

COLONY BROODER HOUSES

By

AC. Smith

Division of Poultry Husbandry

Cora E. Cooke

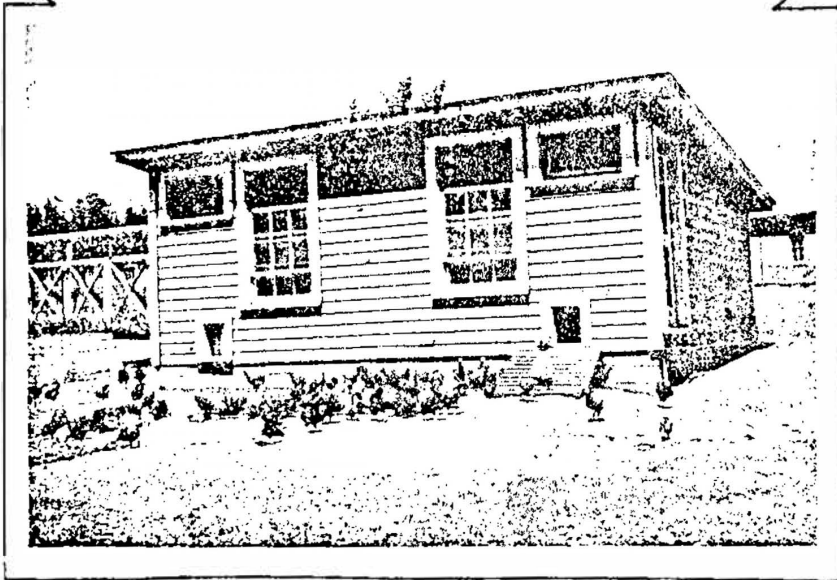
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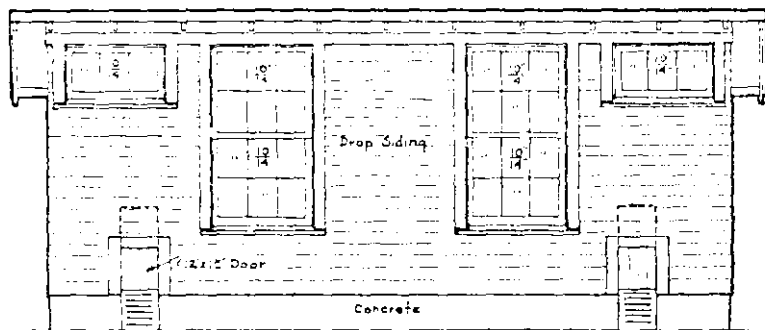
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a run on soil so dry that the chicks may be out most of the time is recognized by all. To this end a gentle southern slope is especially favorable and so is soil that is light enough so that water will leach through it readily. Heavy, cold soils that hold the moisture for a length of time are unfavorable, for young chicks must not get wet.



SOUTH ELEVATION

Fig. 1. Minnesota Mold-Two-Pan Stationary Brooder House

South elevation, showing ventilation and light obtained through two double hung windows with weights and two small windows hung as transoms. By this arrangement ventilation may be regulated for either very cold or very warm weather. Dimensions 16x29 feet.

May Be Either Stationary or Portable

Whether the house should be stationary or portable is worth considering. For the average farm flock, a portable colony house is most desirable since it can be moved to new ground each year. For the larger flocks, however, it is sometimes more satisfactory to use a larger stationary house with a wire sunporch to permit outdoor exercise during the first few weeks when heat is necessary. After this time the chicks can be moved to the clean range in range shelters made of wire netting or other material.

If a portable house is built, it should be provided with a double board floor and placed on skids. Permanent houses are best placed on a foundation and floored with concrete.

Yards and Runs Need Attention

Yards and runs can be freshened by turning the soil over and planting some quickly sprouting small grains—oats in summer, and rye or winter wheat in the fall for use the next spring. It is well to build light portable fences, those with wire attached to stakes that may be easily withdrawn from the soil. The fencing with attached stakes may be rolled up and a cultivator or plow may be used in the yards without obstruction. The line posts may be 2x2 inches, sharpened at the bot-

SPECIAL BROODER HOUSES ARE NEEDED

While poultry keepers often use all sorts of makeshift buildings in which to brood their young chicks, a building especially designed and constructed would be economically advantageous.

