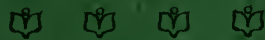
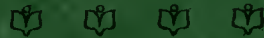


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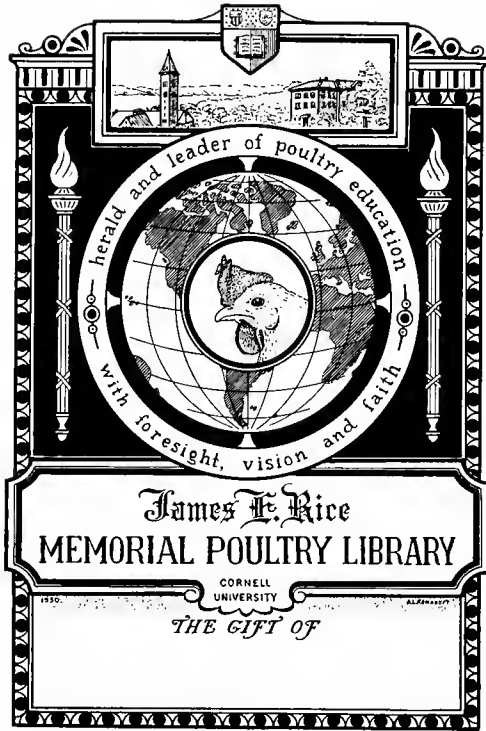
HOW TO BUILD POULTRY HOUSES



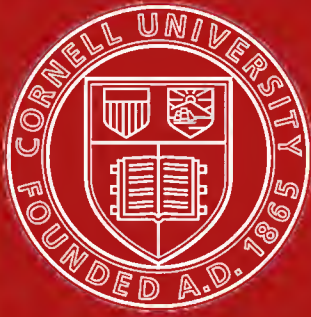
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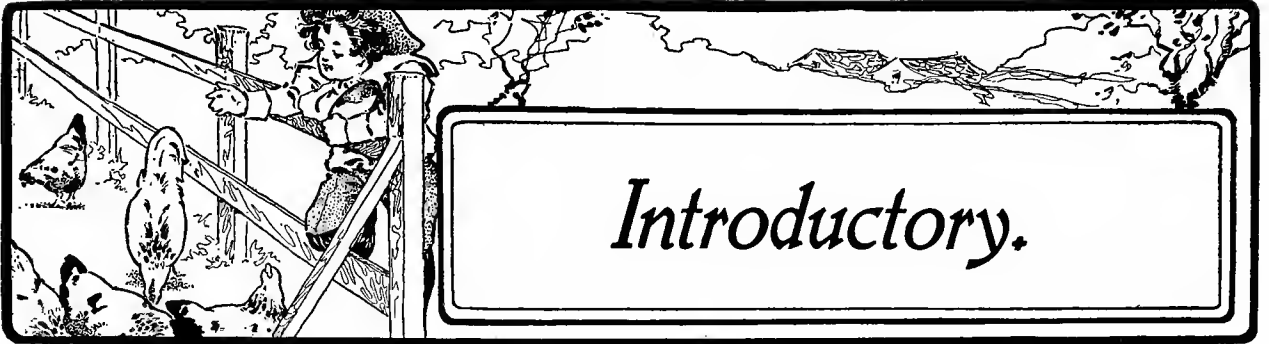
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Introductory.

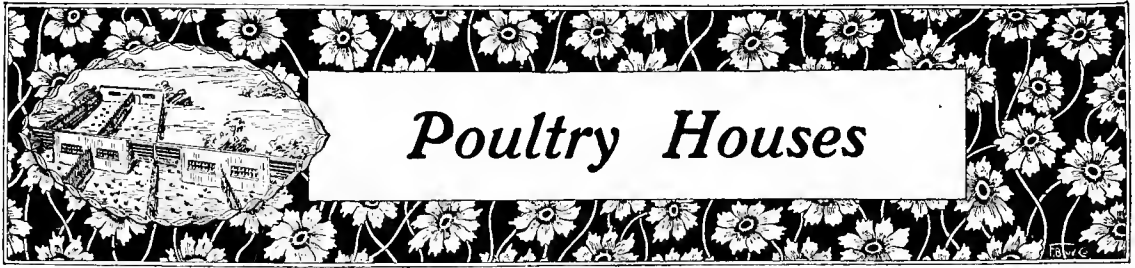


MUCH has been said and written upon the subject of poultry houses. Still very few poultrymen seem to understand the vital and important principles of poultry architecture. Many will take old, worn-out boards for material and in a few hours throw together a poorly-constructed shed, which they think

good enough. Large cracks are left between the boards and draughts strike the fowls from almost every direction. In addition to this a worse blunder is often made by throwing on a poor roof, and then concluding that everything is ready for business. The cold winter sets in and the mud and rain beats in through the open space left between the boards. The leaky roof does its part toward letting in rain, and the consequence is a flooded poultry house. Who can expect to make money out of poultry with such houses? Many people do or they would construct proper buildings. All over the country, everywhere, may be seen hundreds of old sheds ready to fall to pieces, but used as poultry houses. Poorly constructed houses are as bad or worse than no houses at all.

When we have heard people complaining of the poultry business not paying we have in most cases found that the main reason was badly arranged and miserably built houses. Such buildings can generally be put down as filthy and lousy, because people who put up such sheds are not very apt to keep them otherwise. Very likely the floors are not cleaned

once a year, and probably not at all. To obtain best results proper accommodation must be had. Good, warm houses can be built at a very small cost. If you are thinking of erecting a poultry house, go ahead and select your plans, but be sure you have a suitable one before commencing work. Select a building adapted to the size of your flock, your locality and the lay of the land where it will be built. The plans given in this book are of houses which have been tested by practical, experienced poultrymen and have been found satisfactory under the conditions as explained. The ornamental features of a poultry house should be confined to the exterior. The interior should be arranged with the sole view of making the fowls comfortable and contented, and these points are fully explained in the following pages. The location should be a high and dry one and in a place where ample shade may be provided if possible. There are so many seemingly trivial items which materially affect the value and usefulness of a building that any one not perfectly familiar with the subject should read carefully the suggestions and rules laid down in this book. It should also be remembered that to be successful with poultry something more than a house is needed. The fowls should have proper care and feed, and this means more than can be explained in a few short remarks. After you have the proper house, then see that the other requisites to success are not neglected.



Poultry Houses

COOPS FOR CHICKS.

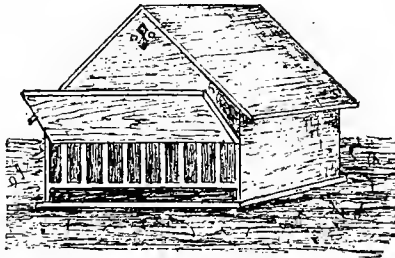


SUCCESS in raising chickens is attained by those who prepare for them before they come from the nest. The proper housing of chicks has much to do with their future. There is always a greater loss of chicks in the first two or three weeks; but if they are properly housed and managed their chances are greater for early maturing and healthy chicks. Place your coops in a dry place and do not let the little chicks run in the damp

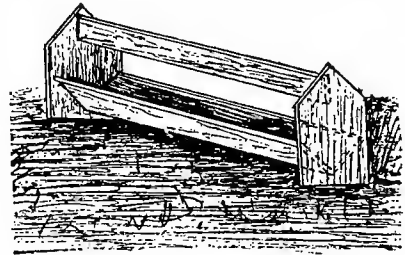
they can easily be taken apart and after the breeding season they can be stored away without taking up much room.

FEED TROUGH, NEST BOX AND WATER TROUGH.

The best size is 4 feet long, 3 feet wide and about 30 inches high. The boards forming the roof should be covered with



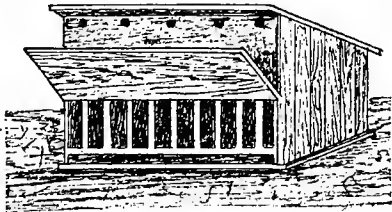
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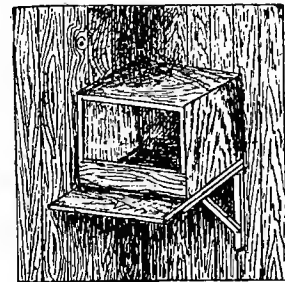
Feed trough.

grass; as this is sure to be fatal to many of them. The illustrations given are practical and easily constructed—

Neponset or tarred paper to keep out the rain. The cost of these coops will not exceed \$1.50 each, and by proper care can be used many seasons. The V-shaped trough given above is constructed of 6-inch boards, 3 or 4 feet long, which are



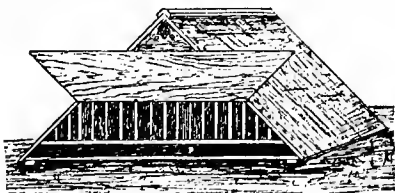
Coop No. 2.



