COOPERATIVE EXTENSION WORK
IN
AGRICULTURE AND HOME ECONOMICS
STATE OF OKLAHOMA

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A HOME FOR HENS

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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's object in requiring the hen to produce eggs was 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 by his judgment it is determined 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 safeguard 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.

The hen house 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.

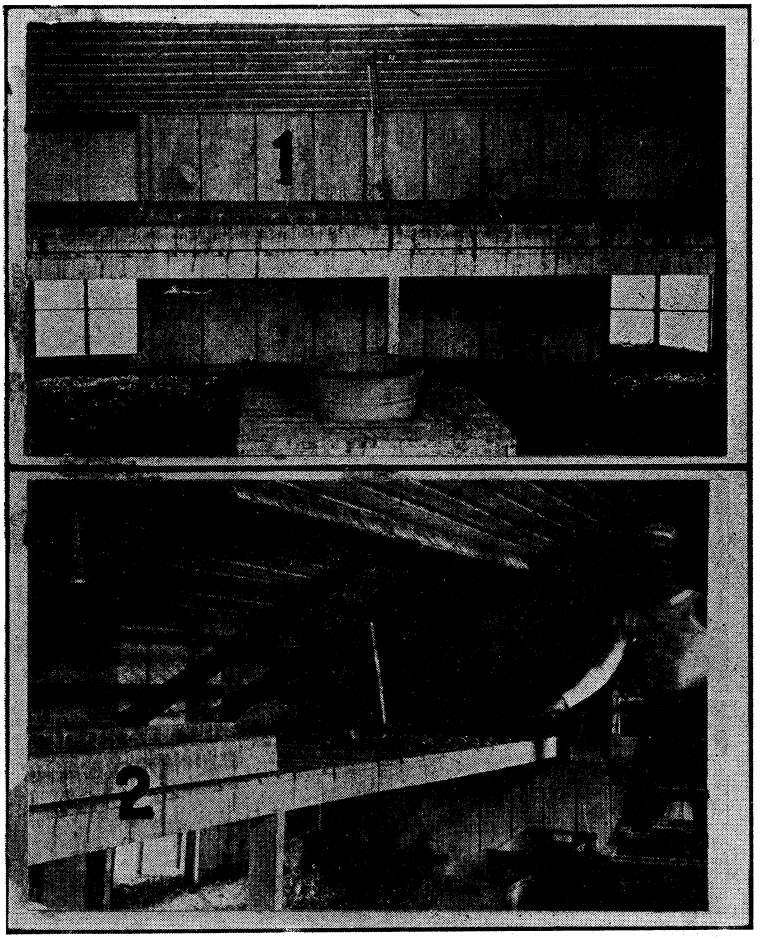
Pure air is a necessity in a hen house. It has been determined by experiments that chickens use approximately 10 cubic feet of air per pound live weight each hour. It is not possible to economically construct a house to have more than 30 cubic feet of air space per hen. This is less than enough air for 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 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 the 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.

