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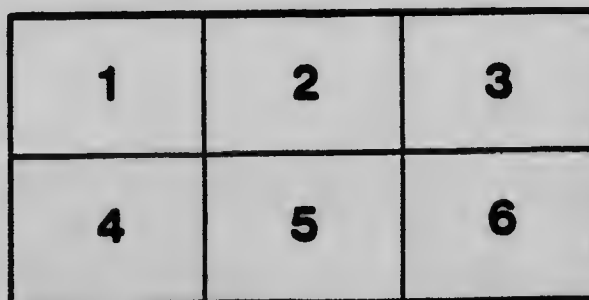
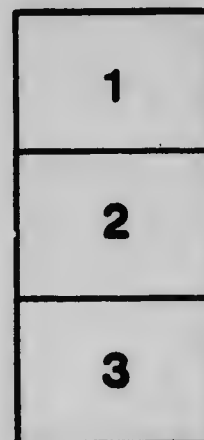
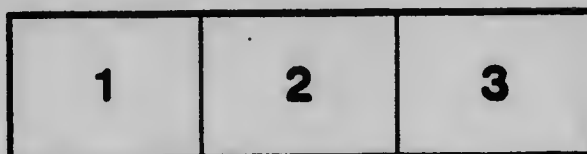
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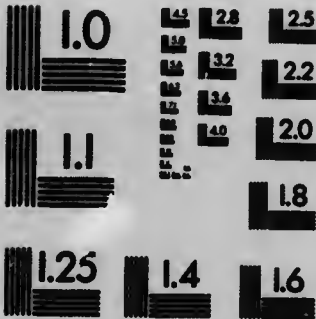
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PROVINCE OF BRITISH COLUMBIA

2/ DEPARTMENT OF AGRICULTURE
(LIVE STOCK BRANCH)

4/ POULTRY-HOUSE CONSTRUCTION

3/ BULLETIN No. 63
(THIRD EDITION)



PRINTED BY
AUTHORITY OF THE LEGISLATIVE ASSEMBLY.

VICTORIA, B.C.:
Printed by WILLIAM H. COLLIN, Printer to the King's Most Excellent Majesty.
1920.

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DEPARTMENT OF AGRICULTURE,
VICTORIA, B.C., November 9th, 1920.

*To Col. the Hon. Edward Gawler Prior,
Lieutenant-Governor of the Province of British Columbia.*

MAY IT PLEASE YOUR HONOUR:

I have the honour to submit herewith for your consideration Bulletin No. 63 (3rd Edition), on "Poultry-house Construction," revised by the Poultry Division, under the direction of Dr. D. Warnock, Deputy Minister of Agriculture.

I have the honour to be,

Sir,

Your obedient servant,

E. D. BARROW,
Minister of Agriculture.

DEPARTMENT OF AGRICULTURE,

VICTORIA, B.C., November 9th, 1920.

Hon. W. D. Barrow,

Minister of Agriculture,

Victoria, B.C.

Sir,—I have the honour to submit herewith for your approval the 3rd edition of Bulletin No. 63, entitled "Poultry-house Construction," compiled by H. E. Upton, formerly Poultry Instructor.

In view of the rapid increase in the poultry industry throughout the Province, there is no doubt that the bulletin will be of material assistance to all engaged therein.

I have the honour to be,

Sir,

Your obedient servant,

D. WARNOCK, V.S., O.B.E.,

Deputy Minister of Agriculture.



Shed-roof colony houses in operation on Iain Island. The shed-roof houses should be built the same dimensions as the combination-patch houses.

PROVINCE OF BRITISH COLUMBIA.

DEPARTMENT OF AGRICULTURE.

(LIVE STOCK BRANCH.)

HON. E. D. BARROW,
Minister of Agriculture.

D. WARNOCK, V.S., O.B.E.
Deputy Minister of Agriculture.

W. T. McDONALD, B.S.A., M.S.A.
Live Stock Commissioner.

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Chief Poultry Instructor.

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Chief Soil and Crop Instructor.

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B. R. ILSLEY, V.S.,
Assistant Veterinary Inspector.

WM. J. BONAVIA,
Secretary to the Department.

POULTRY-HOUSE CONSTRUCTION.

By H. E. UPTON, Assoc.O.A.C., FORMERLY POULTRY INSTRUCTOR.

INTRODUCTION.



HERE are many essentials relating to the housing of poultry, quite a number of which apply only to certain parts of the Province. The plans oftentimes followed are either too mechanical or not applicable to all localities in the Province. Some have built houses which show that the first essential of housing poultry was not thoroughly known or given attention to before building. It is the intention of the writer to mention what should be done in order to get the best results from housing in all districts of the Province.

The most economical way to secure cheap winter egg production is by the continuous system of housing; that the stock be hatched at the proper time, which means from the 15th day of March to the 15th day of May in most any part of



The frames of houses may be made from trees about 3 inches in diameter. The above shows a Tolman house in the course of construction.

British Columbia; that the poultryman possesses a good knowledge of feeding his stock in order to secure good egg production and at the same time not force them; that the stock be of a strain which is not susceptible to any harsh climatic change that may occur in any part of the Province; and, further, that the stock has been given every chance to progress without any set-back from lice, mites, or disease. Unless these essentials have been attended to properly, one must not expect good, profitable egg production in any type of poultry-house.

POULTRY-HOUSE ESSENTIALS.

The house itself should be constructed as cheaply as possible, yet it must be convenient and provide a comfortable temperature—a degree of temperature in which a man could work on the coldest day of winter and yet not feel the cold too much. It must be airy, so that if any moisture should gather and form a frost on the walls or roof of the house at night it may become thoroughly dried out during the day. As much fresh air as possible should be allowed in the house at all times. It should always be kept in a sanitary condition. Droppings-boards should not be placed in the house unless the owner will clean them often.



Good poultry-houses can be made from the virgin forest.

THE SITE OF THE HOUSE.

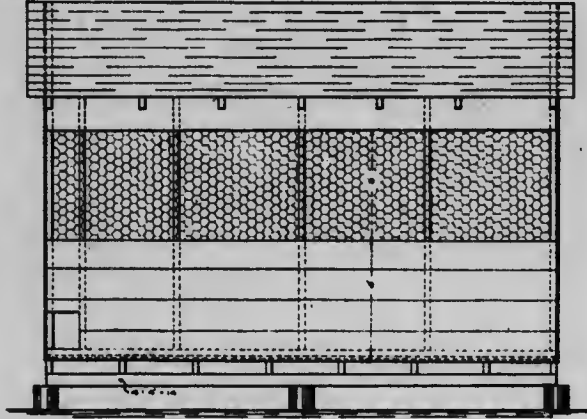
Do not build the house in a deep hollow, where the early morning sun will be shut out, nor on poorly drained soil. The house should be well sheltered from prevailing winds. Trees on the north form a good shelter.



A plant situated on a western slope at Koksilah.

CONSTRUCTION OF THE HOUSE.

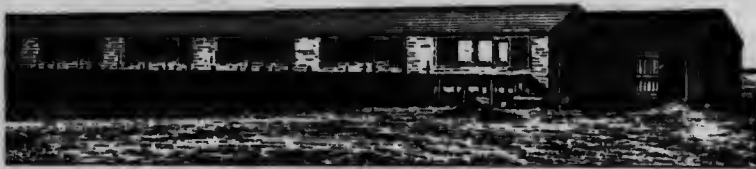
There are many flocks which do exceptionally well in practically all types and sizes of houses, but for commercial work one desires a house which is cheap, practical, and convenient. One sees instances where flocks of 200 birds do as well as flocks of twenty; so, therefore, it is hard to lay down a hard-and-fast rule as regards the sizes of pens or numbers to be housed in the flock. For a general laying-house we may say that a house built 14, 16, or 18 feet deep, according to the districts (the colder the district, the deeper the house), 4 feet 6 inches at the back, 8 feet (or 9 feet in a house 18 to 22 feet deep) in the highest point of the gable, and 6 feet 6 inches in front, making what is termed a "combination roof," will give good success in any part of the Province. This house may be made in any length, and may be divided in pens to accommodate any number of birds the owner wishes to house. The front wall is solid board 1 foot down from the roof. Then there is a 3-foot wire opening extending within $1\frac{1}{2}$ feet of each end of the pen or house, whichever the case may be. Over this opening is built a frame curtain on hinges which will swing up snugly against the roof, and built so that it will fit snugly against the opening when closed over it to keep out the rain or snow. (See cut of front



FRONT ELEVATION

Front section of one pen of the combination-pitch house, 14 feet long. In all districts where the temperature drops below 8° Fahr. we would advise $1\frac{1}{2}$ feet of board at either end of opening in place of open front.

elevation.) For the distance beyond the opening in each pen one may substitute some glass instead of wood, as shown in the cut below, which will work to good advantage.



To show the glass arrangement in place of all wood.

The floor should be double-boarded. In the colder parts of the Province we advise not only breaking the joints, but laying one thickness of building-paper between the floors.

FOUNDATIONS.

There are many ideas relating to the correct foundation for a long continuous house, but there is no set rule to go by. An air-space is desirable under the floor to prevent rotting of the floor-timbers and the floor itself. If a house be built so that the floor-timbers are placed upon boulders at the ends and at short spaces between, or on 4-foot posts set 6 feet apart, with 8 or 10 inches above the ground, there would be a good circulation under the house in warm weather. In winter one can bank up around the house to keep the cold air from blowing under by ploughing a single furrow, throwing the dirt against the house. Although a little extra labour is involved in this method, the dirt banked against the house can be taken from the immediate back. In this way a ditch is formed which will carry the water away as it runs off the roof.

A foundation of cement is strong and more durable than any other if constructed properly. When building a cement foundation it is advisable to dig a trench from 15 to 20 inches in depth directly under where the walls of the house are to be.



It is necessary to keep the house on a level plane. We would suggest the hire of a team, man, and scoop shovel for a day in such an instance to take the dirt from the slope and level the same to a certain extent.