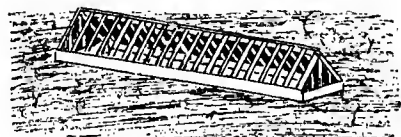
Nest-Box.

coops that can be built of any kind of boards, but should be so arranged that they can easily be taken apart for a thor-

ough cleaning. Build the bottoms, sides and roofs separately by nailing cleats over the boards, and by means of hooks fastening them together. By building them this way



Coop No. 3.



Water trough.

ough cleaning. Build the bottoms, sides and roofs separately by nailing cleats over the boards, and by means of hooks fastening them together. By building them this way

The nest-box illustrated can be made of a soap box. It is better to place a nest in this position to allow the hens to enter the nest from the side than to have the nest open on

top, so that when the hen jumps on the nest she is liable to break any eggs that may be in the nest.

The water trough shown in the illustration can be made of wood or tin by placing the grating over it, which can be made of either wood or wire, and in this way prevent the fowl or chicks from stepping into it and wetting their feet and body feathers. It is especially advisable to be used for chicks.

SMALL COOP FOR HEN AND CHICKS.

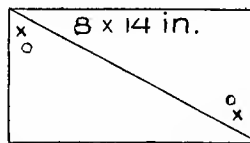
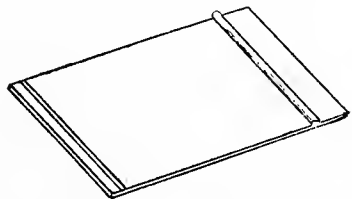
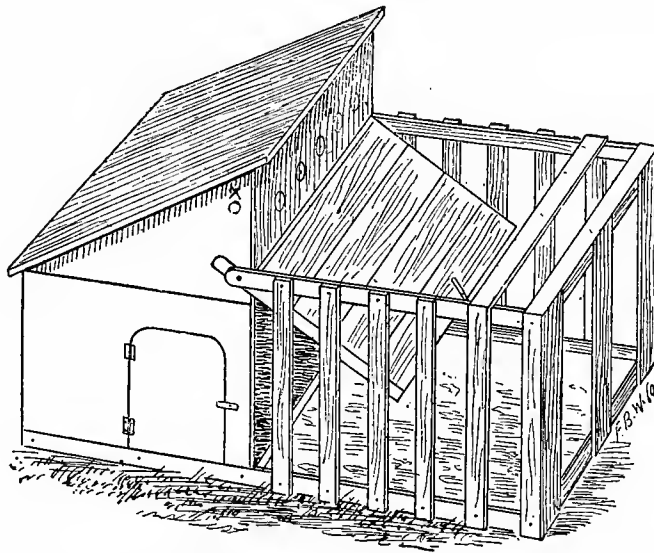
Take a box the size of a wooden coffee box. Lay it broad-side up. Take off a piece of board six inches wide, one inch thick and about twenty inches long, or as long as the box is wide across the ends. Saw this board in two diagonally from corner to corner, which will make two pieces six inches at one end, and run to a point at the other. Nail one of these pieces on each end where the boards were taken off, which

platform. Use a piece of 2x3 scantling to close this to keep the chicks in, taking it away to let them out. The platform can be taken out and cleaned every day. Whitewash the coop inside. This makes a light, strong and serviceable coop. The boxes cost five cents each, and five boxes should make four coops. The coops will cost about ten cents each when completed, not counting labor.

A CONVENIENT COOP.

The illustration and description of coop here given are supplied by J. M. Knight, Lynn, Ind.

The coop is made of lumber 12 inches wide; ends and back 20 inches wide. Take 12-inch board 20 inches long, saw it from one corner to other. This makes gables and gives 20-inch height in front. To make the front solid nail 2-inch strips on inside of front from gable to bottom. The roof is made to fasten on with hooks. The bottom also is loose.



A Convenient Coop.

will give six inches fall for the roof. Now take off boards in front; take one of the boards four or five inches wide, nail against the front ends (not on top) of the six-inch pieces just even with the upper edges. Now the boards you have taken off will about make the roof. Put the boards on cross-wise, which will give a few inches projection front and back. Now take off the bottom boards, but before taking them off draw a lead pencil mark inside of each end from back to front, get two strips, one inch thick, two inches wide and six inches longer than the box is deep. Lay the boards on these strips, but let the strips be two inches inside the lead pencil mark. Nail the board tight to these strips, then saw the boards off at the pencil marks. This will leave this platform just the size of the box inside. Now take two pieces the depth of the box, two inches wide and one inch thick, nail these pieces underneath, one at each end, leaving one inch project inside. Now slide the platform you have made in on these strips, nail plastering lath on in front, beginning at the top, one-half inch apart until within two inches of the

The lid in front is made by cutting boards 20 inches long. Nail strips half-inch thick, 2½ inches wide, 22 inches long on each end; nail them so that when the lid is let down half inch will lap over end, making lid 20 inches high. The ends of strip projecting over at top are to fasten to coop with screens. This lid makes part of cover to run when raised; it closes front of coop when let down. The run is made of lath. The sills are four feet long on each side. Nail them on each side of coop at bottom. Make the run wide enough so that it will fit on outside of coop at top. The screens that hold on lid to front of coop should first pass through cleat at end in top of run. This lets the lid work freely inside of run. Make holes in front of top and ends for ventilation. To move the coop let the lid down in front; step inside of run, and you can carry it to fresh ground every day. The advantages of the coop are: It gives the hen fresh ground and sunshine; a place to wallow if dry; keeps rats out; it is easily whitewashed by taking roof and bottom out.

HATCHING AND HOUSING EARLY CHICKS.

THE HATCHING.

It is well known that the per cent of fertile eggs during February and March is much less than during later months. So our per cent of chicks from a given number of eggs will be less than it will be later. The eggs should be gathered as often as possible. When taken from the nest the eggs should be dated. These eggs should be kept in a moderately warm room, and turned end for end each day while so kept. Now, as to the setting nest. Herewith is given an illustration of a nest box I have found to be wonderfully satisfactory. It is made of common pine lumber, 2 feet square and 2½ feet high. It has a slide door in front. In this door is cut a hole 6 inches square, and over this is tacked wire cloth. This gives light and air to the hen. These boxes are placed in a convenient room, which has been supplied with a large dust box and grit. Do not place these setting boxes in the house containing your breeding stock, or, for that matter, in a place containing any of your poultry. When we have our hen ready to set we paint the inside bottom and sides of the box with liquid lice-killer. A very little straw is then put in and the hen immediately put in the box, giving her a few china eggs. We leave her there until the next morning or evening, for by this time she is entirely free of lice. The nest is then made and she is given her eggs. These boxes are placed along the sides and ends of the hatching room. Every morning the sliding door of each box is raised and the hens allowed to come off for feed and water. They are given only whole grain, mostly corn, during incubation. Each hen readily learns to go to her proper box. When through feeding and having returned to the nests, the doors are closed and the work of caring for the setters is over for the day. By the use of these boxes the work of caring for setting hens is greatly reduced. Then, too, we have each setter well in hand. They are safe from rats or other vermin. The illustration shows a lath run to the box. This is used with the May chicks. The run allows the hen fresh earth and a place to dust.

THE HOUSING.

The improper housing of extra early chicks is what usually causes failure. It positively will not do for February and March chicks to be simply placed in an ordinary brood coop out doors. If you cannot give these youngsters better quarters than this do not try to raise them, for you will fail, and the few which do pull through will not be as good birds November 1 as the May bird that grew steadily from the time he left the nest. A large dry goods box can be converted into a good brood coop. Take such a box and put in a half window. Cover the box with heavy paper. Place dry dirt or sand on the floor. Place the box on the south of your poultry house or barn. Fix an opening so the chicks can run out on pleasant days. This will do very well. A house 18 feet long and 12 feet wide can be so arranged as to give an ideal place for the early chicks. It can be cheaply built of common boards, on the shed plan. Cover walls and ceiling with building paper. Now, as to the arrangement. Face the building to the south, and put in as much window space as possible. A hallway 4 feet wide will extend the full length of the building on the north side. Divide the house into six runs. These runs will extend south from the hallway to the north side of the building. Make the partitions of boards to the height of 2 feet. Above this place wire netting. The fall before the floors of these pens should be covered with sand to the depth of 2 or 3 inches. When the chicks and hen are removed from the setting box, place them in a box in one of these pens. Have an opening so the chicks may go out of the house into small runs on the south. Let them out only on pleasant

days. These outside runs should be raised above the surrounding yard somewhat and kept clean of snow, etc. Do not allow the hen to go out with the chicks until they are two or three weeks old, and then only on exceptionally pleasant days. The hen will enjoy the outing when the little fellows would be suffering with the cold and ought to be in the house. Keep the hens and little ones in this house until about May 1, when they may be removed to outdoor brood coops. In this manner they enter May full of strength and vigor, and then they need and should have range, the more the better. You may say six runs will be enough. True, if you are raising a very large number of extra early birds you will find that the hatches will be such that you can double up with the broods, and in this house one hen will care for from twelve to eighteen chicks. The conditions are entirely different than when the hen and chicks are out doors in an ordinary brood coop. This house is used until wanted in February or March for conditioning exhibition birds—males especially—for the winter shows. It is an ideal place for this branch of the fancier's work.