The makeshifts are usually so lightly constructed that they are cold unless an amount of fuel is provided that would be unnecessary in properly constructed buildings. This adds greatly to the expense and generally, also, to the losses by death because of uneven heat and poor ventilation. Vacant rooms, attics, and basements are frequently used without heated brooding devices. Any such condition must result in disaster. There is too little sunlight to develop healthy, strong bodies; the rooms are too large to be evenly and adequately heated with the equipment used; ventilation is lacking or uncontrolled; and an outdoor run with the benefits of direct sunlight cannot be or is not supplied.

A section of the laying house is sometimes used, and under certain attainable conditions is to be preferred to the places mentioned. There are objections, however, to this, principally because strict sanitary measures are neglected and the house is likely to be infested with vermin. The adult birds will be crowded into too small a space. If full advantage is taken of the capacity of the laying house for ten or twelve months in the year, there really is no room in it for chicks in the spring. On the other hand, there is a financial loss from restricting the number of winter layers in order that a part of the laying house may be used for the chicks. This alone is a sufficiently good reason for a building especially adapted to the brooding and rearing of chicks; and all other reasons are included in this one—it is better for the chicks and therefore better for the keeper, financially and otherwise.

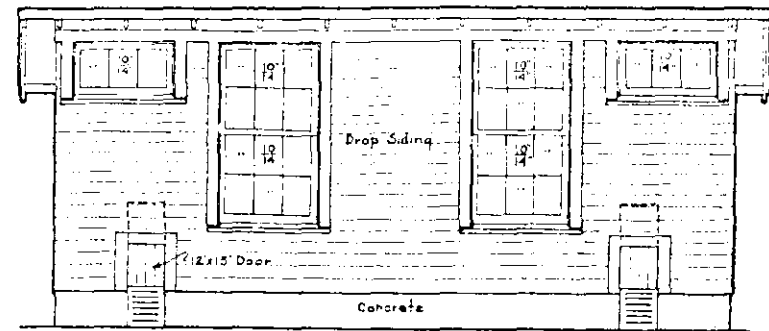
There are several devices for keeping chicks comfortably warm—the multiple hover system; the portable lamp-heated or electrically heated hover; and the large canopy-style hover, heated by electricity, oil, or coal.

The large increase in the number of oil- and coal-burning canopy hovers used in recent years has created a demand for a brooding house of a style and size adapted to these and to similar equipment. Fortunately, any building that is suitable for these brooding devices will serve well for any of the other devices mentioned except the continuous multiple-unit hover. When dimensions, insulation, ventilation, yards and other matters are considered, options may be exercised within certain limits.

House Must Face the South

Location should be the first consideration when contemplating the building of a brooder house. To get as long exposure to the sun's rays as possible, the house must face south. The desirability of constructing

a run on soil so dry that the chicks may be out most of the time is recognized by all. To this end a gentle southern slope is especially favorable and so is soil that is light enough so that water will leach through it readily. Heavy, cold soils that hold the moisture for a length of time are unfavorable, for young chicks must not get wet.



SOUTH ELEVATION

Fig. 1. Minnesota Model Two-Per. Stationary Brooder House

South elevation, showing ventilation and light obtained through two double-hung windows with weights and two small windows hung as transoms. By this arrangement ventilation may be regulated for either very cold or very warm weather. Dimensions 16x20 feet.

May Be Either Stationary or Portable

Whether the house should be stationary or portable is worth considering. For the average farm flock, a portable colony house is most desirable since it can be moved to new ground each year. For the larger flocks, however, it is sometimes more satisfactory to use a larger stationary house with a wire sunporch to permit outdoor exercise during the first few weeks when heat is necessary. After this time the chicks can be moved to the clean range in range shelters made of wire netting or other material.

If a portable house is built, it should be provided with a double board floor and placed on skids. Permanent houses are best placed on a foundation and floored with concrete.

Yards and Runs Need Attention

Yards and runs can be freshened by turning the soil over and planting some quickly sprouting small grains—oats in summer, and rye or winter wheat in the fall for use the next spring. It is well to build light portable fences, those with wire attached to stakes that may be easily withdrawn from the soil. The fencing with attached stakes may be rolled up and a cultivator or plow may be used in the yards without obstruction. The line posts may be 2x2 inches, sharpened at the bot-

tom like any stake and long enough to hold a 1-inch mesh poultry netting 6 feet wide. Long before the chicks are able to fly over such a fence, they will be ready for the range, and undoubtedly on it, and possibly a new brood installed in the brooder house. The end posts should be of stronger, heavier material and permanent, as it will not be necessary to move them to turn the soil. A common cedar post from 4 to 6 inches across the top, or small end, answers here.