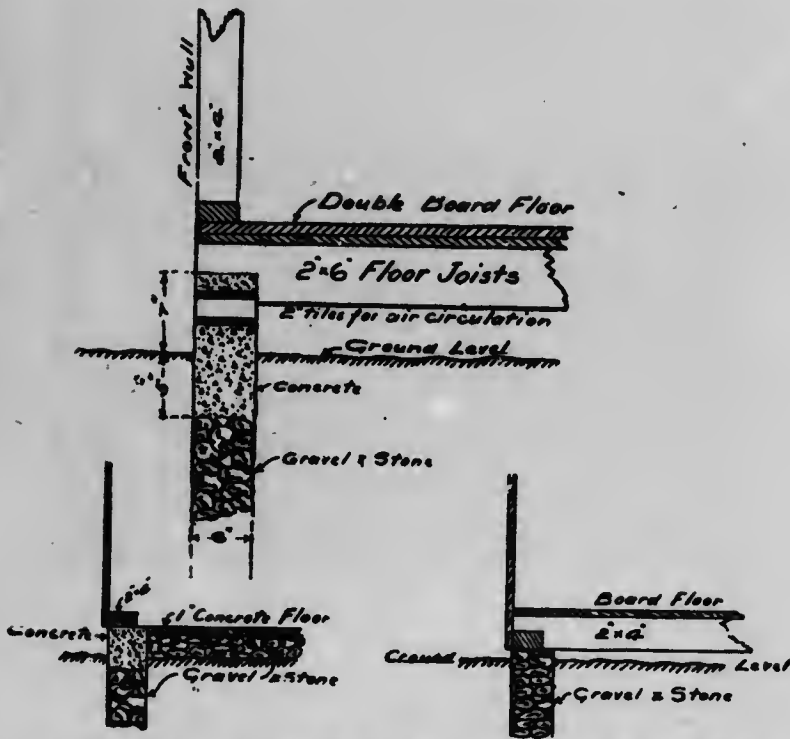
The ditch should then be filled with coarse gravel to about 5 inches from the ground-level. Then construct the cement wall 6 or 8 inches thick to a level of 4 or 6 inches above the highest point of the ground-level on a level plane.

The material should be well mixed in proportions of 1 part cement, 3 parts sand, and 5 parts coarse gravel, to withstand the weight of the building. Tiles may be placed in the concrete on the south side between the ground-level and the floor to allow air-circulation and thus prevent the floor-timbers from rotting.

THE FLOORS.

A good floor must be one which is dry and durable, with a good hard surface. If of earth, it must be well drained; if of cement, the surface under the same must be well drained to prevent the dampness from coming up through the cement and affecting the birds. A damp floor will cause rheumatism in fowls. It must also be rat-proof.

It is advisable to lay tiles under and around the house, unless on a very sandy soil, or when the house is on an elevation well protected from winds. A cold, dry house can be more easily operated than a wet, damp house, which is undesirable.



Upper: A correct foundation for a poultry-house. Notice the tiles, which should be placed every 3 feet for air-circulation. Lower left: A correct foundation for houses with cement floors. Lower right: A poor foundation for a board-floor house.

A house built with an earth floor should be well drained, and the soil of a nature which will not pat down and draw dampness by capillary action, which would act as a drain on the soil surrounding the house. An earth floor can never give the same results when litter is placed thereon as will the board floor.

The board floor is thought to be expensive, from the fact that matched lumber or shiplap is usually used. When the floor is constructed by breaking the joints

and a layer of builders' paper laid between the two floors, it is no more expensive than the cement, and chances of success are as great or greater. Dampness can be more easily overcome by using a board floor with air-circulation underneath than by the cement or earth floor. Neither is there the danger of heaving by frost, or cracking, as with the cement floor.

THE WALLS.

Walls must be so constructed as to provide warmth, dryness, and strength for the house. They should be free from cracks and crevices to prevent mites and lice from accumulating in numbers, hence being easily cleaned and disinfected.



Showing a poorly constructed wall. Openings such as are shown in this cut allow too many draughts.

If a wall is made of single boards tightly fitted and covered with a good roofing-paper, there will be little need of boarding the back wall inside. There is one exception to this statement, and that is, in a climate which is damp or where the temperature goes below zero for any length of time.

When laying roofing-paper, always make the laps tight; have them well lapped over and thoroughly cemented together. Rather than use batten, we would suggest the double-boarding or boarding inside the plates and uprights on the north side of the house.

THE ROOF.

The roof in a house should be high enough to allow plenty of air-circulation and also ease of working. Single-boarded and tightly covered with good roofing-paper, shakes, or shingles is all that is required for a roof in a successful house. Shingle roofs should be one-third pitch, but roofing-paper will be satisfactory with almost no pitch.

A shed roof does not require tie-beams, but with the combination pitch it is desirable to use them on account of the weight of the roof, especially when covered with snow.

The boards on the roof should be brought together. In many instances dampness in the house is caused by allowing spaces between the boards. The heat of the fowls tends to draw the dampness through the two thicknesses of shingles, whilst the tight boarding helps to prevent this. We would further suggest that the roosting-quarters be sheathed on the inside of the house in the more damp sections of the Province.



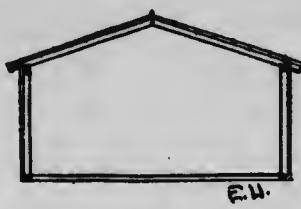
Showing a well-built wall. Notice the paper is well cemented.

The same amount of material is required for either the shed, gable, or combination-pitch type if the pitch and floor-plan are similar. Unless an alleyway and straw-loft is desired, one should not build the gable roof. The shed roof requires extra lumber to build nearly 6 feet higher in front than the combination-pitch type.

Types of Roofs.



1. Shed roof.



2. Gable roof.



3. Combination roof.

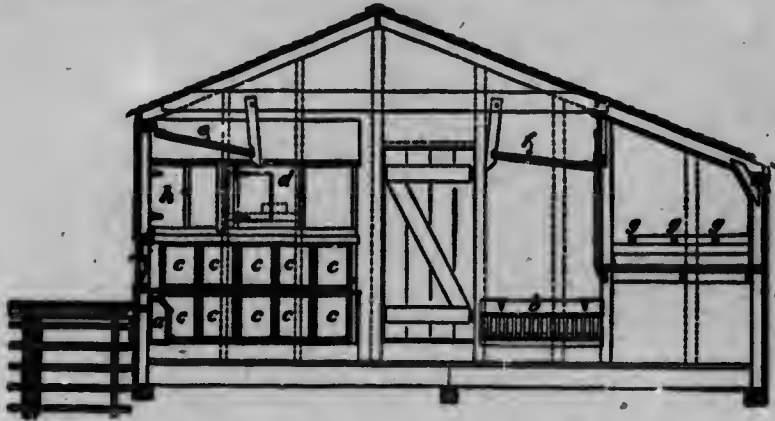


4. Semi-monitor roof.

WINDOWS AND OPENINGS.

As all poultry-breeders advocate to-day, the more fresh air we can allow in the house, the better results are to be obtained from the stock. The chief objection to

be raised is from the fact that the openings often embrace the whole of the front of the house, or the opening embraces the upper half of the front and the lower half is of solid boards. A good arrangement of glass and opening for curtain is shown in the cut on page 9. The following cut shows a good arrangement of the amount of glass, openings, curtains, and interior arrangements in a pen of a continuous house.



To show tie beams in combination-pitch house. *b*, feed-hopper; *c*, nests; *d*, coop for extra males; *a*, place for eggs; *e*, curtain; *f*, roost curtain (not needed); *g*, roosts.

PARTITIONS.

We have found quite frequently that ranchers have more or less trouble with colds amongst their stock. Though not always the case, we might state that oftentimes this trouble is due to the fact that there is too much frontage to a pen or pens in the house in comparison to the depth of the house.

A house that is built 14 feet in depth should not have pens over 14 feet in length, unless there is a good wind-break near the roosts, or, say, covering the back half of the pen, running from back to front of house.

Partitions should be tight at the back half of the house. If the builder does not desire to make the front half of the partition of solid board, a good heavy cloth could be used as a substitute. The strong objections to cloth are that it is less durable and collects dust very quickly.

Another suggestion might be that boards be used to the height of 2½ feet from the floor up, with the exception of the roosting part of the house, and cloth be used to fill up the remaining distance.

DOORS.

The best place for doors seems to be in the centre of the partitions all through the house. All doors should be raised above the floor 6 inches, so that the bottom will clear the litter. A 5-inch piece of inch board may be nailed permanently under the door.

The doors should be hung evenly on hinges which are durable. A cheap hinge is an expensive nuisance when once it gets out of working order.

A good serviceable door is one which will allow ample room for the attendant to walk through with a pail in his hand. The writer prefers a single to a double door, except in cases where a trolley-car is to be used in the house.

The interior doors should swing both ways rather than one, and when once shut should be secured firmly. Continual swinging of doors means a draught, which one desires to overcome.

ROOSTS.

All interior fixtures of the house should be portable. The perches should be in the warmer part of the house, where no draughts can strike the stock, yet allowing them plenty of fresh air. They should run from east to west inside the back wall of the house.

Perches may be made from trees of 3 inches in diameter, or by nailing 2 x 4 joists. The edges should be skived down evenly, then placed narrow edge up, and always built on the same level.

The general working rule for roost-room is 6 to 8 inches per bird, and the perches placed 12 to 15 inches apart, having the first perch 15 inches from the back of the house.



A poor open-front arrangement, showing too much wood and glass.

DROPPINGS PLATFORMS.

Drop-boards should not be used if the poultryman cannot give them the attention required. It is better that a 12-inch piece of rough lumber be nailed across the back of the pen far enough out from the back wall to catch all the droppings. An absorbent, such as loam, sand, or slaked lime, should be used in this method to keep the house from smelling badly.