A SIMPLE DRINKING FOUNTAIN.

Take a stone jar of the size that may be necessary for the number of your fowls and on the edge cut a small hole from one-half inch to one inch square, then take a shallow pan, fill the jar with water, then cover with pan and turn it upside down quickly. The water will empty into the pan only to the depth of the hole in the jar. As the fowls drink from the pan, water will flow from the jar. By this means you will always have clean water, as the fowls cannot soil it or turn the pan over. This plan is adopted for a small jar, one that can be easily handled. An ordinary tin can may also be used for the purpose. The fountain should always be kept in a shady place.

BUILDING A POULTRY HOUSE—HOW I BECAME INTERESTED IN HENS AND WITH WHAT RESULTS.

DR. D. D. POTTER.

Four years ago my little boys, who occasionally rode out into the country with me, became very much infatuated with the poultry they saw at the farm houses, and when they asked me to get them some chickens I readily consented, and had a little hen house built against the east side of my barn with a door opening into the barn so that the hens could get out into the barn for exercise. I then procured a dozen scrub hens and put into the house and taught the boys how to care for them.

This was all very interesting to them, but in my watchfulness to see that the little fellows did not neglect their charges I unconsciously became more interested in the hens than were their real owners. So when fall came I determined to build a house for the hens separate from the barn and so keep them out of the barn altogether. After reaching this determination I then began to "think" what kind of a house should I build.

Reasoning from the standpoint of physiology and pathology I concluded that my house must be both warm and sanitary if I expected to get good results with my hens. If a hen is kept in cold quarters it takes all the fuel she can run through her digestive apparatus to maintain an equilibrium in the animal economy, hence there can be no surplus for the production of eggs. Knowing this beforehand, and wishing to have nice, fresh eggs in the winter time, when other people's hens are eating to keep warm, I started out with that object in view and built a hen house as per the following description:

It is not possible to build a house so warm that it will not freeze in a Nebraska winter if it is on the surface of the

ground, unless it be kept warm by artificial means, either that of stoves or pipes supplied for that purpose, or by the animal heat emanating from the birds, so I first dug a hole in the ground, 9x12 feet and 18 inches in depth; then I laid up a brick wall to the surface of the ground, on which I placed a 2x4 sill all the way around. On these sills I placed 2x4 posts and on them my plates. Now I had my frame ready for siding, so I went to a dry goods store and purchased the same grade of sheeting that is usually used to make sheets for our beds and stretched this as tightly over the frame as I could, fastening it securely by lath nailed to the sills, plates and posts. Then I put on a tight board roof, made from thoroughly seasoned lumber, after which I tar papered and shingled the same. Next came my windows, which I made double, one acting as a storm window and preventing any moisture from getting into the house, either by storms or frost which will collect on a single window. I then cemented the floor and up the side walls, lapping over onto the sills, thus effectually shutting out all moisture and all draughts of air from that source.

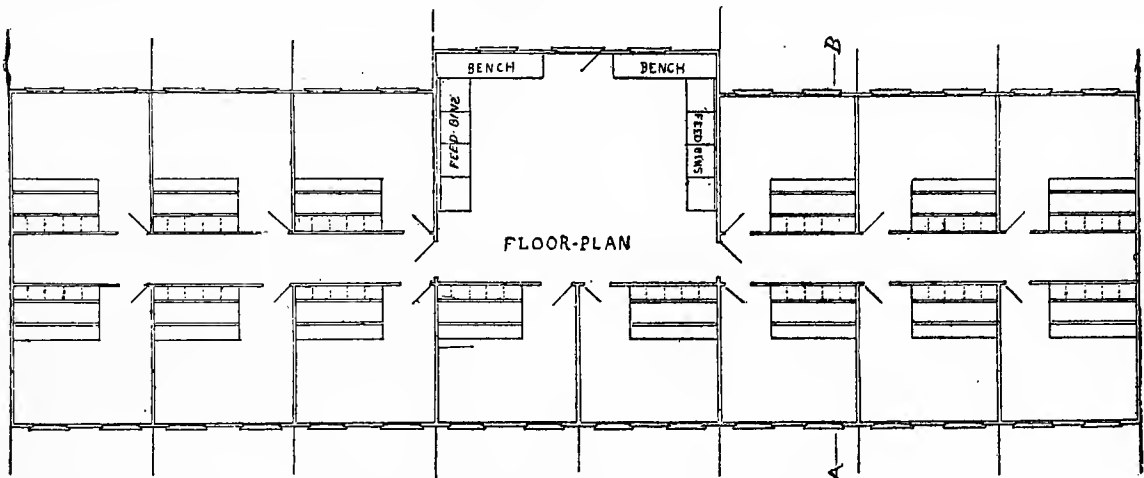
Again turning my attention to the side walls I painted the sheeting on both sides with a good heavy paint, which

which I have is that my hens are cooler and more comfortable in the hot summer weather than in any other house that I ever saw.

HOUSE FOR RAISING CHICKENS.

No improvement that I have made for years, writes Waldo F. Brown in the *Country Gentleman*, has paid me so well as a house in which to raise young chickens. I do not raise them with artificial mothers and fire heat. I think it can be made a success, but I do not think it will pay a farmer who is making poultry a side issue.

My house is made with rooms five feet square for each brood, and a run with a gravel floor of the same size attached to each room. These rooms have a broad floor raised high enough so that there is no harbor for rats or other enemies under it, say fifteen inches, and a board eight inches wide, with cleats nailed across it, makes a ladder for the chicks to climb from the gravel yard to get into it. Early while the weather is cold, we give each hen twenty to twenty-five chickens in one of these rooms, but in May and June we have succeeded just as well with forty or fifty chicks to a hen. We have a door which slides up and down in a



Floor Plan of House Described by Dr. D. D. Potter.

securely closed all the meshes in the goods, making my house absolutely impervious to wind and almost air-tight, except the ventilation I saw fit to give it, and for this purpose I put a ventilator in made out of two eight-inch and two four-inch boards nailed together and long enough to extend from the floor up through the gable roof at its peak and extending about four feet higher than point of roof, like a chimney on a house. If the bottom of this flue or ventilator I made a little trap door, which is always raised. In my entrance door on the opposite side from this flue I have a little door, 8x10 inches, which I can open the least bit or throw open to its full capacity, thus admitting little or much outside air. And in passing will say that that little door is always open a little in the coldest days, and that my hen house never smells like a hen house because of this efficient ventilation.

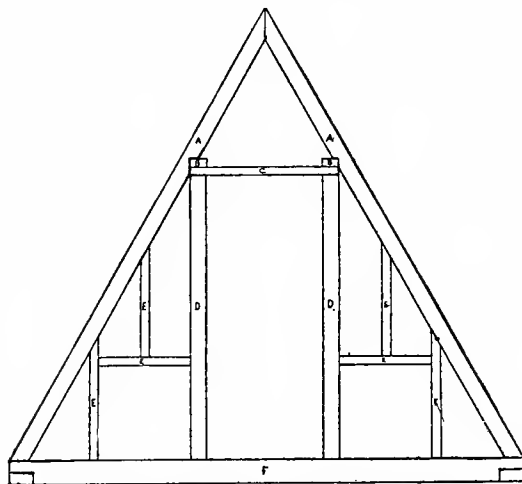
Next came the question of roosts, which I placed on a level plain even with the surface of the ground outside; that is, 18 inches from my cement floor. In my house I have a floor space of 9x12, or 108 feet, which is sufficient room for 20 small hens or 12 to 15 large ones, even though they have to be shut in for weeks at a time.