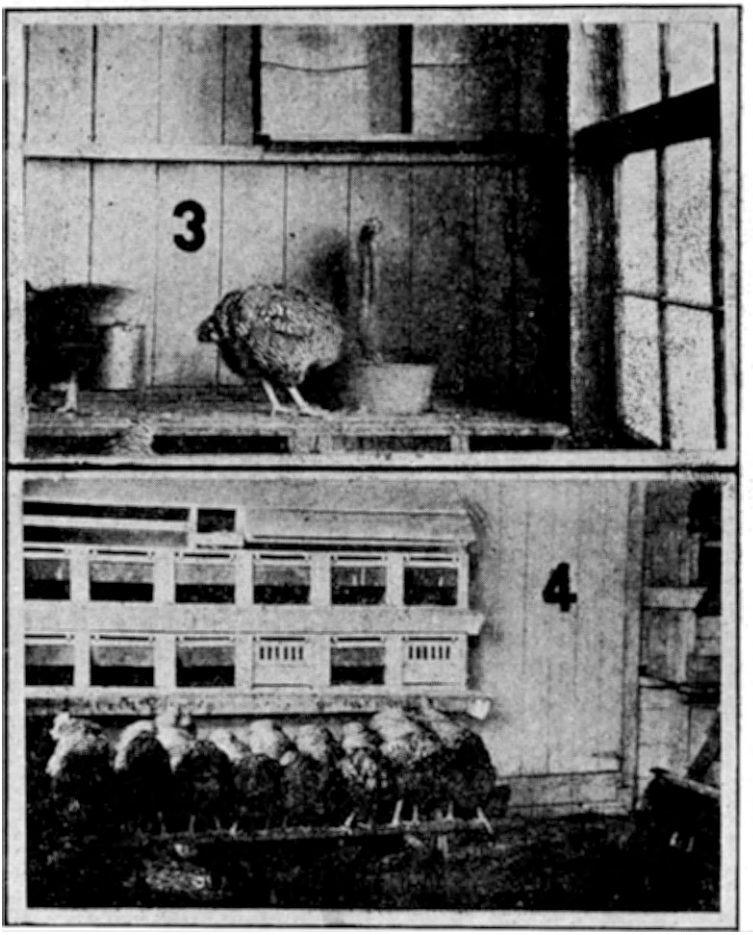
Whenever the length of a house is more than one and one-half times its depth there should be solid division partitions extending from the back wall for at least two-thirds of the depth of the house. A house 20 feet deep and 30 feet long without a partition may be safe and satisfactory some years but 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.

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



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 window 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.

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 poultry house floors 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 nine 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.

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.

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.

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 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 or 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.

The requirements for a good poultry house can be worked in to many styles. The two styles which permit all of the requirements of a poultry house are the shed roof house and the even span house. The shed roof permits greater admission of sunshine and ventilation. A third style is the uneven span which has the advantage of a low back wall and higher front wall, but the disadvantage of an even ceiling for a straw loft.

One square foot opening for glass and one square foot of ventilator for 15 to 20 square feet of floor are satisfactory for a poultry house. The glass or glass substitute should be on hinged frames to permit opening during the summer for increased circulation of air. 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 curtain, 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. It is possible to build a semi-straw loft into properly built shed roof houses. 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 8 to 12 inches deep. It is not neces-

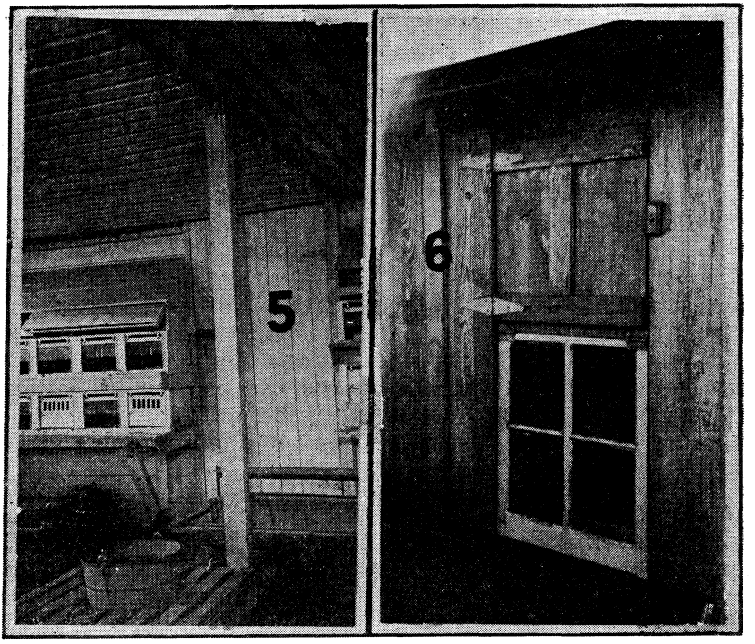
sary to change the straw in a straw loft for several years, vermin will not infest it but there is possibility of trouble with rats.

The Oklahoma A. and M. College 20x20 shed roof poultry house meets these requirements. It can be built with a semi-straw loft. It is also possible to dip the front seven feet of the roof and have an uneven span house. As a shed roof house the back wall must be five feet and the front wall 10 feet high. Other heights will lead to many complications.