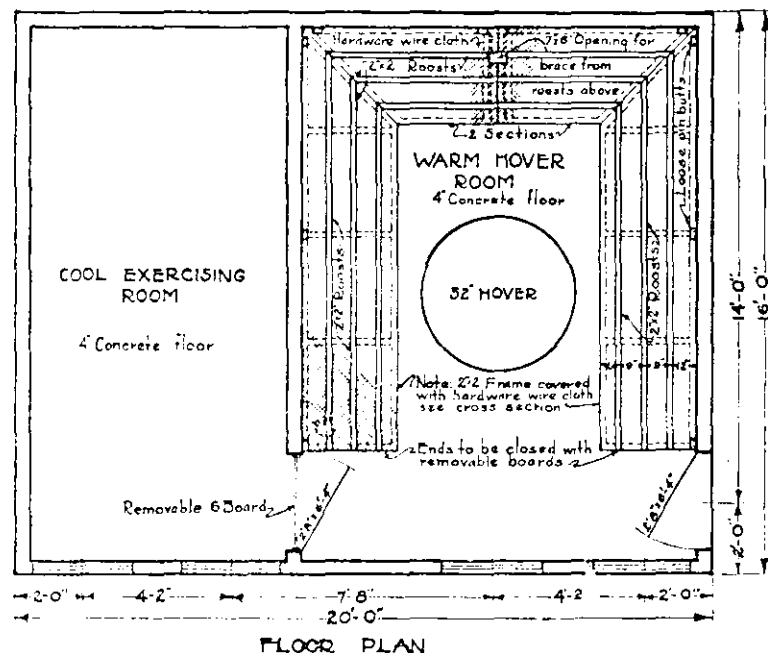


Fig. 2. Minnesota Model Two-Pen Stationary Brooder House

Floor plan, showing warm room with inclined screened roosting frames which prevent the smothering of chicks by crowding; also, cool exercise room. Dimensions 20x16 feet. For explanation, see page 5.

Size and Capacity Depend on Equipment

The dimensions must be considered with reference to the brooding device. In this case, we are considering what is known as the coal-burning colony or canopy-topped brooder that has a capacity of from 250 to 1,000 chicks. The width of the hover varies, but on the average is about 48 inches; the height of the stove from the floor is usually 2½ or 3 feet. Such devices are advertised to hover from 250 to 1,500 chicks, but it is well to discount the claims of manufacturers, especially if the operator has not had much experience. In most cases it would be well to divide the manufacturer's claim by two, at least. With experience,

it is safe to keep from 250 to 300 chicks in a 42-inch hover and from 500 to 600 in a 52-inch hover. For hovers of 500 capacity, the house should be 12x14 feet and it may be 12x16, 14x16, or 16x16 feet. A house of the last dimensions and a hover of 1,000 capacity could be used together, and probably to advantage, even tho only 500 chicks are accommodated. For a single unit, the shorter dimensions should be from east to west and the longer from north to south, as it is easier to ventilate and the chicks have a better chance to get out of the draft. If there is a very perceptible draft, many of the chicks are sure to die.

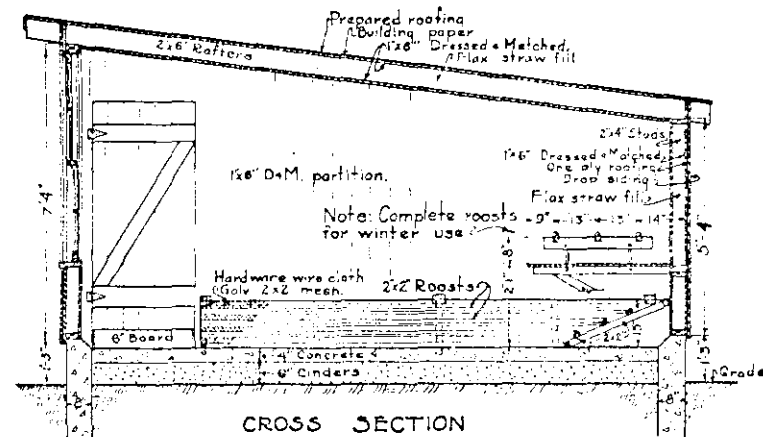


Fig. 3. Minnesota Model Two-Pen Stationary Brooder House

Cross section, showing the lower inclined screened roosting frames for the younger chicks and upper roosts and roosting platform for older chicks; also the construction of floors and double insulated walls and roof necessary for warmth of chicks hatched in early spring.