In regard to the warmth of the house will say that it is all that could be desired, as water in an open dish will remain in the house all day without freezing when the temperature outside is below zero. And another advantage

groove and that can be opened or shut by a cord which is fastened on the opposite side of the room, so that, standing in the passage from which you feed the chicks, you can open or shut the door at pleasure. The gravel should be put in several inches thick in the runs, and there ought to be a wagonload of fresh gravel near, so that whenever the top of the gravel gets foul a wheelbarrowful can be removed and fresh substituted. The rooms for the broods, each five feet square. There should be a sash of six lights, 10x12 glass, at the south side of each one of them. The graveled run need only be inclosed with a fence two feet high if you have movable frames of lath, or, better, woven wire, to cover them, so that the hens or chicks cannot fly out. If made in this way there need be no grate or door, except a small one just large enough to let the hen through. The runs should always be at the south, and this will necessitate that the house be built running east and west. The doors to the compartments should be made of lath and hung so as to swing around flat against the partition and not obstruct the passage, and should be large enough for a man to pass through without crowding. The passageway is usually made two feet wide, but it adds so little to the expense of the house to make it three feet wide, so a wheelbarrow can be used in cleaning out the house, that when I make another I shall make it that width. The outside walls should be lined with tarred paper to secure warmth. At one end of the passage

there should be a door, and at the other a small window set high up out of the way. A single pane of glass of good size is all that is necessary. Under this window make a little bin with a drop lid, which will hold a few bushels of feed, as it will be a great convenience to have it handy. It will be an advantage to set the foot of each sash out a little—eight inches to a foot, according to the height of the sash—as this will let the rays of the sun fall more directly on the glass and make the house warmer.

The house I built last spring is twenty feet long and seven feet wide and cost \$18, but as I located it at the south end of another building I saved the weather-boarding on the north, which is the highest side. The roof should be made high enough so that you can stand straight in the compartments at the highest side to clean them. In putting the lath or the runs, the novice is almost certain to get them too far apart, for a chicken can squeeze through a very small space. They should not be more than a half inch apart at the sides, but overhead they may be an inch or more, as the chicks cannot fly up so high until they are too large to get through. The partitions between the apartments may be made by nailing up strong coffee-sacking, or



Frame of House for One Pen of Fowls.

if you prefer it can be made of fine woven wire, which will look neater.

Do not be tempted to let the chicks out at all until they are feathered. If you keep the rooms clean and feed regularly and wisely the chickens will grow and do better here than they possibly can outside, and you will escape the ravages of hawks, cats, skunks and other prowlers—will probably not have a single case of gapes, and will not have your chickens drowned when a sudden down-pour of rain occurs. An experience of many years in raising chickens in coops leads me to believe that more than half that are hatched fall a prey to some of the above named causes before they are six weeks old.

When the chicks are feathered and old enough to wear there should be a lot fenced so that they cannot get out of it, with a house with low roofs to move them to, but after they have become accustomed to roosting there they can be allowed to run out through the day. The sooner the young chicks are marketed the better, but do not sell the pullets from the early broods, as they will make winter layers. If you keep Plymouth Rocks—and I doubt if you can find a better breed—the sexes can be distinguished as soon as they feather, and it is a good plan to separate them at weaning and push the cockerels for market.

Early chickens can be sold when the size of a quail, and at this time they have cost very little for food. In market-

ing eggs good judgment will enable you often to get a better price than is offered in the local market.

CONVENIENT AND ECONOMICAL HOUSE FOR ONE PEN OF FOWLS.

The accompanying sketch illustrates the manner of framing a very convenient as well as economical poultry house for one pen of fowls. For the fancier who desires to keep one or two breeding pens, or for the poultry man who favors the colony plan, such a building as this one, we think, will be found the cheapest possible manner of building a structure of equal floor space or accommodation. A roof we must have, and in doing away with the side walls we still have every possible foot of floor space that could be had otherwise, and simply cut out of the bill of material just the amount of stuff which would be used in sides and ends. The drawing shows the front of the building, which may face south or southeast; whereby it will be seen that *both sides* of the roof receive the direct rays of the sun. This feature, together with the extreme pitch, insures a *dry roof* at all times, and where shingles are used they may safely be laid five inches to the weather. The building may be located in the center of the yard, or either end may form a part of same, and another large door (same as shown) cut in the other end, so one would not have to enter the yard in order to get into the building. Or, again, the large door shown as being on the south end may be done away with entirely and placed in the north end; and in place of same a window and *small* door for the fowls may be substituted. The interior arrangement may of course be to suit your own fancy, the droppings board, roosts and nests being suspended from the ceiling. Thus every possible inch of floor space is available to the fowls. The illustration shows a building 10x10 feet on the inside and 9 feet high under the ridge. It gives a width of over three feet from end to end, where the height is sufficient for an average man to stand erect. Every portion of floor and building is thus easily reached with rake, hoe or shovel in cleaning out. This design shows 6x6 timbers for sills and 4x4 and 2x4 for rafters and studding; the rafters being set, 16-inch centers, which come just right for lath, if one *prefers* lath and plaster to match flooring. *We don't*. We would put boards on the ends, perpendicularly, and batten cracks with three-inch strips, and the bill of material given herewith is based on this manner of boarding. Should shingled ends be preferred, the same quantity of boards, laid horizontally, will answer to shingle to, but the expense is some greater. Roof boards are sheathing, laid horizontally and tight together, projecting six inches beyond the rafter at each end, and one inch over the 6x6 sills. When laying the shingles extend them one inch over the boards on ends and sides. Prepared roofing may be used in place of shingles, but we very much prefer good shingles. The 6x6 sills may be set on posts to raise them six or more inches above ground, and afterward filled in with earth up to bottom of sills. If clay can be procured and put in when damp, it can be packed down hard, and, once dry, forms a floor nearly as hard as cement and nearly as good. D D, see illustration, are 4x4, six feet long, set two feet six inches apart, on top of which a 2x4 (C) three feet two inches long, is nailed, thus forming the door frame. B B are 4x4 halved, four inches back from each end and spiked onto the 2x4 (C), as shown. These 4x4 are eleven feet long and are supported at the other end of the structure same as shown. The timbers (B, C and D) are first to frame, and put in place after the sills. These are each eleven feet long, put together as shown. A A are rafters eleven feet two inches in length on longer edge, and ten feet four inches on shorter. They are notched and spiked to the 4x4 (B), and the mitre by which to cut them is easily found, after which all may be cut after one pattern, they of course

being all alike. The window openings may be obtained by setting the studding and trimmers (E E) to suit your sash. These shown are two feet square, and if more light is desired a glazed door may be used. The number of square feet of 6x6 given makes five timbers 12 feet long, one of which, cut into pieces three feet long and set into the ground, forms corner posts, upon which to nail the sills. The following bill of material is ample to complete the building as described, and by taking same to a lumber dealer you can easily ascertain the exact cost of construction, less the labor. The construction is, however, so simple that any one at all handy with tools can easily build it:

180 square feet 6x6-12; 72 square feet 4x4-12; 176 square feet 2x4-12; 300 square feet of 1x12-12 sheathing; 100 square feet of 1x12-10 dressed, fine com.; 25 square feet of 1x3-10 dressed battens, fine com.; 402 square feet of 6-in. matched floor 12 feet long; 11 square feet of 4x3 dressed, fine com.; 1 or 2 1½ doors, 2½x6, plain or glazed; 2 glazed sash, 2x2, or any other size. Hardware: 8 pen., 20 pen. and shingle nails, and 8 pen. finishing nails; lock and hinges, etc., about \$1.50. Enough material will be left for most of the interior finishings, such as roosts, nests, etc.

POULTRY HOUSE VENTILATION AND VENTILATORS.

A Statement of the Necessity of Ventilation in Poultry Houses—Full Description of the Manner in Which to Build a Ventilator and Arrange for Good Circulation.

NELLIE HAWKS.

Before the introduction of this much talked of poultry-house ventilator that we own and operate, it was no unusual thing on bitter cold mornings to find the walls of that house so covered with frost that it could be scraped down as frost can be scraped from window panes in any house inhabited by people. The walls would glisten with frost and the air was full of frost. It was their breath, frozen, for there had been no escape for the moisture from their breath and from the excrement that is constantly dropping. In less than twenty-four hours after fresh straw would be put down on their floor it would be reeking with dampness. When the sun came up and the outside temperature changed from bitter cold to a degree of sunshine warmth, the inside temperature was changed also, and the walls would be dripping and beads of water standing all over them. The result was hard colds and a general indisposition among the fowls in those damp quarters.