In constructing the platforms the boards should be laid from the back towards the front of the house, rather than from wall to wall, to allow of easy cleaning.

Many prefer building the drop-boards with a pitch to the front, instead of on the level plane, with a piece of 1 x 3 inch nailed edge along the front to keep the droppings from falling in the litter. An opening is allowed every 4 feet measuring

3 x 8 inches through which the droppings fall into a box as they are scraped from the boards. This does away with holding the box or basket continually while scraping the boards.



Cut showing Tolman open-front arrangement.

NESTS.

Many houses about the Province have nests constructed on the front wall of the house. Though little trouble is given as a rule, there is danger of germination and too great evaporation in the egg itself, while the nests become too warm to be comfortable for the layer. One must cater to the needs and likes of the stock in order to secure all possible profits from them.

A strong objection is also made against placing nests under the drop-boards. Lice, mites, etc., are always more prevalent in this part of the pen. If nests be placed here, they should be high enough from the floor so the stock will not lay on the floor in corners. They should also be near the front edge of the drop-boards, and should be portable, removing and cleaning them often.

Perhaps the most desirable place to locate the nests is shown in the cut detailing the inside arrangement of a commercial poultry-house. Orange or apple boxes may be made to fit in a cabinet, as is shown in the same cut.

Nests should be 12 to 15 inches high, 14 inches wide, and, if single, at least 15 inches deep, thus being spacious and airy. They should also be dark, and the bottom well covered with dry litter.

About the best litter to use is a fine, dry straw. If eggs are broken in the nest, the nesting material should be replenished at once.

Trap-nests may be used, but they are not a strictly commercial proposition.



When building, nail on wire, then lay last board over same to hold in place.



A 12-inch board (1 x 12 inches) at the top of the opening would be of service to keep the temperature more even inside.



A continuous open-frost house. The seeds are below the opening of frost and bread-crops above. Heat is a bad factor for bread-crops as well as seeds.

TRAP-NESTS.

The trap-nest system of poultry-breeding is one which gives the best black and white results. Owing to the great amount of time involved in this system, it lies with the poultryman himself whether he trap-nests his stock or not. If one does not care to trap-nest all his stock, some advantage will accrue from trap-nesting some of the April-hatched stock that matured nicely. In this way only a small amount of time will be required, yet in time the poultryman can advertise pedigree trap-nested stock which will be all he claims for it. One will also find, by using males from the trap-nested hens, that in a few generations a good strain of layers can be built up.

In all the experimental work done by experiment stations use is made of trap-nests.

The cuts and dimensions of the latest nest, which was devised by the Maine Experiment Station, show an excellent double-compartment nest.



This shows a good interior arrangement for a commercial poultry-house.

The features of superiority of this nest over the old types used there, as also of the coop type of nest, are: Firstly, certainty of operation; secondly, more simplicity in construction and less tendency to get out of order; thirdly, saving of labour in resetting the nest.

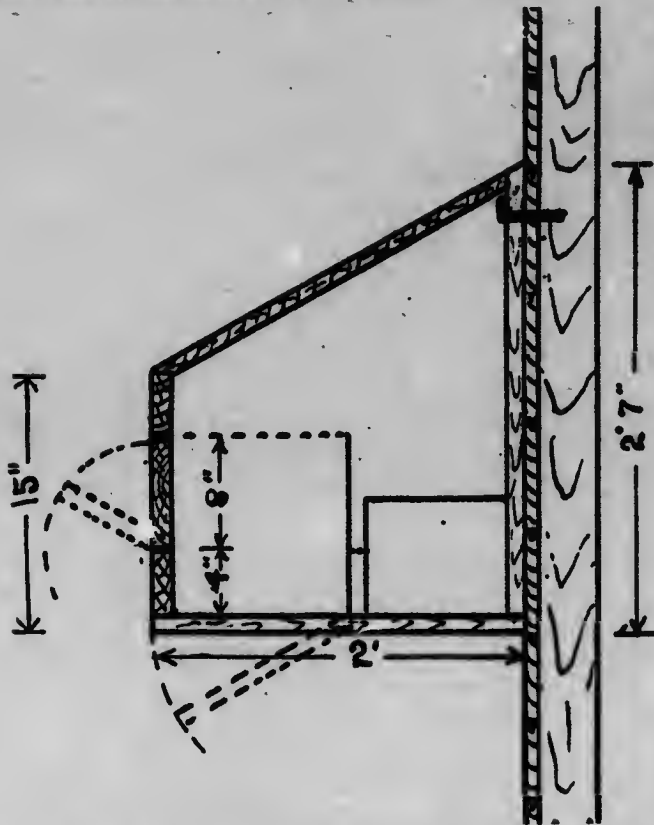
The nest is a box-like structure without front end of cover, 28 inches long, 13 inches wide, and 16 inches deep, inside measure. A straight board partition extending up a few inches from the floor of the nest, 12 inches from the back and 15 inches from the front, divides the nest in two compartments.

The front portion of the nest has no fixed bottom. Instead there is the movable bottom or treadle, which is hinged at the back end of the front half, as shown in the cut. To this treadle is hinged the door of the nest. The cut gives very detailed dimensions.

When the nest is open the door extends horizontally in front. In this position the side strips of the door rest on a strip of beech $1\frac{1}{4}$ inches wide, bevelled on the inner corner, which extends across the front of the nest. This beech strip is nailed to the top of a board 4 inches wide, which forms the front of the nest-box proper. To the bottom of this is nailed a strip 2 inches wide, into which are set two 4-inch spikes from which the heads have been cut. The treadle rests on these spikes when the nest is closed. The hinges used in fastening the treadle and door are narrow 3-inch galvanized butts with brass pins, made to work very easily. It is necessary to use hinges which will not rust.

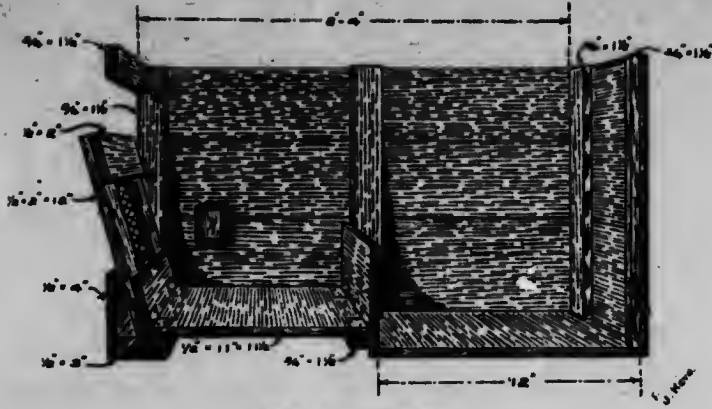
When the hen about to lay steps up on the door and walks in towards the dark at the back of the nest, she passes the point where the door is hinged to the treadle, and her weight on the treadle causes it to drop. This at the same time pulls the door up behind her. It is then impossible for the hen to get out of the nest till the attendant lifts door and treadle and resets it.

The nest is very simple. It has no locks or triggers to get out of order. Yet by proper balancing of door and treadle it can be so delicately adjusted that a weight of less than half a pound on the treadle will spring the trap. All bearing surfaces are made of beech because of the well-known property of this wood to take on a highly polished surface with wear. The nests in use at the Maine Station have the floors of hardwood in order to get greater durability. Where trap-nests are constantly in use poor construction is not economical in the long run. For temporary use the door could be constructed of soft wood.

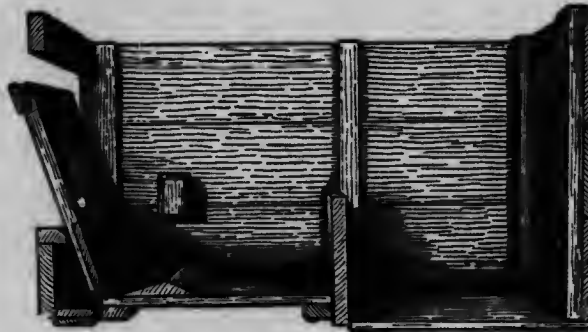


An excellent type of nest. These nests are hung on the wall and may be removed for cleaning. This type of nest is dark, the bird entering from the rear and the door in front being opened to remove the eggs.

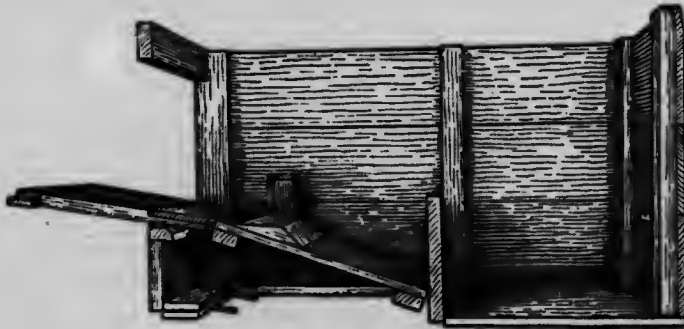
The trap-nests are not made with covers because they are used in tiers and slide in and out like drawers. Four nests in a pen accommodate fifteen hens by attendant going through the pens once an hour, or a little oftener, during that part of the day when the hens are busiest. The hens must all have leg-bands in order to identify them; a number of different kinds can be purchased in the larger towns of the Province. The double box with the nest in the rear is an advantage. When a hen