There are advantages in a two-pen brooding house that should not be overlooked. It provides for a moderately cool exercise room that accustoms the chicks to a temperature much below that of the room in which they are brooded and yet is warmer than outdoors. For early chicks this is advisable, because it is not safe to allow them in an outdoor run and because exercise in a cool room makes them sturdier and healthier than if kept in a warm room all the time. The outside dimensions for a two-pen brooder house should be 20x16 feet. The larger and heated room should be 12x16 feet and the cool exercise room 8x16 feet.

Floor Must Be Warm

For a portable house, the floor must be so constructed as to be warm and free from drafts so that the chicks will not be chilled. Two thicknesses of matched boards laid crosswise are desirable, with one-ply

roofing paper between and overlapped and fastened to the lower course of boards. Both the upper and the lower floor should be well fitted to the side walls. For a stationary house, a concrete floor is best because of the necessity of frequent cleaning. As usually constructed, concrete floors are hard, cold, and damp. To correct these evils, concrete floors should be laid above crushed rock or cinders and covered with a litter of sand or gravel.

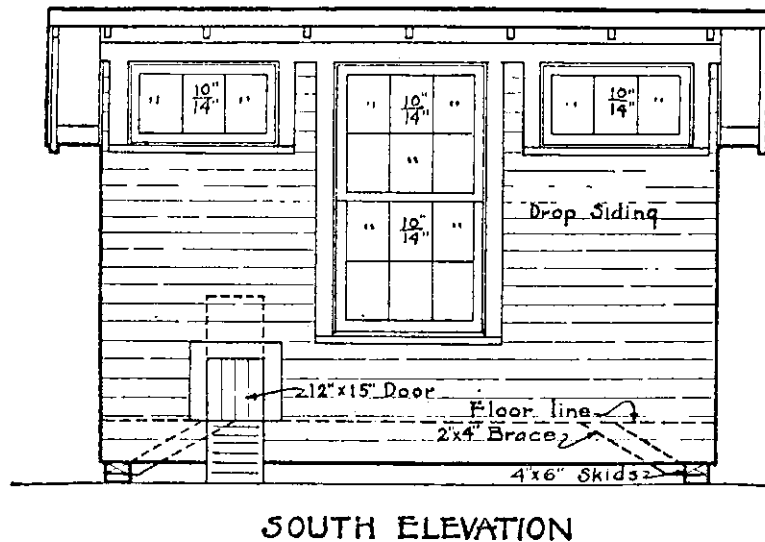


Fig. 4. Minnesota Model One-Pen Portable Brooder House

South elevation, showing light and ventilation obtained through one double hung window with weights and two small three-light windows hung as transoms. By this arrangement ventilation may be regulated for both extremes of weather. Dimensions 12x14 feet.

Litter of Straw and Sand Should Cover Floor

All hard floors should be covered with a layer of fine, clean sand, more or less heavy according to the frequency of removal, and with this a litter of fine-cut straw or an equivalent. The age or size of the chicks should determine the amount of litter—the larger the chick, the more litter. Add the cut straw gradually; do not use so much that the chicks cannot lift it or scratch it about.

Walls Should Be Tight

The walls must be so tightly constructed that there is no possible chance of a cross-draft, and all the ventilation must come from one direction. The least cross-draft causes trouble of various kinds—colds in the head, bowel chills—and troubles of this nature always mean heavy

mortality. The walls should also be warm and may be more or less insulated according to conditions. As a rule, the more insulation, the less coal required. If you insulate well, the fuel bill will be less; if you do not insulate well, the fuel bill will be more and the insulation cost less. On the other hand, the more insulation used the heavier the house will be. If ample provision for moving the brooder house is available, the best possible insulation is, in the long run, most economical. But if the soil or the lay of the land makes moving difficult, or if the building must be moved with horses, it is better to use the lighter type of wall construction and run the risk of a slightly increased fuel bill. With any construction, the outside wall should be of matched boards on the outside of the studs, and if the house is not to be ceiled, these boards should be laid up and down for durability and for economy of time when spraying with disinfectants and insecticides. Outside of this, a good-quality building paper or roofing paper is desirable, and, in general, the more the better—two thicknesses is considered good insulation.