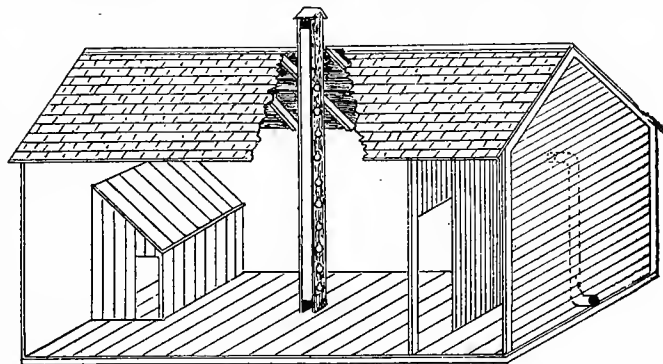
Only by artificial means could I keep the atmosphere dry. I had never kept fires for my fowls, but I had made them as warm as I could by other means—well built houses and closed doors and windows. The straw litter and droppings were always kept cleared away as soon as possible after becoming so damp. And yet it seemed always damp, and there was more or less sneezing and coughing all winter long among the birds kept there. It worried me a great deal, but I was sure that it was not a ventilator my poultry house was in need of, for hadn't I read volumes of a tirade nature concerning ventilators in general? I had learned through bitter experiences that the short-chimney style ventilator that I had had put into a poultry house, "once upon a time," was nothing more or less than a death-dealing "contraption." Of the "scientifically constructed ventilator" I knew nothing in particular, except that any number of writers were condemning them *all*, unreservedly, and I supposed that they should surely presume to know more about it than I did. So I was abiding by their decisions and was losing money continually.

But, one fortunate day for me and my biddies, I concluded to engage the services of a well known poultry judge, and I sent for him to come and score my biddies. It was a very cold week that he came, and my poultry house, though

very clean and tidy, was nevertheless very damp. As he went inside that house he turned and looked at me curiously. I knew it meant that something was wrong there. But *just what*, I was waiting to hear, and felt an uneasy sense of guilt over something, but really did not know what it was that I was guilty of, for I was taking the best of care of my fowls, I thought.

"Your house is an excellent one," he said, "but it needs ventilation. Don't you see the frost on the walls and note the damp feeling of the air? And some of your hens are sneezing. That means 'colds' and colds mean roup eventually. Good ventilation is badly needed here."

We talked long on the subject. I gave him my ideas on the subject; told him what I had read; gave him my past experiences with ventilators; told him of my fears and prejudices and asked him countless questions. He gave me practical, sound advice, offered to help my husband put the new ventilator in working order. We would have material brought home at once and would board him (and be assured we would). The first day of his stay was devoted to scoring fowls, but the second day he was driven to town, gave his own orders, and before night that ventilator that is plainly pictured for you, and will be followed with a few explanations that will help you to build one for your own accommodation, was all in place and all in shape to do the work intended. The next morning, on opening the poultry



Ventilator in use by Mrs. Hawks.

house door, a very different state of atmosphere was found inside. The air was not foul, nor were the walls covered with frost, and the floor and litter was dry, for it had been made all dry the day the work on the ventilator was being done. The biddies occupied the scratch room while work was going on.

The cut shows the construction of this ventilator, also the interior arrangement of my main poultry house, cages, nest rooms and all. At the left hand, it is noticed, the nest room is much smaller than at the right. In the corner, in the space between outside wall and the door of that nest room, stands the bone-cutter, but it is not shown in the illustration.

Two boards of the ventilator shaft, as seen, rest on the floor, while the two shorter boards that complete the square shaft are, by being a few inches shorter, allowing the escape up the shaft of the foul air that, confined, was doing all the work of bringing colds and impaired vitality upon my flock. The shaft is composed of two boards that are six inches wide and two that are four inches wide, thus making said shaft to measure six inches square outside. In building this shaft two boards are shoved some four or six inches above the other two before nailed together. This for the purpose of leaving the air space required at each end of the shaft. This shaft projects some inches above the roof of the house at its highest point in the center.

The two longer boards above the house are capped over or roofed to keep out rain and snow, while at the sides of the shaft above the roof the foul air finds egress as it comes up the ventilator from inside.

The number of holes up the sides of the shaft, inside the house, need not be more than four on each of the two sides. They are three inches in diameter, and fitted over each hole is a circular piece of tin, some four inches or more in diameter. These tin covers are held in place by passing a screw through small holes cut for the purpose. These screws answer the purpose of hinges also, the covers being held by them in whatever position they may be wanted—half closed, quarter closed or wide open. The impure air, heavy with odors, sinks to the floor if the side holes are closed (and the opening and closing of these ventilator spaces or holes depends upon outside temperature of the weather). But, there finding an outlet, they pass out of the shaft.

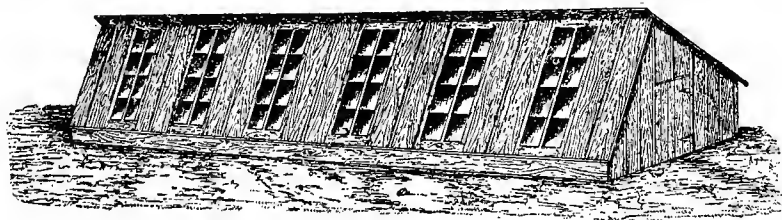
In the meantime an inflow of fresh air is coming in at the sides of the house through pipes provided for that purpose. But one of the pipes is shown in the cut, but another is there, opposite the one shown and running up the side of the left-hand wall. These pipes pass clear through the sides of the building, entering just over the base-boards, a few inches from the floor. The pipes are of tin spouting, and where they pass through the side of the house they are in shape like a stovepipe elbow. They reach up the wall for more than six feet, thus letting the fresh air in

trench ran east and west. On the south side the wall was constructed of boards two feet high, one foot below and one foot above the surface. On the north side the wall is three feet high, one foot below and two feet above the surface. The roof was made in sections, so as to easily be removed for cleaning the house and renewing the manure, from the fermentation of which the heat was derived. On the south side the roof was made of alternate window sash and boards in section, this part standing at only a small angle from the perpendicular. The comb of the roof in this house was five feet high and a door large enough to admit a man was made in each end. Frost never got into this house during the whole of a severe winter, and it served its purpose perfectly.

Now, taking this brooder "hot bed" as a basis to work from, we will describe a house that is much used in some parts of the East, and which has proven to be adapted to the plan of keeping small flocks in separate houses.

This house is commonly called the "A" house on account of its shape. It is so easily built that any one with any kind of skill in using a saw and hammer can build one without help.

To begin with, a frame 8x10 feet is made of plank 2x6 or 2x8 inches. This is made by simply spiking the planks together where the house is to stand. The frame or box is filled with clay, or, preferably, fine gravel and sand, and makes the foundation of the house with the floor



Hot Bed Plan of House.

high above the heads of the fowls. Their breath warms this fresh air before it is taken into their lungs. As soon as once breathed over it falls, heavy with impurities, and is followed by a constant flow of fresh air. After an all-night stay of the fowls in this house, when the door is opened in the morning the air one finds within is not offensive. Pure air and well ventilated rooms, and sleeping rooms in particular, has been all my life one of my hobbies. If you and I need pure air to breathe, why do not our fowls need it, too? If impure air will sicken the individual, why will it not eventually sicken the poultry that may be neglected? It will and it does.

The cost of this ventilator for materials did not exceed \$2.50. Any one who is at all haudy with the hammer, saw and nails may put in just such a ventilator at small cost. There is no patent on the affair, valuable as it is, and it is your right to use a ventilator after this pattern. Moreover, it is your duty as a poultry man or poultry woman, and especially if your poultry house is a snug built one, such as it should be, by all means.

HOT BED PLAN OF HOUSE.

A cheap and very effective poultry house is illustrated on this page. The designer of this house built it for the purpose of using it as a "hot bed" for chicks just out of the brooder. The end view shows how the heat was supplied. A trench five feet wide and twenty-five feet long was dug two feet deep. In this trench was placed one foot of coarse, fresh horse manure and one foot of dry earth. A quantity of litter was then scattered over this. The

eight or ten inches higher than the level of the ground outside, thus insuring a dry floor, if the land is properly drained either naturally or by digging drains.

The house proper is made of matched flooring on a frame 2x4 scantling. The flooring should be 16 feet long to begin with. This is sawed in two, so one end is 9 feet long and the other 7. The short end makes the front of the house and the long end the back. The frame is then made of the same shape, and the flooring, which makes at the same time the sides and roof, is put on. This house should face the south with the short ends used for siding on that side. This will make a very steep slope of the south side and a longer one on the north side. The peak of the roof (house) will be 6 feet 6 inches from the ground, and a line dropped from the peak to the ground will strike not quite 2 feet 6 inches from the front side. The north side is without openings, but the south is half boards and half window. In the east end a door 4 feet high is cut, or it may be made higher, as preferred. By the side of the door a small door, say 20 inches square, is made for the convenience of the hens. A good many of these houses in practical use do not have glass windows, but in place of window sash and glass, heavy muslin or ducking is used. If a house of this kind is well put together and well painted it is for all practical purposes as good a one as can be built. Some cover with roofing paper, but this is not necessary if good lumber is used and the work is nicely done. A house of the size named above will be large enough for twenty hens. To accommodate larger flocks it may be extended indefin-

itely, but the original purpose was to use a number of separate houses a few rods apart, following out the colony plan, which is the best where there is plenty of room. The houses need not be far apart, as the hens go to their own house to sleep after they become settled.