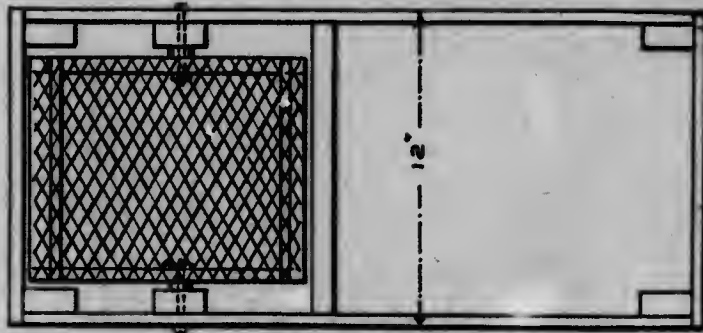
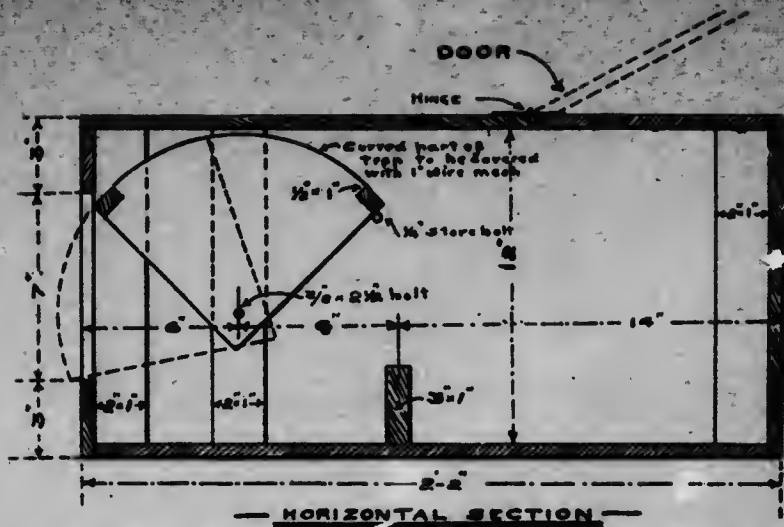
Maine State trap-nest.



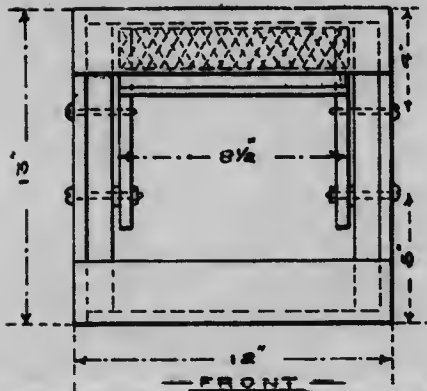
Showing nest closed.



Showing nest open.



J. KEYS



Morgan trap-nest. The hoop form of trap is desired by many.

has laid an egg and desires to leave the nest, she steps out into the front space and remains there until she is released. With only one section she would be likely to crush her egg by stepping on it, and thus learn the pernicious habit of egg-eating.

To remove a hen the nest is pulled part way out, and as it has no cover she is readily caught, the number on her leg-band noted, and the proper entry made on the record sheet. After having been taken off a few times the hens do not object to being handled, most of them remaining quiet, apparently expecting to be picked up. Trap-nests were used at the Maine Station for Leghorns, Brahmas, Wyandottes, and Plymouth Rocks.

MATERIAL FOR MAINE STATE TRAP-NEST.

For sides, four pieces 8-inch shiplap 2 feet 4 inches long.

For back, two pieces 8-inch shiplap 14 inches long.

For bottom, trap, etc., one piece 8-inch shiplap 8 feet long.

For corner pieces, one piece rough lumber 34 x 1½ inches, 10 feet long.

Approximately 20 feet of lumber, say\$0 50

Two pair hinges 50

Approximate cost of material\$1 00

A single-compartment trap-nest, the origin of which is not exactly known to the writer, is in vogue on several of our poultry-ranches. This nest is giving good satis-



The single-compartment trap-nest may be made in tier form.

faction in several parts of the United States and Canada. One man near Victoria is using this form of trap-nest by adjusting the buttons on the ordinary 30-dozen egg-case, making two trap-nests from the case, thus having a very cheap nest.

The nest should be built 15 inches in height, 14 inches deep, and 12 inches wide. It may be built singly or in a tier form like that shown in the following cut. In the same cut the nest in the upper left-hand corner is closed, representing a hen laying inside. The one on the right shows the nest with door set to catch on the back of

the hen as she enters the nest. Notice the little screw-button made of wood instead of having a screw-hook as shown in the line cut. The lower tier of nests shows the same as above, but allows one to see the door resting upon the trigger as it is set.

The method of working is as follows: The hen enters the nest and as she steps in her back lifts the door free from the trigger. The trigger is immediately released and falls upon the stop-block, while the door swings to the front and hits against the screw-hook, which stops the same from swinging outward. Inside, the trigger resting upon the stop-block prevents the door from swinging inward. Thus the door is held intact until the operator wishes to release the hen.



Showing front view of tier form single-compartment nest.

The tier form of nest has no back to it, thus it can be set against or hooked on the sidewalls or partitions of the house. In the cuts a wire and a wooden door are shown. One is as serviceable as the other, but the wooden door is less expensive and requires less time to build.

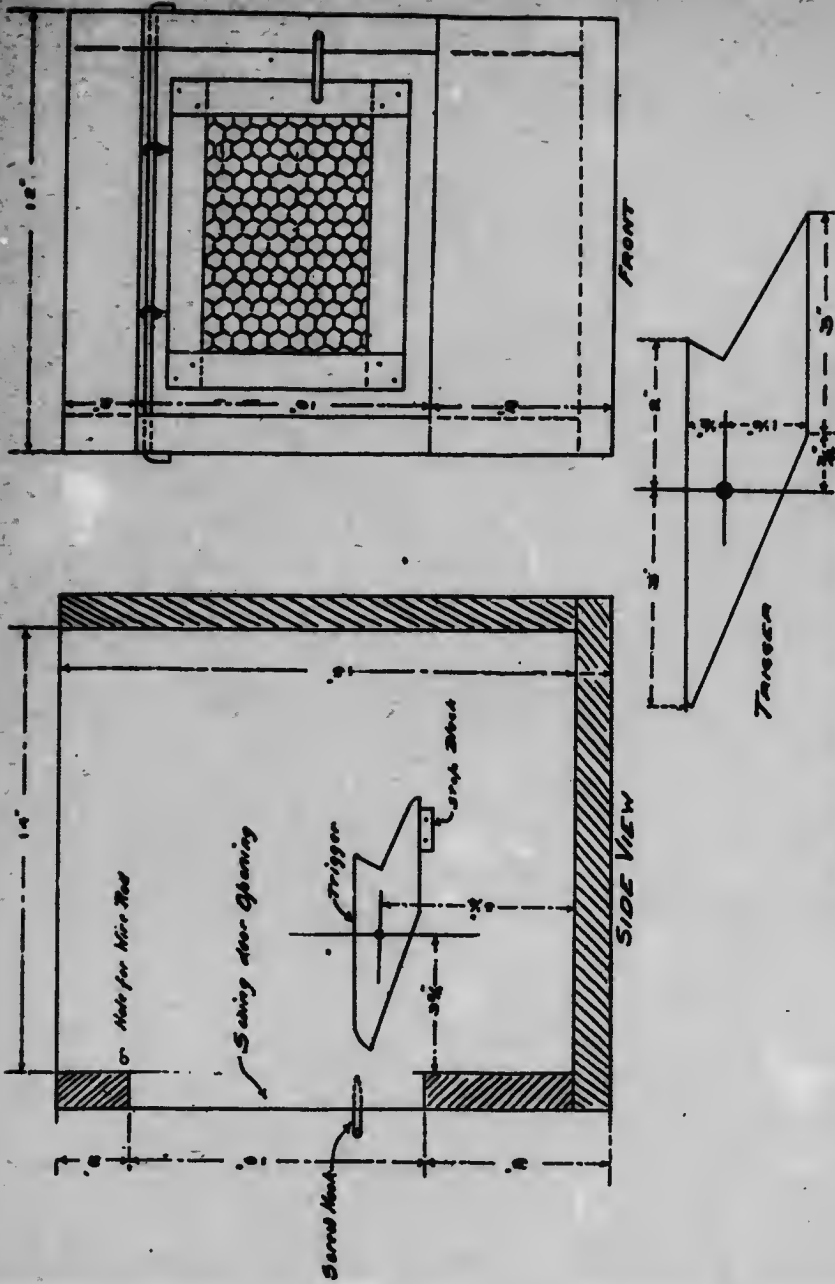
The line cut shows how the door may be suspended from a wire rod. We prefer, however, to hang the door by screw-hooks and eyes to the strip at the top front of the nest, which would allow one to remove the doors when not trap-nesting.

ALLEYWAYS.

Some beginners will still have room for alleyways left in their house when building. If the doors are in the centre of the pens, as before mentioned, the poultryman has a greater chance to get his stock acquainted with him by continually moving about amongst them. It may take a few more minutes to open and close the doors, but this is preferable to the stock becoming excited each time the attendant enters the pen.

Alleyways reduce the holding capacity of the house to quite an extent, as well as causing draughts by allowing such long, unobstructed currents of air within the house.

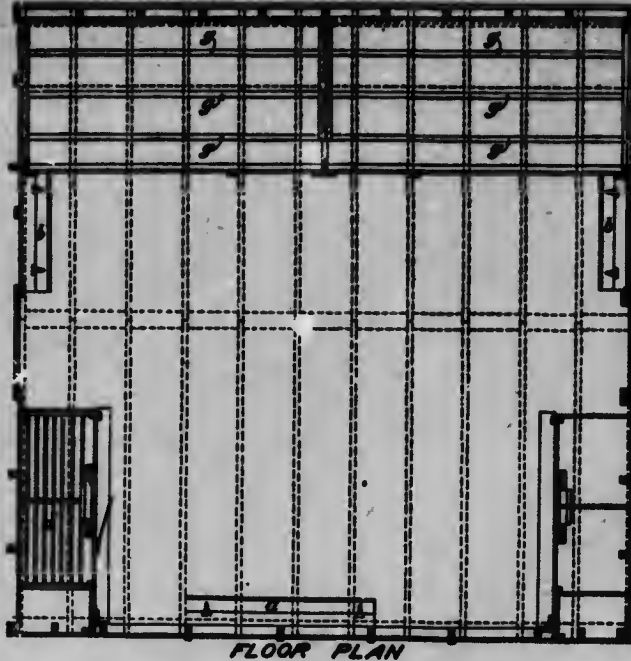
If many visitors are received, the poultryman should build a walk along the outside of the house. The visitors can thus view the stock from out-of-doors.