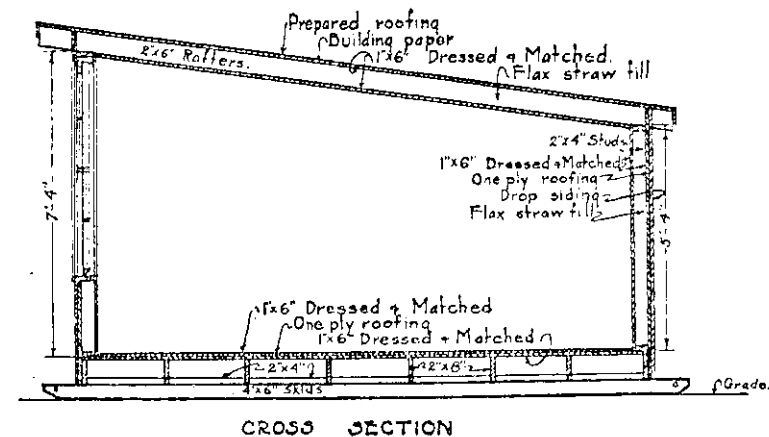


Fig. 5. Minnesota Model One-Pen Portable Brooder House

Cross section, showing floor construction resting on skids, and double insulated walls and roof, advisable for early chicks. This type of wall construction greatly increases the weight and should be used only in case ample provision for moving is available. Dimensions 12x14 feet.

Outside of the building paper, drop-siding, lap-siding, or shingles may be used. For early chicks, more insulation will be beneficial. If a standard insulating plaster base is used, applying a thin coat of fine plaster will give satisfactory results. If lumber is preferred, cover the studs with roofing paper well lapped; then put on matched and dressed lumber for sheathing. This should run vertically for reasons given above. Some walls are insulated by using some such construction as mentioned above, and others by covering the outside of the studs with

roofing paper, well lapped, and drop-siding, and the inside with roofing paper and dressed and matched stock laid vertically. Because of the circulation between the studs, walls constructed in this manner are not as warm as desirable. To prevent circulation, often the space between the studs is filled with sawdust, planer shavings, or flax straw. Because of the condensation of moisture, the sawdust will sooner or later deteriorate and decay at the base, causing the lumber to decay. Of the three, flax straw seems to be the best. There are several kinds of insulation that may be laid between the studs, but they must be covered by sheathing. The amount of insulation required depends somewhat upon the season at which chicks are to be hatched; that is, more insulation is necessary if the first chicks are hatched in March than if they are hatched in April. In some cases in the colony house this warmer type of wall insulation has to be sacrificed in order to keep the house movable. If the chicks are not hatched until the middle of April or later, one course of matched boards and one or two layers of building or roofing paper, with drop-siding on the outside, would be ample. On the other hand, if it is desirable to hatch chicks in March, more insulation is necessary; otherwise the coal bill will be much more.

Roof Should Be Well Insulated

The roof should be constructed to hold the heat. Much heat will escape through a loosely constructed roof, because hot air rises rapidly. Roof boards should be matched, smooth lumber. These should be covered with building paper and then with roofing, 3-ply being desirable. If chicks are to be hatched in March or early April, it is advisable for purposes of economy to ceil the roof with matched lumber and fill the space between the rafters with straw, closely packed, flax straw being preferred.

Sunlight Is a Vital Need

Sunlight is vital in the rearing of chicks. Because of inadequate natural light, chicks grow slowly and many die. It is essential to build so that the floor of the coop will be flooded with sunshine on sunny days, and so that the house will not be too cold on cloudy days and during the night. Consequently a happy medium must be attained. This means that about $\frac{1}{4}$ of the south elevation should be of glass, but to prevent overheating at times, ample ventilation must be provided and this is most easily and cheaply done by making the glass movable. The most satisfactory way is to use double-sash, 12-light windows hung on weights and pulleys as house windows are hung. Do not allow the contractor to substitute home-made frames in which there are no pulleys or to substitute spring catches or hinges for weights and pulleys. They

will cost less but not enough less to make up for the inconvenience. The spring window-bolt arrangement often does not work easily and is certain to get out of order sooner or later to the extent that it will not be used. The result is that the windows are not adjusted for proper ventilation. They will often be left stationary, at times causing drafts, while at other times causing the house to become over-heated. Unless properly constructed for ventilation, a brooder house will become too hot in the middle of a bright sunny day, especially late in the season. Adequate means of ventilation should therefore be provided. This may be simple and cost little beyond the first expense. In