The lumber required to build this house is as follows:

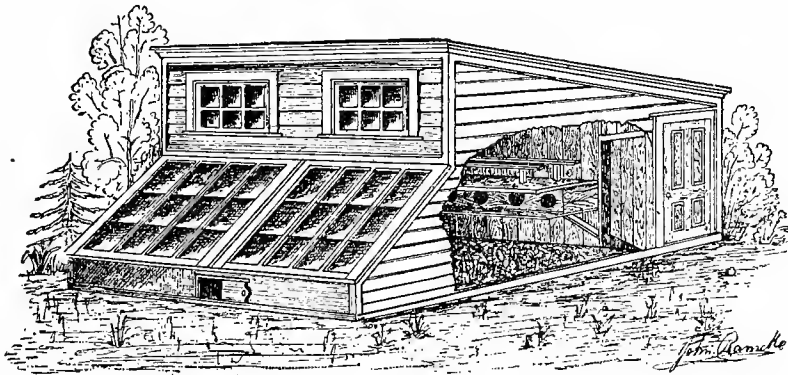
Two pieces 2x6 inches by 10 feet, two pieces 2x6 inches by 8 feet, four pieces 2x4 inches by 16 feet, four pieces 2x4 inches by 10 feet, flooring to cover sides and ends, 230 feet.

This allows for four "rafters" and the necessary "girts" to nail the siding to. The door may be made of the lumber allowed for the siding, and the windows will cost extra the price of sash and glass or the cloth used in covering. Allowing \$25 a thousand for the lumber, the total cost, including labor, should be about \$10 or a little more, or 50 cents for each hen, a very moderate cost for a good house.

A. POULTRY HOUSE FOR ONE FLOCK.

The illustration given is a neat and substantial home for one flock.

This house is arranged with a hallway, in the rear for storing feed and removing eggs from the nests through openings with slides from the hall. The roosts are above



\$40 House for One Flock.

the nests, as shown by broken lines in the side of the house. For the large breeds the nest boxes should be lowered, or a ladder placed so they can conveniently get to the nests and roosts. The floor can be made of wood, brick or cement, but should be covered with about four inches of sand and plenty of litter for the hens to scratch in, so they may have the necessary exercise in the winter; the large windows in the front can be removed in the summer time, and in very cold winter nights they should be covered with straw mattings, in order to keep out the cold. as in the daytime when the sun shines the house will get the desired warmth; but if the windows are not covered in cold nights it would be rather cold for the stock, as the roosts are not protected by inclosures. The material for this house, building it 10 feet wide and 12 feet deep, and 8 feet high in front and 7 feet in the rear, making the outside walls double with tar paper between, would be about forty dollars (\$40).

ROUP AND VENTILATION OF HOUSE.

By U. GRANT DAVIDSON, *Manson Iowa.*

Now that the opportunity offers, I will write as a sequel to the experience I had in exterminating roup, with some important facts in regard to the diagnosis and prevention of this disease.

Doubtless the different opinions advocated in regard to treatment for roup arise from curing colds that have a

very close resemblance to roup, and yet are not the real thing itself. For instance, one party writes:

"My fowls had roup. It attacked their nostrils and throats. I cured them with liquid vaseline and blue vitriol dissolved in water."

Another flock had canker; still another sore eyes, and each owner had a different cure, and all their fowls recovered—which is proof positive in their estimation that roup is a disease easily cured.

Roup has one chief characteristic by which it may always be told, and that is a rank, putrid odor or stench that is easily discernible to the person whose olfactories are reasonably well developed. On account of this stench it need never be mistaken for any other disease in the poultry world. Fowls may sneeze, have rattling of the throat, canker, discharge from the nostrils, sore eyes or swelled head, or all of these, but if this stench is not present they have not got the roup; but any one of these symptoms accompanied by this disagreeable, putrid odor stamps the ailment at once as roup.

Good care and dry, uncrowded quarters have much to do in controlling this disease, but cannot be relied on exclusively.

Some nine years ago, when I was brand new to the poultry

business. I kept some 225 hens in a house, the floor room being 15x20. There was but little snow. They were out almost every day all day, and laid well. I cleaned out under the roosts every day and used air-slaked lime freely; kept all cracks well battened and did not have a sick fowl all winter.

Of course I read all the poultry literature I could get hold of and thoroughly believed all I read. In the various reports of poultrymen I saw where many men, with the same number of hens as myself, under much the same conditions, were getting more than three times as many eggs. It occurred to me that something must be wrong; but what? I looked up the matter as best I could. I was feeding all right, according to the advised methods. I combed those hens every day with a fine tooth comb, but still they did not shell out those 200 eggs. I kept warm drinking water in their troughs and all kinds of good sharp grit where they could get it easily, but still the returns were not satisfactory. I knew that something was wrong somewhere. I felt it every day of my life and every night in my dreams I would be seeking a solution of this problem, viz.: Mr. So and So's hens averaged from 24 to 30 eggs a day during January and February. He fed so and so, etc. Now, if his hens would lay like that, why ought not mine to do the same under the same conditions? But were the conditions the same? I finally concluded they could not be, but resolved to find the difference. I studied all summer

and fall without success, but as perseverance is one of my virtues I kept at it, and at last the first of December the following year I found it. I read where another party had made the same mistake and had written the editor of a poultry paper in regard to the matter, and he had solved the problem at once. I needed a ventilator in my hen house! Why, of course! Why had I not thought of that sooner? Mr. So and So, who kept more hens in less space than I, had always had a ventilator. I read that a piece of pump tubing extending up through the roof from within eight inches of the floor, right by the roosts, was the right kind of a ventilator to carry off the foul gases and admit pure air. It was just after noon that I made the great discovery, and before night I had my ventilator in position. I went to bed that night the happiest of men, fully expecting in three days hence to be gathering many additional dozens of eggs. But alas! During the third night after that ventilator was erected the wind suddenly changed to the northwest and blew with all the rigors of the Klondike. In the morning when I opened the hen house door the draught of pure air from that ventilator blew off my hat. I found one-fourth of my hens had colds; some had rattling of the throat; some sore eyes; some canker, and some were sitting around in the corners so nearly smothered that they had to open their mouths and stretch up their necks to get breath. But I was pretty well up on roup, or thought I was, and commenced to doctor those fowls. Of course many of them recovered, and if I had had the experience then that I have now I could have cured most of them, but I did not, and roup was the result. There was not a case of roup at the beginning, but at the end of seven or eight days there were plenty. I drove a plug in that pump stock at once, and have never had a ventilator in a poultry house from that day to this. I have never tried to keep 225 hens on 300 feet of floor space since either, for I came to the wise conclusion that whenever my poultry houses became so crowded that I needed a ventilator I would erect one 7 feet high, 10 feet wide, and as long as necessary to give an abundance of pure, fresh air at all times. There is no patent on this kind of a ventilator, to my knowledge, so all may use it. They may cost more than some other kinds in the beginning, but are cheaper in the end. Build your henhouse warm and tight. Use drop-siding and paper on the outside and paper and shiplap or ceiling on the inside. Be sure all cracks and crevices are closed up, and you have made a long stride in the prevention of roup. Keep the house reasonably clean and perfectly dry at all times. Keep your eyes and ears open for the first symptoms of disease, and when a fowl gets a cold remove to warm, dry quarters at once. For remedy I give a four-grain capsule of quinine, two pills the size of a hulled peanut, composed of cayenne pepper five parts, mustard (ground) one part, wheat flour one part, mixed with enough fresh salted butter to make it stick well together. Bathe head and throat with kerosene, and when the eyes are attacked I raise the lid and insert some vaseline. I use the kerosene and vaseline two times a day; also give pills twice a day, but quinine every third day.

If the bird is not well enough to go back to the flock at the end of a week I use the hatchet.

One year ago we were confronted with a serious puzzle—what shall we do with the young chicks when compelled to remove them from the brooder to make room for the next hatch? We finally concluded that the treatment which had been beneficial for young plants would do equally well for young chicks.

When our young chickens were a few weeks old we transferred them from the brooder into the hot-bed. This we found was a splendid place for the young chicks and

we have enlarged upon our first idea, and have constructed a scratching and dusting place and a grand winter resort for chicks of larger growth.

The accompanying illustrations give a good idea of its construction. We dug a trench five feet wide, two feet deep, and 25 feet long. We filled this trench one foot with horse manure and one foot with dry earth. A quantity of litter can be scattered on the ground. This trench runs east and west.