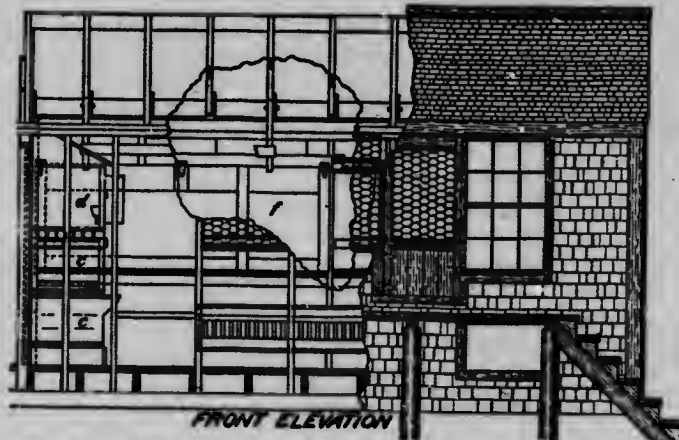
Single-compartment trap-seat, with detailed dimensions.

DUST-BATHS.

It is as essential for the hens to have a dust-bath as the "tub" is to the human being. Sandy loam and sifted coal-ashes, with a little sulphur mixed, make a very good dust-bath, providing it is slightly damp.



FLOOR PLAN



FRONT ELEVATION

A combination-pitch house showing the raised walk scheme for visitors. This walk is very helpful when cleaning out the house.

The dust-bath should be placed near the front of the pen. If a box is used, tennenny nails may be driven in firmly all around the edges 3 or 4 inches apart to prevent the stock from roosting upon the edges.

BROODY-COOPS.

Each pen should be provided with a coop to keep the hens in when they become broody. It is a good idea to have the same suspended by wires from the roof-plates. It should be constructed of common light stuff, with either a wire or slatted bottom, front, sides, and top.

WATER-PANS

Though there are several opinions as to the best water utensil, we prefer either a shallow pan set on a lid 14 inches off the floor or the 10-quart pail. The container should be so placed that the fowls cannot get into the pan, nor congregate about the same, causing dampness to collect in this spot. If the container is placed on a shelf, the shelf should not extend beyond the width of the pan. When the container is high off the floor, nail a 1-inch strip around the shelf to prevent the fowls' feet from gathering dampness.

YARDS AND FENCES.

The question is often asked: How much range should be allowed for the stock? The writer believes that there is only one real answer, and that is, to give the stock as much range as possible. This statement does not mean, however, that the stock shall roost in the trees all winter, nor stay in the hay-loft. It simply means, use your good judgment.

One cannot allow as much range to layers as to breeders. With the high cost of labour existing, the layers can be housed on the continuous plan, commercially speaking, to good advantage, and the breeders kept in small flocks on the colony plan during the breeding season.

The yards for the continuous plan should be made with width of the interior plan, and no less than 70 feet long. When one has several hundred fowl housed on the continuous system, the question of soil-contamination must not be overlooked. Runs may easily be made on the north side of the house. The partition fences on the north and south may be taken up each alternate year and placed on the side which is used as runs that year. The other half may be sown with a mixture of clover and rye in the spring, ensuring a good green mat for the next season's laying stock. If provision is made for green feed, one may estimate on giving 10 to 30 square feet per bird in confinement.

If the stock is housed on the colony plan, the houses should be placed in rows with doors facing on a centre road. In this way many steps are saved.

All fences must be high enough to prevent the stock from flying over. A wire fence gives best satisfaction. Heavy-weight varieties require a fence 4 to 5 feet high. Light-weight varieties should have a 6-foot fence. If stock will not stay within these fences, providing the care and feeding are correct, their wings should be clipped or the runs covered.

FLOOR-SPACE.

In practice, it is found that small flocks need much more floor-space, proportionately speaking, than large flocks. Within a house or pen 20 x 20 feet, 100 light-weights or 75 heavy-weights may be housed quite comfortably with good results. If a house or pen be 12 x 12 feet, 25 heavy-weights or 35 light-weights is the usual rule. For hens of medium-sized breeds from 4 to 6 square feet should be allowed when housed in flocks of twelve or more. For smaller flocks the amount of floor-space should increase as the number decreases.

SUITABLE QUARTERS FOR CITY BEGINNERS.

Before any birds are secured it is necessary to provide suitable quarters for them. The house must be dry, well ventilated, free from draughts, sunny, and bright. Any building possessing these few essentials will prove satisfactory to the fowls.

In addition to these, the beginners will do well to bear in mind the necessity of economy in construction, and also plan the building with reference to its convenience.

Start on a small scale. The first house should be small, and either portable or constructed of inexpensive materials. Any one living on rented property should keep in view the possible necessity of moving, and plan his poultry buildings accordingly.

Some firms in or near Vancouver and Victoria make portable poultry-houses to meet the requirements of poultry-keepers who would rather purchase a complete house than build it at home. Some of these portable buildings are constructed in units, and sections may be purchased as required. They are all alike, in that they are furnished with complete equipment, are light in construction, quickly erected or taken down, and easy of transport. In many cases they cost less than similar structures built at home.

PIANO-BOXES.

Piano-boxes are freely used, especially when they can be purchased at a low price. In most cities they can be secured at prices ranging from \$1.50 to \$3 each.



Showing front view of piano-box house.

A very practical small house can be made from two piano-boxes. Any one handy with common tools can construct such a house at a low cost, for little additional material will be required.

The average piano-box is 5 feet high, 6 feet long, and 2½ feet wide. As constructed, this two-box house has approximately 40 square feet of floor surface, which is doubled if the structure is set up on posts 4 to 6 feet above the ground to permit the birds to run underneath the floor. This is an excellent scheme in the warmer parts of the Province, enabling one to keep a larger number of fowls, or give a small flock much more space, but should never be practised in the mountainous sections.

In building, proceed as follows: Have two boxes of the same size. Remove the boards from the back and top of each box, working carefully to avoid splitting. Set the boxes back to back 3 feet apart on three pieces of 2- x 4-inch material, and nail them in place. Nail boards on the 2 x 4's sufficient to fill the space between the boxes, to complete the floor. Then secure two boards 8 or 10 inches wide, and long enough to reach from shoulder to shoulder of the boxes. Mark the centre of one side of each board, and then saw from that point to the lower corner of the opposite side. When nailed in place on top of each end of the pair of boxes, these boards will support the roof, the points forming the peak.

Complete the roof by nailing on enough boards to cover, taking care to make joints smooth at the shoulders. Board up the opening between the boxes on the back, or north side, tightly.



Showing side view of piano-box house.

The frame of the building is now complete, excepting the south side, in which the door is placed, and windows if desired.

The latter need not be provided with glass sash, as cloth-covered frames will serve the purpose well, furnishing both light and ventilation and saving money. The opening for the windows should be cut in the centre of the end of each box. Each opening should be covered with wire netting. Half-inch mesh wire is recommended.



A type of colony house which would work well on a city lot for 15 hens.

DEPARTMENT OF AGRICULTURE

The door may be made by nailing on to two cross-strips enough boards to fill the opening between the boxes. It should then be hung on strong hinges and swing outward.

If the fowls are to be permitted to go out of the house, a small door should be arranged for in the lower west end of southern exposure. This additional opening should be so placed as to avoid cross-draughts.

The frames for each window should fit tightly, and each should be covered with one thickness of thin muslin or cotton cloth. Unbleached sheeting is commonly used for this purpose. These frames may be buttoned on the front or hinged inside. If hinges are used, they should be placed on the top so the frames may be swung up out of the way to the roof, to prevent the hens roosting or laying on them when not in use.

The building should then be covered to make it wind and weather proof, using one-ply roofing-paper. This material should be put on as smoothly as possible in warm weather and should be well cemented and nailed.

For winter use the house must be kept free from cross-draughts. It is also important that good ventilation be provided during hot weather. Tight poultry-houses become uncomfortably hot in the summer, and birds confined in them do not remain strong and active. One may either arrange to face the house north during the summer months, and so prevent the sun from shining in, or cut a good-sized door high up in the rear, keeping the same tightly closed until hot weather, when it may be opened to provide the necessary ventilation.

CHIEF TYPES OF HOUSES.

The combination-pitch house is one that the writer can advise being built in any part of the Province. Where the temperature drops to zero for any length of time, this house should be built 18 or 20 feet in depth; but where the temperature goes below zero, the house should be built 20 or 22 feet in depth.