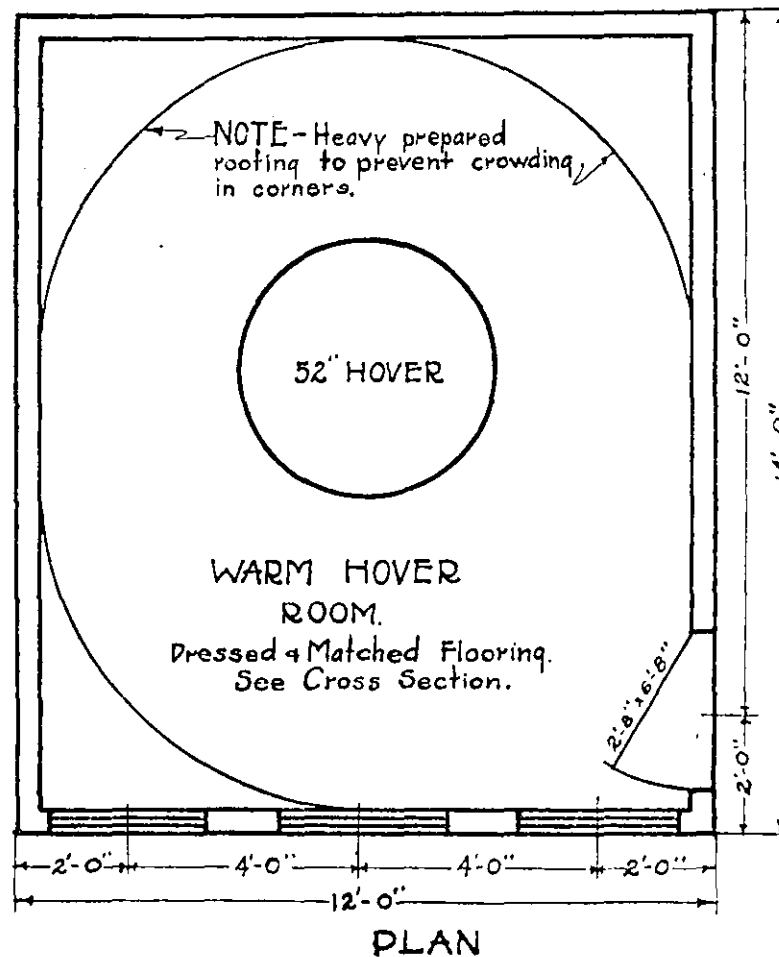


Fig. 6. Minnesota Model Single-Pen Brooder House

Floor plan, showing simple arrangement to prevent crowding and smothering the chicks. One-inch mesh poultry netting can be used instead of roofing paper. Dimensions 12x14 feet.

a house 12x14 feet, one double-sash window with 12 lights and 10x14 inch panes should be installed, with a transom made of a 3-pane cellar-window sash 10x14 inches, in the east and west upper corners of the south side, as near the plate as the construction will permit. These may be equipped with transom rods or, for simpler construction, attach a loop chain 8 to 12 inches long to the studding and catch it over a small right-angle hook placed in the adjacent upper corner of the window sash. With this the window can be opened any distance, depending upon conditions of wind and weather. An open window admits direct sunlight which is beneficial to the chicks if temperature can be maintained and drafts prevented.