On the south side the wall is constructed of boards two feet high, one foot below and one above the level of the ground. On the north side the wall is three feet high, one foot below and two feet above the surface of the ground. The entire roof is constructed in sections and can be removed in a short time to clean house and to renew the horse manure, which is the source of the heat. On the south side the roof is made of alternate window sash with glass in and boards nailed in sections, and this part of the roof stands almost perpendicular. The roof on the north side is made of boards nailed in sections and stands comparatively flat. The comb of the roof is five feet high; close up the ends with boards and make a door at each end large enough to admit a man.

The ground has never been frozen on the inside during the past winter. The size of this winter resort and the superstructure can be varied to suit the various ideas of many breeders, and in cold and stormy weather any person will be surprised to find how much time the fowls will spend on the inside, and how much this chicken palace will add to the comfort and health of a flock, and how much the income will be increased.

SKETCHES OF A POULTRY HOUSE.

Sketches of a poultry house are herewith presented. I do not claim that the plans are perfect, but that the building is handy, considering the available room. The cost is moderate.

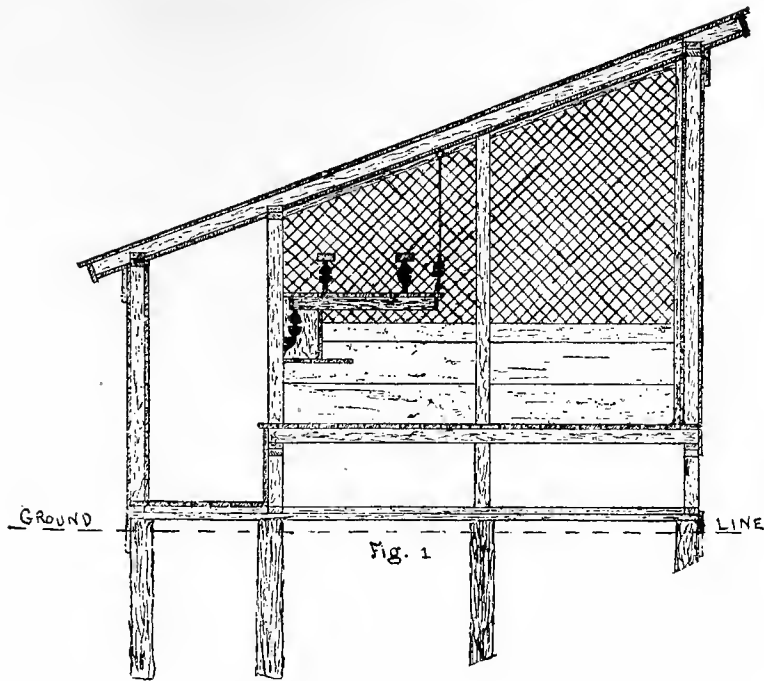
For a foundation I went to the woods and cut beech and maple posts, six inches in diameter. With a post auger I set these in the ground from three to four feet, and five feet apart from centers.

In lining these posts, stretch a line where you desire (for instance) the south wall; and in setting the posts set them inside and just up to the line, being particular to put the straightest side of the posts outside, to nail to. The posts will vary in size, and by lining the outside edges you will save dressing them off after the sills are spiked on. The sills for the building in question are two 2x4's, spiked together; and should measure one hundred and three feet and one inch by fourteen and three inches, outside measurement.

After lining and setting the posts for the outside walls and the ends, stretch the line from end to end again, this time three feet and ten inches south, from the outside edge of the line of posts supporting the north wall. Set posts five feet apart along this line, same as before, putting them north of and just up to the line. This line of posts come under the alley-way partition, and support a sill from end to end, same as around the outside.

Figure 1 shows position of posts. Level all posts and saw them off when you are ready to spike on the sills. Go clear around the building with one course of 2x4's, and also through on the middle line, spiking them securely. If needed, use shingles to wedge under the 2x4's to level them exactly. In putting on the second course of 2x4's be particular to break joints.

The joists for the alley-way are cut next, so they just fit snugly between the two sills, and are toe-nailed to them, eighteen inches apart between centers, the top edge being flush with top of sills. To form the underneath of ground



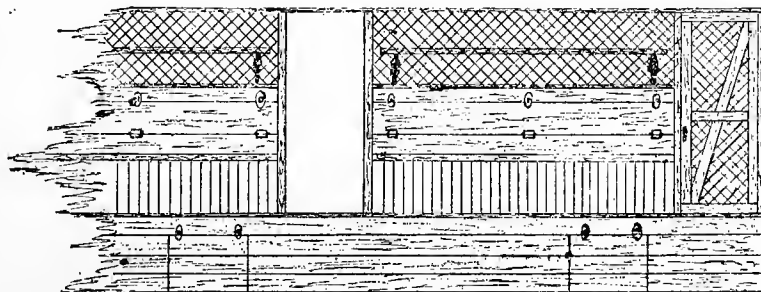
Sketches of Poultry House—F g. 1.

floor scratching-room, cut studding fifteen inches long, and double, by spiking two together. Before setting these studs, commence at either end of the building and measure off and mark where each partition between the pens will come; then toe-nail one of the short double studs at each partition and also half way between. They will come very nearly five feet apart. By reference to Figure 1 it will be seen that these studs are set on the south and middle sill only, those on middle sill being spaced the same as on south sill.

Now nail one of these double studs midway between the south and middle sills (at each end), and you are ready to

ten feet, after plates are on, to line, and hold the plates in line. Board up the outside while the frame is securely braced. Then frame and spike on the rafters. Line the rafters with a chalk line and saw them all off alike, and put on the cornice; then the roof boards; after which you are ready to lay the shingles or paper, as you prefer.

Cut out the openings for your windows next, and put in the window frames. Then put on your siding paper or boards. The sheathing boards should be set six or more inches into the ground, as should also the board divisions between underneath scratching rooms. Then the outer siding,



Sketches of Poultry House—Fig. 2.

brace the four corner studs, preparatory to spiking a double plate on to them. Plumb the four corner studs and nail a four inch board from near the top of the stud to the sill, each way; and the longer these braces are (say ten or twelve feet) the firmer will they hold the studs. The double plate, which goes on to these studs, is laid the same as you did the sills, being careful to break joints. Plumb the studs as you spike on the plate. You are now ready to lay on the joists which support the floor to the pens. Referring again to Figure 1, it will be seen the joists are cut of length to come flush with the edges of the plates, and are toe-nailed on to them. When the joists are all on, commence and lay the floor on both the alley-way and pens. Then cut the studs for the rest of the frame, setting them two feet apart between centers. Toe-nail them to the floor, bracing corners well; also, every

whether boards or paper, should come down to the ground line.

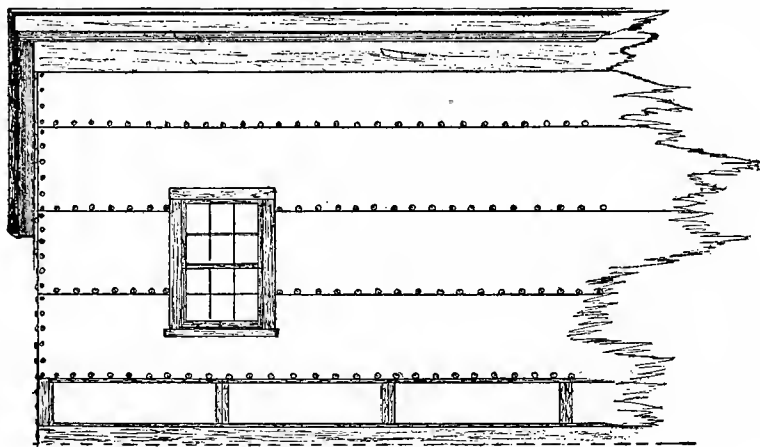
This completes the outside of the building, save the yards. These are ten by one hundred feet, with two feet boarded at bottom, and netting above; of such width as will give the desired height. A heavy wire stretched tightly along the top of the netting will keep it from sagging, and is not readily seen by the fowls. Doors between each yard are located next the building. The sills are six inches above the ground line, the building being sheathed down to and into the ground six or more inches (as before stated), nailed to the posts. Fill in with dry clay or gravel up to the bottom of sills.

The interior arrangement will be easily understood by consulting Figures 1 and 2. The good features of the build-

ing may be enumerated as follows: An alley-way three feet wide in the clear, with matched floor. The floor to the pens is also of matched boards, and is two feet above the alley floor. The space between floors is boarded up with the matched flooring and door eighteen by twenty-four inches, hinged at the bottom, gives access to the underneath, scratching room (which, by the way, is open front), and permits the scattering of grain in the litter, from the alley. Eighteen

the yards. Half-inch matched flooring is used to eil the inside, both on walls and overhead. I believe it superior to lath and plaster. As yet I am undecided upon the manner of ventilation, having two or three styles of ventilators in mind, which I propose testing thoroughly, when I will give results and description of same.