The material needed for a unit of this house built 14 x 16 feet is as follows:—

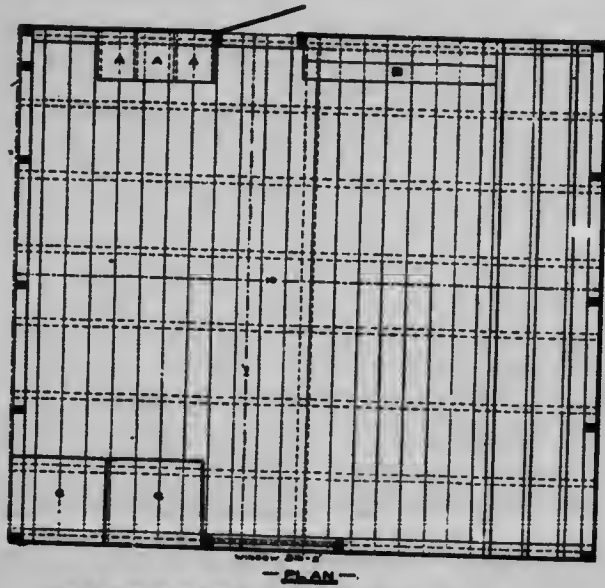
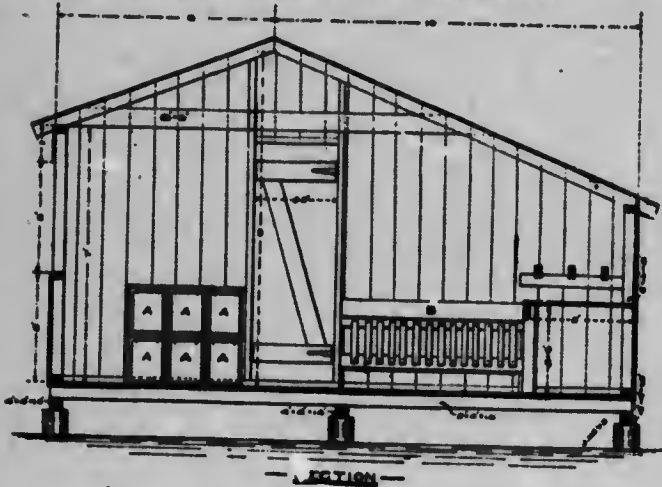
	No. Pieces.	Dimensions.
<i>Rough Lumber.</i>		
Sills	8	4" x 4" x 14'
Floor-joists	8	2" x 4" x 16'
Floor-pads	4	2" x 4" x 16'
Front studs	6	2" x 4" x 6' 8"
Back studs	5	3" x 4" x 5'
Side studs	4	2" x 4" x 10'
Wall-plates	2	2" x 4" x 14'
Roof-collars	4	1 1/2" x 6" x 12'
Front roof-joists	8	2" x 4" x 8'
Back roof-joists	8	2" x 4" x 12'
Front plank	1	1" x 12" x 14'
Posts	9	8" x 8" x 8'
Perches	3	2" x 4" x 14'
Drop-boards	3	1" x 12" x 14'
Extra	10	2" x 4" x 10'
<i>Shiplap.</i>		
Floor (double)	26	Boards, 8" x 14' long.
"	24	" 8" x 16' "
Sides	32	" 8" x 10' "
Back	24	" 8" x 6' "
Front	5	" 8" x 14' "
Roof	29	" 8" x 16' "

Cost of Material.*

800 feet rough lumber @ \$14	\$11 20
1,100 feet sheiplap @ \$16	17 00
Three rolls roofing-paper @ \$1	3 00
One window	3 00
Hinges and fastenings for door	50
Nails	1 70
Wire front	3 00

Cost of material only \$40 00

* Add on 100 per cent. of the cost price to all these prices for 1920.



Combination-pitch house. (For front elevation see p. 9.)

The reason that this house is called the "combination-pitch" house is due to the fact that the point of the gable makes a slope one-third to the north and two-thirds to the south in the roof. Detailed measurements are given in conjunction with the cuts.

THE WOODS HOUSE.

This type of fresh-air house is used quite extensively by many poultrymen to good advantage. It entails a little more labour in building than does the combination-pitch house. The objection in a continuous house of this type is the disadvantage one has in cleaning the same, but this could be overcome by having part of the front in the form of a door, so that the litter could be removed from each individual pen and carried away from the outside of the house.

The material for a unit of a Woods poultry-house 14 x 14 feet is as follows:--

	No. Pieces.	Dimensions.
<i>Rough Lumber.</i>		
Sills	3	4" x 4" x 14'
Floor-joists	3	2" x 4" x 14'
Floor-plates	5	2" x 4" x 14'
Studs, front	6	2" x 4" x 4'
" centre	5	2" x 4" x 7'
" centre	2	2" x 4" x 9'
" back	5	2" x 4" x 5'
Wall-plates	4	2" x 4" x 14'
Side-rails	4	2" x 4" x 7'
Rafters	14	2" x 4" x 10'
Front board	1	1" x 12" x 14'
Drop-board	3	1" x 12" x 14'
Perches	4	2" x 4" x 14'
Etc.	4	2" x 4" x 10'
<i>Shiplap.</i>		
Floor (double)	44	Planks, 8" x 14' long.
Roof	27	" 8" x 14' "
Back	22	" 8" x 6' "
Sides	42	" 8" x 10' "

Cost of Material.*

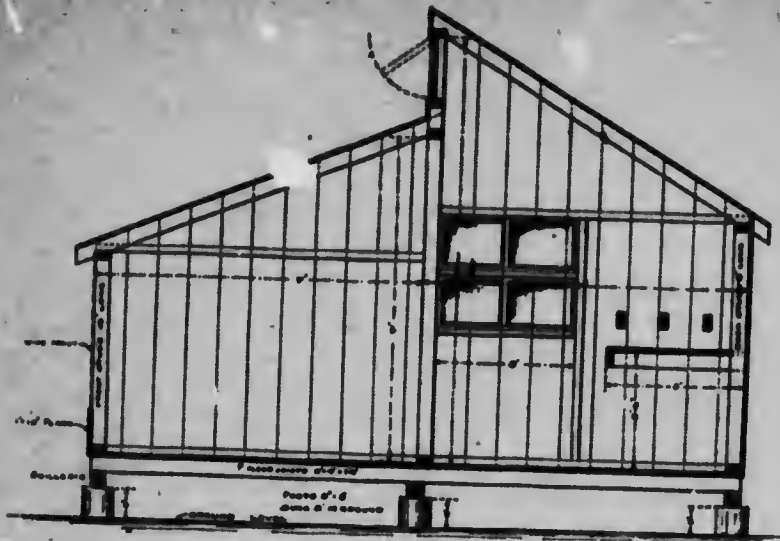
550 feet rough lumber @ \$14	\$ 7 70
1,100 feet shiplap @ \$16	17 00
Two transoms	3 00
One side-window	2 00
Four pairs hinges and one hasp	2 00
Wire for front	50
Three rolls tar-paper	3 00
Laths	50
Nails	3 00
Nine posts	2 25

Cost of material only \$41 55

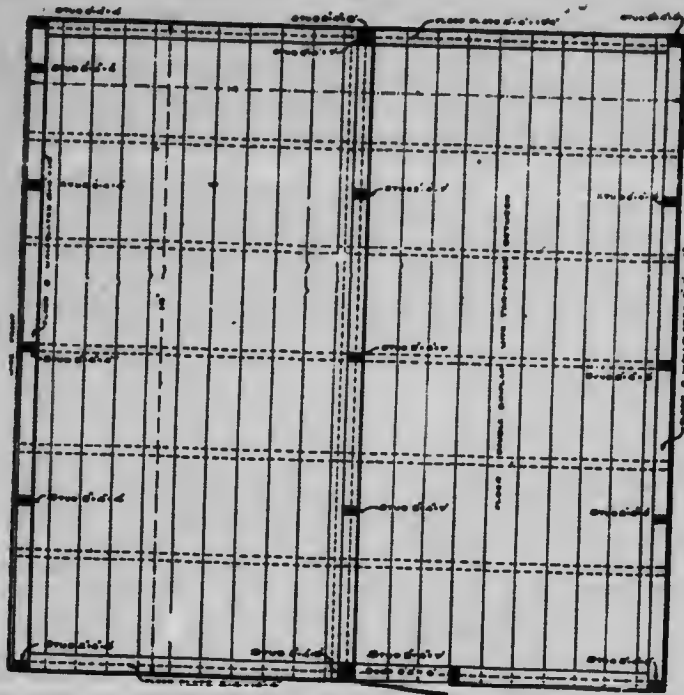
THE TOLMAN HOUSE.

The Tolman house is one which is used more for a colony system of housing than for continuous housing. It should, however, give fair success when built deep enough, providing that plenty of light is allowed inside by having mullin or glass doors in between the pens. This, of course, adds to the expense of the house considerably. A type of this house which is called "the automatic hen-house" was originated by Professor W. R. Graham, of the Ontario Agricultural College, and was built 20 x 20 feet. We believe this house to be very good where persons are housing 75 or 100 fowls in one flock in the more dry sections of the Province, especially during the winter-time.

* Add on 100 per cent. of the cost price to all these prices for 1920.

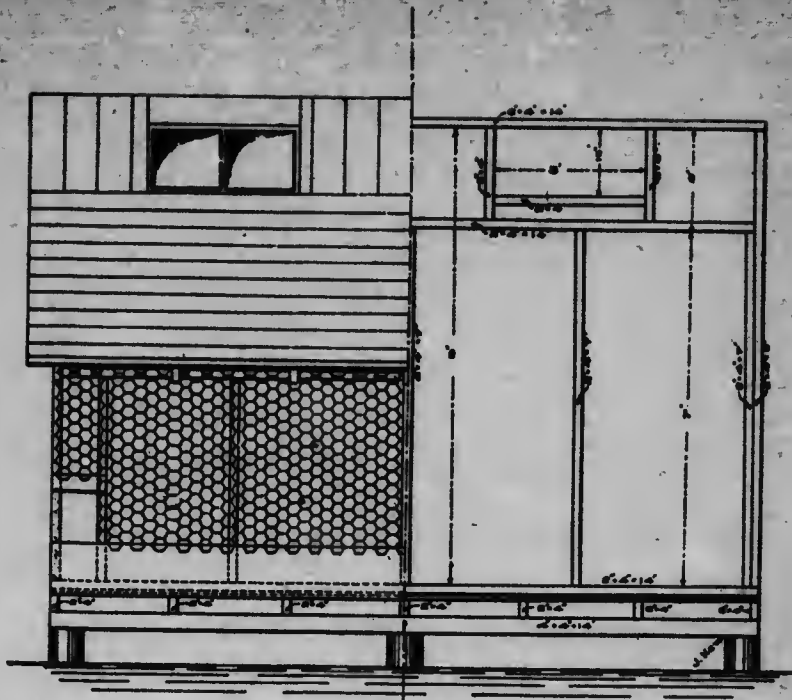


— SECTION —



— FLOOR PLAN —

Woods house.