The droppings boards are 30 inches from the floor, six feet from the 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″ mesh poultry netting as illustrated in picture of house interior in this bulletin, and are 16 inches apart from center to center, the back one being 12 inches from the back wall. The feed hopper, nests, water table, and feed bin are 24 inches from the floor. There is no obstruction on the floor other than the two supporting posts in the middle of the house and the one supporting post in the front center of the droppings boards and perches. The north, east and west ends of the perches and droppings boards are supported by cleats nailed to the wall of the house.

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 wood 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.

A concrete floor is recommended for poultry houses. It is best poured after the foundation and before the house is built. By constructing the outer forms for the foundation and filling the central portion with hollow tile, rock or cinders the floor and foundation may be poured at the same time. The floor should not be finished with a top coat. A straight edge to level it with the foundation is all that is necessary. It may be smoothed off with a wood float.



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 necesasry. These doors and windows are opened during the summer for cross ventilation which is especially desirable during hot nights.

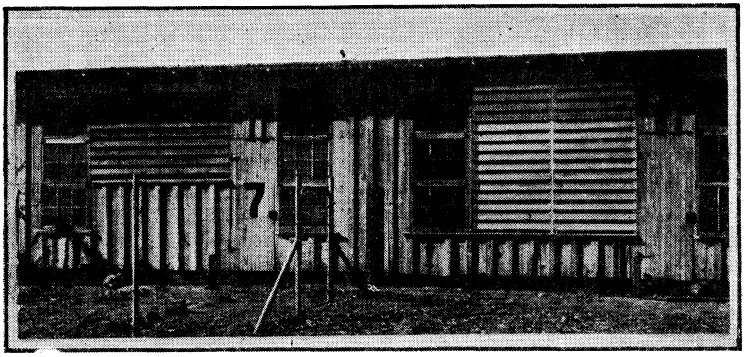
A concrete floor eliminates trouble with rats, is easy to clean, and if the house is properly ventilated will not be cold or damp. Straw litter four to five inches deep should be kept on the floor during the entire year. Whenever the straw becomes fine, dusty, or dirty it should be changed and fresh straw put in the house. Where clean sand is available it is an excellent practice to use about two inches of sand on the floor with the straw or other litter on top of the sand. Ground corn cobs are good litter. Any absorbent material that is not tough or long and fibrous is suitable for litter. Dust is detrimental to the health of hens and when sand or litter is dry and dusty enough to fill the air when hens scratch, it is well to sprinkle it lightly with water. Under the best methods of feeding grain in troughs and not in the house litter it is necessary to change litter not more than two or three times during the winter. Emergency changes due to wetting or epidemic may be necessary in addition to these normal changes.

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 iron. This should be laid on solid sheeting and should have a layer of 15-pound saturated felt between it and the sheeting. Corrugated iron is not satisfactory for a chicken house roof.

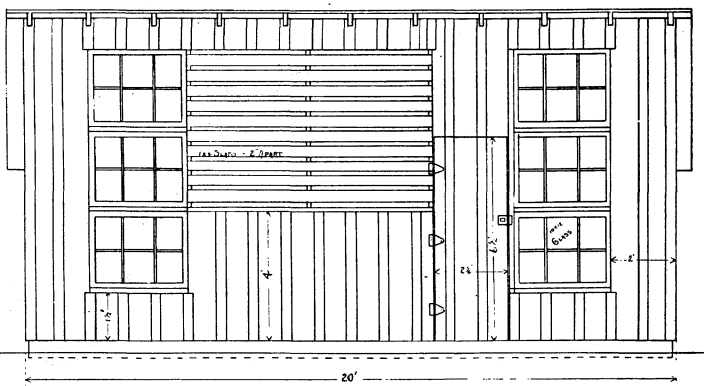
The 20x20 foot house illustrated in this bulletin has been used at the Oklahoma Experiment Station since 1923. This house is constructed with boards and batten sides, front and back. One by four No. 1 common lumber is used for battens. The same house may be constructed with stud and siding construction but the cost of construction will be greater and it is not possible to make the back wall as tight with siding as it is with board and battens. Two sections of this house have the remodeled front in which the bottom two feet of the ventilator has been taken out and solid wall substituted. The opening of the old style was found to be too low and let too much cold wind onto the floor. One section has been provided with a 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.

