the hens to go outside the house for water. A 12-quart bucket or crock placed on a stand makes a desirable water container. Provide at least two water containers for each 100 hens.

15. Grain Feeding. Feed a mixture of threshed grains in troughs, on top of the mash, in the feeders, or in clear litter. The feeding of grain on the ground, or in a dirty litter, invites disease and parasite infestation. Limit grain consumption to control mash consumption, body weight and egg production.*

* For a detailed feeding program, see Oklahoma Experiment Station Bulletin No. B-244, "Feeding Laying Hens."

16. Management. Keep the hens confined in a comfortable house during cold, wet or inclement weather to maintain health and egg production. Production decreases if the birds are uncomfortable. If birds are kept confined in a good house until noon, better production and more uniform yolk color are often secured. Provide a chicken yard to regulate the feeds consumed by the birds and in order to give personal attention to the flock. House cleaning should be resorted to as often as needed. Clean droppings boards weekly. Remove dust, dirt, droppings, straw and other loose material before applying germicides or insecticides; otherwise a good job cannot be done. Do not rely upon whitewash, crude oil, banana stalks and similar treatment. Remember that dust in a poultry house is as detrimental as dampness.

1-42—20M