Front section cut through Woods house.

The material for a unit of the Tolman house, which in the original is 8 x 14 feet, is as follows:—

	No. Pieces.	Dimensions.
<i>Rough Lumber.</i>		
Skids	2	2" x 8" x 17'
Floor-joists	8	2" x 4" x 8'
Step	1	1½" x 12" x 8'
Floor-plates	2	2" x 4" x 14'
"	2	2" x 4" x 8'
Wall-plates	2	2" x 4" x 8'
Side studs	4	2" x 4" x 8'
Front studs	4	2" x 4" x 8'
Back studs	3	2" x 4" x 8'
Roof-joists	10	2" x 4" x 10'
Collars	5	1½" x 6" x 10'
Bars, etc.	4	2" x 4" x 10'
Front board	1	1" x 12" x 8'
Perches	3	2" x 4" x 8'
Drop-boards	3	1" x 12" x 8'
<i>Shiplap.</i>		
Double floors	12	Boards, 8" x 14' long.
Roof "	22	" 8" x 8' "
Back	27	" 8" x 10' "
Two sides	6	" 8" x 12' "
	42	" 8" x 10' "

Cost of Material.*

343 feet rough lumber @ \$14	\$ 5 01
738 feet shiplap @ \$16	11 80
Two windows	3 00
Two rolls tar-paper	2 00
One bundle laths	60
Two door-binges and one hasp	1 50
Wire for front	25
Nails	2 00
Cost of material only	\$26 16

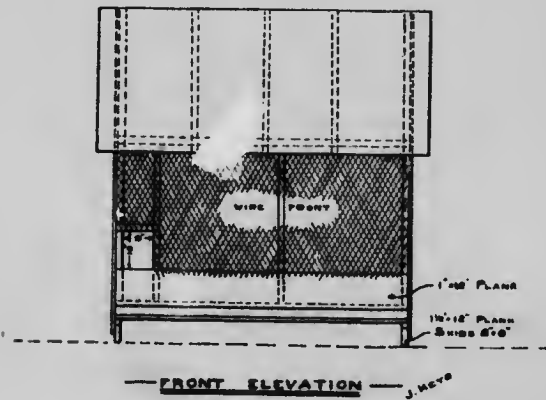
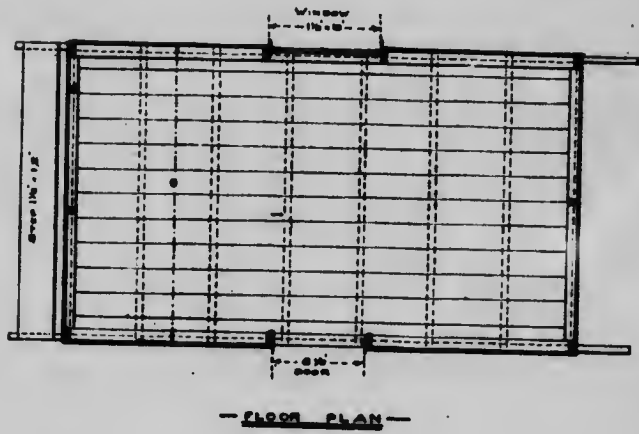
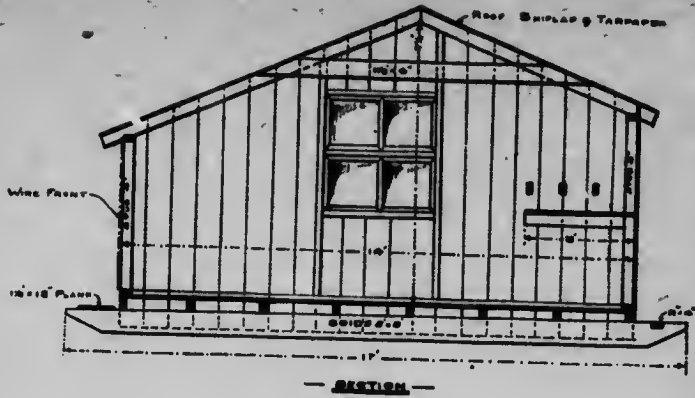
SHED-ROOF HOUSE.

If one prefers to build the shed-roof house instead of any of the foregoing, there perhaps can be no better plan than that of the Cornell type of house, 16 x 16 feet. This house, being built 9 feet at the front, or south elevation, and 5 feet at the back, has hardly enough pitch to be used in the colder sections of the Province, but should work well in any other sections. For the benefit of those who desire to build such a house, making two pens 16 x 16 feet, the material needed for such a house, 16 x 32 feet, is as follows:—

15 pieces 2" x 4" x 16'.
15 " 2" x 4" x 14'.
6 " 2" x 3" x 12'.
18 " 2" x 5" x 18'.
2 " 2" x 4" x 12'.
405 square feet shiplap for roof, 18-foot lengths.
360 " shiplap, 16-foot lengths.
220 " rough lumber for back, 12-foot lengths.
300 " rough lumber for ends, 16-foot lengths.
150 " rough lumber for partition, 16-foot lengths.
700 " shiplap for miscellaneous work, 16-foot lengths.
230 " shiplap for front, 12-foot lengths.
24 pieces 1½" stuff, 12-foot lengths, for inside fixtures.
For sills, 4 pieces 8" x 8" x 16', rough lumber.
For floor, 64 pieces 1" x 12" x 16', rough lumber.
Hardware, including roofing-paper and glass, \$40.

NOTE.—The dimensions given on the cuts are applicable to the Lower Mainland, Lower Gulf Islands, and the southern part of Vancouver Island. In other parts of the Province, according to the coldness and dampness of the atmosphere, the houses should be altered to meet the conditions. From Chilliwack to Kamloops and from Cowichan to Comox we would suggest that houses be built at least 16 feet in depth. For other parts of the Province where we have extreme cold the houses should be built at least 18 feet in depth. In constructing poultry-houses, one should never build them under 12 feet in depth nor over 22 feet; the former would allow too much air-circulation in the house, and the latter would allow too much dampness to collect that would not dry out during the day.

* Add on 100 per cent. of the cost price to all these prices for 1920.



Tolman house.



A Tolman house in operation near Victoria.

CONSTRUCTION OF BROODER-HOUSES.

The coal-burning brooder-stoves seem to give the best results by operating them on the colony-plan system. This division recommends a colony house built 10 x 12 feet, with the back 5 feet 6 inches inside and the front 8 feet over all. We recommend that the door be placed in the centre of the front and to swing outward. This will allow the attendant to operate the stove with greater ease, and also without disturbing the chicks, by going direct to the stove rather than walking from the side of the house to the front of the stove when shaking, filling, and doing the various things that one must do at night.

Two six-light sashes should also be made to swing outward by hinging at the top. These should be at the front of the house, one on each side of the door. The bottom of the sash should be at least 2½ feet from the floor. Inside the sash-opening should be two cotton sashes made to swing in from the top by hinging at the bottom. By having the glass and cotton frames so hinged no direct current of cold air will strike the chicks, and at the same time a good amount of fresh air will always be accessible. The operator must so fix the sashes that the wind will not cause them to fly back and forth.



Colony brooder-house, 14 feet long and 10 deep; curtain-fronted. This house is built on skids and can be easily hauled by a team.

The house can be made of single boards and shingled, with building-paper between. In the colder sections of the Province we would recommend double-boarding by boarding on both the outer and inner side of the frame timbers, then using either shingles or good building-paper. The majority of the breeders prefer shingles to building-paper on the brooder-houses. The floor should be double-boarded in all sections of the Province and built on skids. The skids should be placed 18 inches from either wall, and should run from wall to wall rather than from back to front.

Too much stress cannot be laid on the importance of rounding off the corners and leaving no cracks for chicks to get in between during the night.

Plans are usually given by brooder-manufacturers to persons desirous of using the oil-burning stoves.

CONSTRUCTION OF FRESH-AIR BROODERS.

The problem of securing better results from brooding has been studied and experimented with by many different experiment stations and individuals for several seasons past. There have been so many difficulties to contend with that the work has been left mainly in the hands of communities rather than individuals for results.

The following detailed description is the result of the work done by Dr. R. Pearl, of the Maine Experiment Station, in conjunction with his poultry staff. The above station had used many different types of brooders, but each had its objectionable features. Therefore, before the brooder which is described below was known to any one outside of the station staff, it was experimented with under all difficulties, in order to improve any mediocrity which might exist.

It is from the above results that the writer feels thoroughly justified in recommending the brooder to the poultrymen of this Province. Practical experience has been exactly as outlined in the following lines, and the advantages are needed by many who are engaged in the business. To point out the benefits derived therefrom, the main faults of the regular brooder are designated as follows:—

Firstly: The mortality in the old type of brooder is found to be exceptionally high within a few days after the chicks are placed therein. For example, if the hover be situate in the centre, placed on a closed projection whereinto the heat was conducted, invariably, on a cold night, the chicks would crowd in towards the heated projection. The result was that one would pick from five to ten chicks out each morning which had been trampled to death, until the number was small enough for all around the projection to get an even amount of heat. From this point, we arrived at the conclusion that the heat was not evenly distributed, so, therefore, one must first choose a hover which will throw out the heat to all parts of the brooder.

Secondly: The difficulty in obtaining the required amount of heat could be overcome only by having a higher flame. The flame being turned up, one would get bottom heat, which is not desired. Again, if a draught happens to strike a too-high flame, one would have a fire to contend with.

Thirdly: One must also consider that the lamp-flames and vitiated air must be taken from the interior of the house, especially so when two brooders are operated in a small space.

Fourthly: There is too much labour involved in the moving-about of the small brooders of the box type. They are not only heavy and clumsy, but have to be carried from the house on the range to the store-house, thus entailing too much time in the busy season.