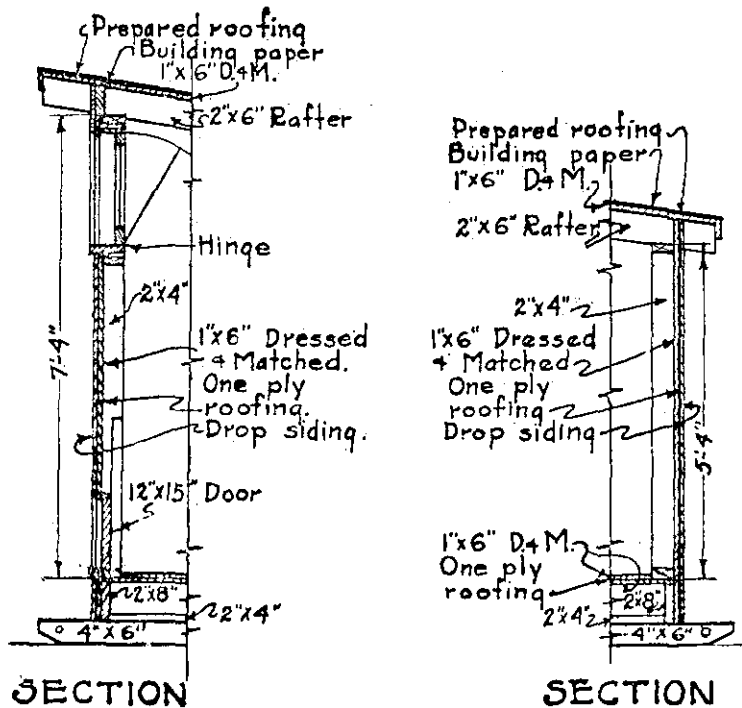


Fig. 7. Minnesota Model Brooder House

Section of south and north walls, showing construction of single walls consisting of two courses of lumber with building paper between, which is ample insulation for use after April 1.

Door Should Be Large

The door should be large enough to admit a person with baskets or boxes for the necessary cleaning operations. It should open in, and to prevent injury to the chicks, should swing about eight inches above the floor level. Brooder houses, whether portable or stationary, should

not be set too high above the outside ground level on the south, as it will be difficult or impossible for the chicks to use them if the inclined runs are too steep.

Yards Are a Great Help

A yard in which the chicks can be confined for at least the first two or three weeks is a great help in getting them into the house easily during a storm. It also protects the chicks from animals and keeps them out of the wet grass in the mornings. The yard or yards should be on the south to get the benefit of the sun, and if protected from winds by other buildings, trees, or shrubs, so much the better, as the chicks may be out many days when otherwise they could not. The brooder house itself will afford considerable protection from the north.

Arrangement Should Be Studied

A one-room brooder house provides the greatest comfort if the brooder stove is placed somewhat back of the center. This allows the chicks to choose the temperature they prefer, enabling them to get away from the stove if they wish; also, farther from the open windows.

Portable Furnishings Desirable

Much time can be saved if the furnishings are arranged so that the necessary changes can be made with a minimum of effort as the chicks develop.

To protect the chicks from a draft and to keep them from going too far from the stove during the first two weeks, provide a roll of 1-inch mesh chicken netting to be set up around the stove 15 to 18 inches from the edge of the hover. The circle can be enlarged as the chicks outgrow the need of a small one.

The corners of the house should be rounded off by a light frame of 2x2 inch strips covered with hardware cloth, inclined at an angle of about 30 degrees, to prevent chicks crowding into the corners, in which case some are too warm or perhaps are smothered. Whatever material is used, it should be brought close into the corner at the top so that chicks cannot fly over behind it and smother. The open ends should also be enclosed to keep the chicks out from under the frame or boards.

Two sets of roosts are placed at different levels, the top of the lower set being about 12 inches from the floor. These are placed on the inclined frames that hold the hardware cloth. The chicks at first use the lower roosts but eventually give the upper ones the preference. The lower roosts are used until the chicks are about eight weeks old, when they may be removed by simply drawing the pins from the hinges. The

upper roosts may be 2½ or 3 feet from the floor and may rest on cleats nailed to the end walls at the desired height. These roosts may be 2x4's, allowing the chicks to roost on the wide side first. As they grow older they will prefer the narrow edge. The 2x4's should be placed on three sides of the house and the corners and edges of the roosts should be somewhat rounded off with a plane. Notches cut in the cleats make it possible to place the roosts in either position.

Feeders for the very small chicks can be made cheaply from 4-inch boards, with strips of lath nailed to the sides and ends to form a flat trough. A strip of lath running from end to end on top of the trough and supported by two nails in each end of the trough keeps the chicks from wasting feed and is easy to remove when cleaning and filling the feeders. Larger feeders of the same kind may be used later.

If hanging feeders and fountains are used, it is a good plan to place round-headed screws in the studding at various heights so that the feeders can be raised to correspond with the changing needs of the chicks. After two or three days the feeders can be raised 2 inches off the floor, and as the chicks grow, enough higher to keep the feed and litter clean.

Many persons find that portable partitions running out from the brooder stove to separate the chicks into lots of about 100 during the first 10 days are a great help in preventing the spread of disease.

Special Bulletin 83 describes the care and management of chicks artificially reared, and will be sent on application to the Bulletin Department, University Farm, St. Paul, Minn.