The temperature control in the home for hens with semi-straw loft is greatly improved over the original home for hens or with the new front ventilator without the straw loft. Dur-

ing cold weather when the outside temperature was one degree below zero the temperature on the floor of the semi-straw loft house was 15, on the floor of the house with new front without straw loft 9, and on the floor of the original house 8. A greater variation was observed in the temperature on the perches at the same time. With the outside temperature one below zero the perch temperature in the semi-straw loft house was 18, in the new style front without straw loft 10, and in the original house 5. These temperature comparisons give quite an advantage in hen comfort to the semi-straw loft house.

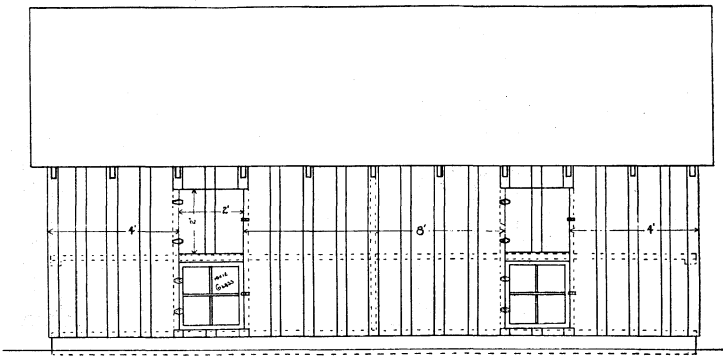


7. An important change in the home for hens has been to make the bottom of the front slatted ventilator four feet from the floor. This makes the ventilator smaller. The semi-straw loft is just above the top of the front door which leaves some slatted ventilator above the straw. This is proper because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

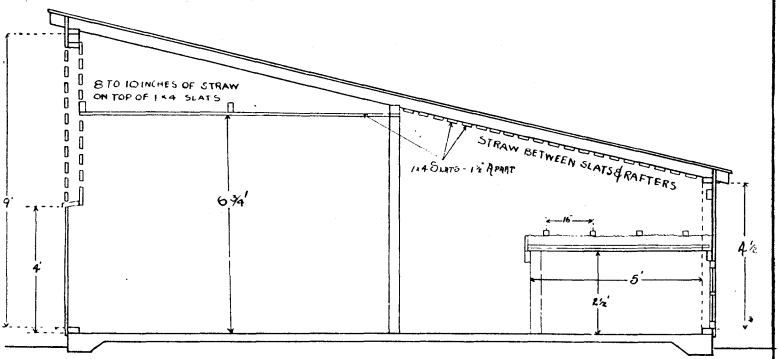


FRONT VIEW - GLASS SUBSTITUTE ON FRAMES MAY BE USED IN PLACE OF GLASS SASH

OKLAHOMA A AND M CHICKEN HOUSE
A PERMANENT FARM INVESTMENT WHEN WELL BUILT AND PAINTED

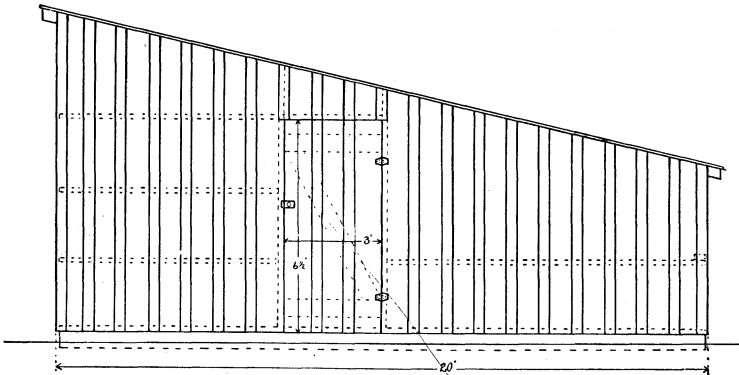


BACK VIEW - THREE DOORS AND WINDOWS ARE ADVISABLE IN SOUTHERN OKLAHOMA



CROSS SECTION WITH PERCHES - DROPPINGS BOARD - SEMI STRAW LOFT - ALSO SHOWING WIND BAFFLE & VENTILATOR EXTENDING ABOVE CEILING