With the brooder outlined the above faults are overcome. It is so constructed that it may be dismantled in five minutes, the hover and its parts put in one place, and the different frames, etc., placed in under the floor of the brooder. Any plan which is shown to be of a labour-saving nature should be welcomed by every poultryman in the Province. The advantages which we found to accrue from the use of this brooder are as follows:—

It was found possible to rear a larger number of chicks in proportion to the number originally put in than in any other brooder, and the mortality was much lower. Furthermore, the chicks not only lived and grew quicker, but were more thrifty than those raised in any other type.

We must not let the problem of tuberculosis pass unnoticed. Although we do not see it in so much young stock, the main way to help prevent this disease is by allowing more fresh air to the young chicks from the time they leave the shell until they are put into the laying-house.

The Construction of the Brooder.

With the idea in mind of obtaining a fresh-air brooder, it was deemed advisable to use a wall which is permeable to air. In meeting this requirement, the outer side and front walls, as also the top of the brooder, were made of cloth. Collectively speaking, the brooder is a cloth box containing a hover of the type in which the lamp-fumes are conducted outside of the building by an exhaust-pipe. These brooders may be built permanently into the house which they occupy. If the house be 6 x 6 feet, we would not place more than one brooder in the same. If it be 12 x 6 feet, two brooders may be run to their full capacity. When two brooders are placed in the building, a part of the end wall and part of the back wall of the building form two of the sides of each brooder. The remaining side, front, and cover are made of cloth tacked firmly on light wooden frames, as are shown in Fig. 2. The floor of the brooder stands 10 inches above the floor of the house. From the front of the brooder a sloping walk extends down to the floor of the house, reaching in width clear across the whole front of the brooder. A small piece of burlap may be tacked on this runway to allow the chicks to run up and down from the hover more easily. The cloth front and side of the brooder are not permanently fixed in position, but are removable panels, which are held together to the framework by hooks and eyes, cleats also being placed on the floor and sides, as shown in Cut 3. The cover is hinged in the middle in such a way that it can be either half or entirely open, and folded back out of the way. The advantage of having it jointed in the middle is that the degree of heat may be fixed more regularly, and that by folding over it is possible to turn up against the back and roof, thus leaving no small holes for the chicks to fly into and get lost, as shown in Fig. 6.

A hover of the circular type must be used in this kind of brooder. The lamp is placed inside the house, underneath the brooder, on the floor. Two little pegs of wood should be nailed securely on the floor, to prevent the lamp from sliding about. By having the lamp inside the house, we do not have any trouble from winds or rains when we wish to light it. In the old type of brooder it often requires a box of matches to light the lamp in the outdoor box. Heavy insulation is also required on the inner side of the top of the hover or drum, to reduce the loss of heat by radiation in the early spring. Detailed working drawings are given, as seen in the cuts. Fig. 2 shows the end elevation of the brooder. Fig. 3 shows a section through the middle of the brooder. Fig. 4 shows the floor-plan and arrange-

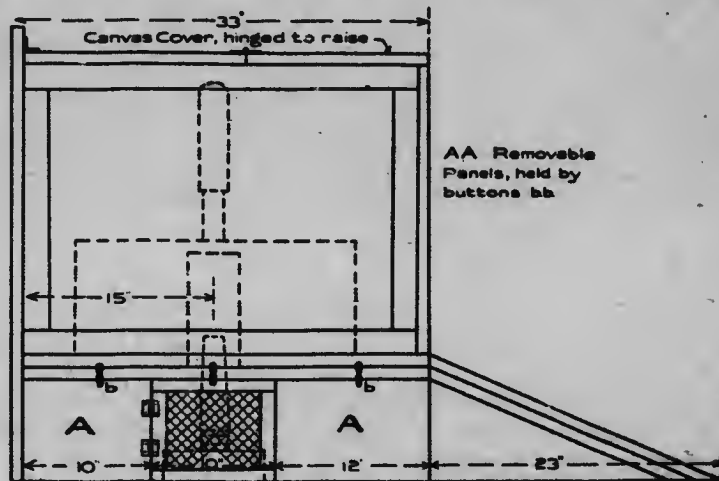


Fig. 2. Showing the end elevation of the brooder.

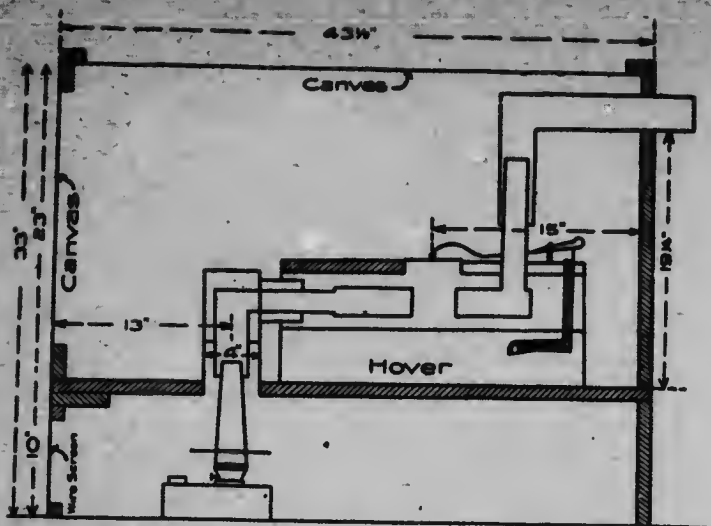


Fig. 3. Showing a section through the middle of the brooder.

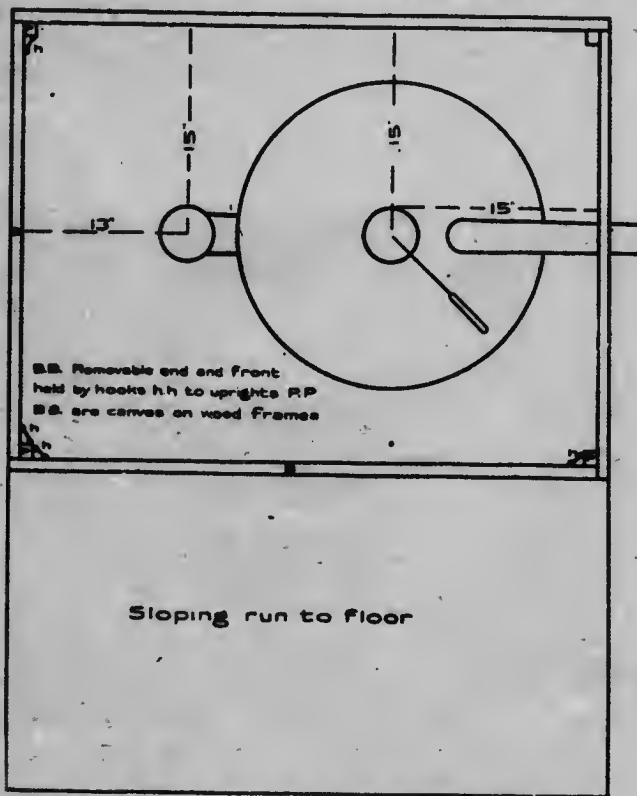


Fig. 4. Showing the floor-plan and arrangement of the hover.

ment of the hover. Fig. 5 shows the brooder in operation. Fig. 6 shows its appearance when dismantled, with the parts stored in the base, yet the house is in use by the larger chickens.

There is no roost provided in Cut 6, but two scantlings may be laid across the house, on top of the wall side of the brooder, which will accommodate about fifty good-sized birds.

Material of any sort of planed lumber may be used, though it is well to secure lumber which has been thoroughly dried, and which will not swell too quickly from wetting. Where the joints have to be connected in the frames, the material calls for lumber of even width, also tending to keep the muslin firm and straight. Burlap may be used in the place of muslin, but it does not allow light to enter the brooder as would white material.

A few measurements would, perhaps, make the above a little more clear, as follows:—

The height with the cover up is	4' 4"
The height of the back is	2' 1"
The width of the floor is	2' 10"
Width of run	2' 1"
Length all over	3' 10"
Length of end	2' 9" x 1' 11"
Canvas top frame	3' 7½" x 2' 8½"
Canvas front frame	3' 0" x 1' 11"
Canvas end frame	2' 8" x 1' 11"

Pieces of wood about 8 or 8½ inches are used for elevating the floor of brooder from the floor of the house. Use inch stuff for cleats. Where tongue and groove lumber cannot be used, we would recommend breaking the joints.

Hovers may be purchased from firms in the Province that can easily be adapted for utilization in an arrangement of the above-mentioned type. We would suggest to the poultrymen that they substitute more cotton and muslin in the place of so much wood and glass.



Fig. 5. Showing brooder installed and ready for operation.

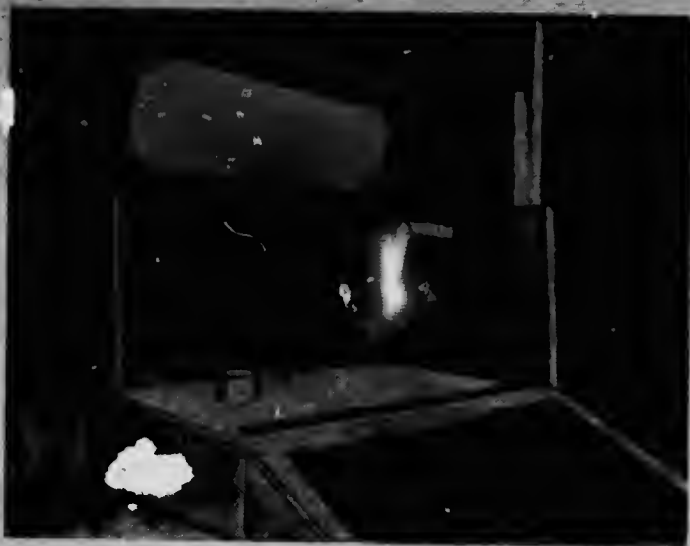


Fig. 3. Showing brooder dismantled and parts stored in base.

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