A HOME FOR HENS
MAXIMUM CAPACITY 150 LEGHORN HENS OR 125 HEAVY BREEDS



END VIEW - DOTTED LINES INDICATE 2 x 4 NAIL TIES - THE DOOR IS 36" WIDE

Bill of Material for 20x20-foot Laying House

Foundation—

12 sacks cement
1.5 yards sand
3 yards 1-inch gravel or stone

Floor—

Gravel, cinders, hollow tile, or stone used to fill the floor up to within 12 inches of the top of foundation. This should be leveled and well tamped.
12 sacks cement
1.5 yards sand
3 yards 1-inch 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. bats
Sides, 17-1x12-16 ft. boxing; 17-1x4-16 ft. bats

Roof—

39-1x8-14 ft. shiplap
20-1x8-16 ft. shiplap
5½ rolls roofing paper
Shutter or louver, 8-1x4-16 ft.
16 ft. 1″ mesh 42″ poultry netting

Windows—

Back, 2-10x12-4 light sash, plain rail
Front, 3-10x12 light windows, plain rail
14 ft.-1″ mesh by 36″ poultry netting
12 ft.-1″ mesh by 25″ poultry netting

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.
14-1x2-12 ft. perches
20 ft. 2″ mesh by 72″ poultry netting

Water Platform—

4-1x2-12 ft.

Nests—

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

Hardware—

3 rim locks or barn door latches for doors
3 pairs 6-in. strap hinges—doors
10 pairs loose pin butts or screen hangers—windows
8-½x8-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 20x60-foot Laying House

Foundation—

3-3/4 yards sand
30 sacks cement
7½ yards of 1-in. stone or gravel

Floor—

Gravel, cinders, hollow tile, or stone, used to fill the floor up to within 2 inches of the top of foundation. This should be leveled and tamped
9 yards 1-in. stone or gravel
36 sacks cement
4.5 yards sand

Lumber—

Sills, 10-2x4-20 ft.
Front studs, 9-2x4-20 ft.
Back studs, 3-2x4-20 ft.
End and partition studs, 4-2x4-16 ft.
Center posts, 6-4x4-8 ft.
Plates, 6-2x4-20 ft.
Rafters, 27-2x4-25 ft.
Window sills, 3-2x6-16 ft.
Nail ties, 16-2x4-14 ft.
Nail ties, 9-2x4-20 ft.
Center stringer, 6-2x4-20 ft.

Front and Back—

36-1x12-16 ft. boxing
36-1x4-16 ft. bats

Sides—

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

Partitions—

15-1x8-16 ft. shiplap

Roof—

156-1x8-14 ft. shiplap
20-1x8-12 ft. shiplap
15 rolls roofing paper

Shutter or Louver—

24-1x4-16 ft.

Windows—

Back, 6-10x12-4 light sash, plain rail
Front, 9-10x12-12 light windows, plain rail

Door—

21-1x8-14 shiplap
7-1x6-12 shiplap

Droppings Boards and Perches—

12-2x4-20 ft.
51-1x8-12 ft. shiplap
42-1x2-12 ft. perches
60 ft. 2″ mesh by 72″ poultry netting

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—

7 rim locks or barn latches for doors
14 pairs of 6-strap hinges
30 pairs of lose pin butts, or screen hangers for windows
48-½x8-in. carriage bolts for foundation anchors

Paint—

5 gallons mixed house paint.

For Semi-straw Loft, Add—

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

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. 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. Consider these 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, cannibalism, and usually increases 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 windows back of the roosts to encourage cross circulation of air for the hens' comfort, especially at night.

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 windows 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 sheathing 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 emphasises 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.

6. *Light.* Direct sunlight acts as a source of desirable Vitamin D and is a disinfectant. Birds are happier in a light house than when kept 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' coming in contact with the droppings. Diseases and certain parasites are contracted through droppings.

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' 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 undesir-

able 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 possible. Haul into the house enough clay to build the floor six inches above the level or 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 in feeder space decreases mash consumption which results in decreased production. Prevent feed waste and contamination by proper construction of the feeder.

13. *Feeder Location.* 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 clean 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.

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 producton 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.