I have used 2x4's entirely in framing this building, but if desired 2x6's may be used for joists and rafters. The

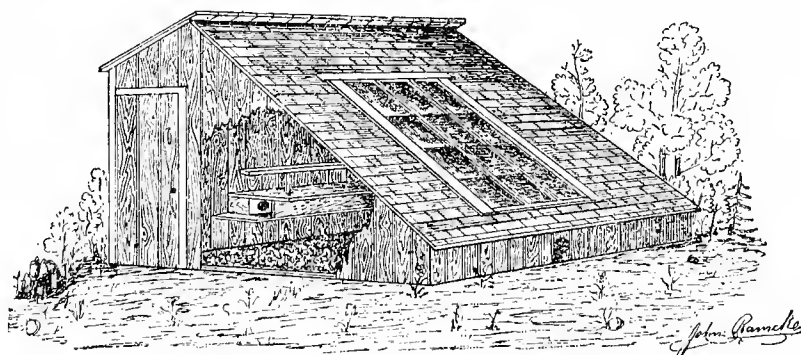


Sketches of Poultry House—Fig. 3.

inches above the floor (see Figure 1) are the nests, accessible also from the alley; and above them are the dropping platforms, with roosts of 2x4's one foot higher. Under the nests, and next the alley, a 2x4 is nailed horizontally, and three-eighths inch iron rods are set into this and the floor, three inches apart. Between these rods, the fowls eat their soft food from a trough hung on the outside—the trough being removed, cleaned and hung over on the north wall after the fowls have finished eating. Doors two feet wide open inward into each ten foot pen and are hung on spring hinges. Partitions between pens are boarded up two and one-half feet, above which is wire netting. Dust bath, grit and oyster shell are supplied on the upper floor, and a trap door 14x18 inches, raised and lowered by a cord from the alley, admit

Jenkins oil cup brackets will be used throughout in supporting dropping platform and roosts. The bill of material for building the size of mine is as follows, but one may build as long or short a structure as he chooses, the cost varying accordingly:

Nails and hardware will cost about \$10; carpenter work, extra. There are 4,176 square feet of bill stuff, as follows: Seventy-six pieces 2x4-9; 63 pieces 2x4-10; 109 pieces 2x4-12; 75 pieces 2x4-14; 162 pieces 2x4-16. There are 5,000 square feet of hemlock or pine sheathing, 2,500 square feet of pine flooring, seven-eighths thick for floors; 3,500 square feet half-inch pine flooring for ceiling inside; 2,000 square feet roofing paper, or 20,000 shingles; 2,500 square feet paper or



A \$15.00 House.

the fowls to the underneath scratching room; where, after their morning feed, they busy themselves in the litter all day. Each pen is 10x10 feet and scratching pens the same, thus giving ample room for ten or fifteen birds. Window sills are ten inches above the floor, and windows are double sash, so in summer the lower sash may be raised or removed entirely and a screen put in its place. One can clean the upper pens, as well as do all feeding and gathering of eggs, from the alley-way, while the refuse from the scratching pens may be shoveled directly into a wheelbarrow or cart taken through

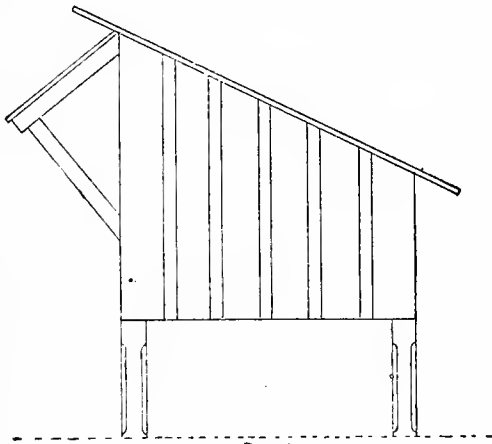
boards for siding; 200 pounds 8-penny and 100 pounds 20-penny nails are required, and ten windows 29x45.

A CHEAP HEN HOUSE.

The illustration given is for a hen house 10x10 and 8 feet high, with door on the end and one large window in the front. If this house is built of common dressed boards with three battens on the outside and tar paper fastened on with laths inside, and the slanting front as shown covered with shingles, the cost of material would not exceed \$15.

SUMMER QUARTERS FOR YOUNG STOCK.

What to do with the season's crop of youngsters when hatching time is fairly over is quite a problem to many who have an unusually large number of chicks, or to such as are starting into the business who have as yet made no provision for housing the young and growing stock after they leave the brooders or mother hen. Accommodations for them of some sort must be furnished, and when weaned they should be taught to occupy whatever is provided for this purpose. One should have at least two yards for the young stock, in which may be placed the brood coops, if you are using hens, and if the chicks be raised in brooders they should be located in these yards as soon as they are able to do without artificial heat. It might be of benefit to some one to know that these yards should be situated where the stock can have plenty of shade and direct sunlight. An orchard is a splendid place usually to locate such yards, but if not available one may provide shade artificially. Were it not for the rain, young stock would grow faster and hardier if allowed to roost in trees or bushes. Old birds, too, are benefited by a change of air, and since it is not practicable to move them one should see to it that every possible door or window is left open and the building kept scrupulously

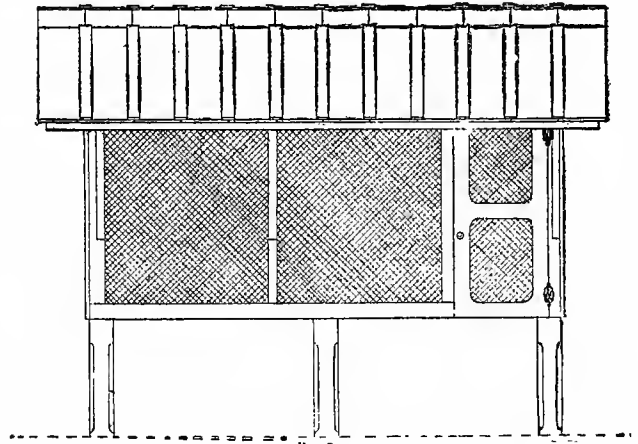


Side View Summer Quarters for Young Stock.

together two 2x4's or use 4x4 stuff if preferred. The method of framing a structure of this size and construction is extremely simple, and I think will be readily understood by any one. A glance at the accompanying sketch shows the roof, back, side and ends, to be boarded perpendicularly and battened. The front is left entirely open, save for wire netting of one inch mesh. A door two feet wide is hung on hinges, as shown in figure 2, by which one has access to clean out the building. It is hooked to remain open in the daytime and closed at night. For a floor matched lumber is preferable. Sixteen foot lumber and bill stuff will cut without waste, and the following amount will build the coop in question:

36 lineal feet 6x6, or posts; 250 square feet boards, 12 inches wide, 16 feet long; 75 square feet boards, 2 inches wide, 16 feet long; 15 square feet boards, 4 inches wide, 15 feet long; 224 lineal feet 2x4-16; 32 lineal feet 4x4-16, or 64 lineal feet 2x4 sills, and 60 square feet matched flooring. Hardware, 5 pounds 8-penny nails and 3 pounds 20-penny nails, one pair spring hinges, hook and eye, and 10 feet wire netting 6 feet wide, with one-fourth pound staples.

When completed such a building is neat and durable, dry and cool. The chicks are practically outdoors, yet pro-



Front View of Summer Quarters for Young Stock.

clean. When raising any considerable number of chicks, best results will be obtained from yarding them. Construct yards 100x150 feet, and they will be ample for 250 head of young chicks until they are two-thirds matured, when the number should be reduced to not to exceed 200. Where it is possible to provide larger yards do so by all means, as the nearer we can come to giving the stock unlimited range and still protect them by means of a fence the more contented and active will be the fowls. Where yards are much, if any, smaller than named they are too much on the order of a pen; and where the chick feels that he is a prisoner he will not thrive as would otherwise be possible. Some kind of shelter must be provided in each yard, and with a view of offering some ideas as to how these summer coops may be constructed I herewith present sketches of one we think hard to beat. Of course; such buildings may be of any size desired and in proportion to the number of chicks they are designed to accommodate. The building shown is ten feet long, six feet wide, six feet high in front and three feet high at the back, and will take care of 100 chicks until they are nearly matured or forced into winter quarters. For a foundation use either six-inch posts or 6x6 timbers and cut them six feet long. Set them into the ground three or three and a half feet, so as to raise the sills of the building two and a half or three feet above the ground. For sills, spike

ected from draughts, storms and danger from other sources. Roosts may be put in as the chicks become old enough to need them, and clean litter or dry sand or dirt kept on the floor. If kept painted such a building will last a good many years.

PRACTICAL POULTRY HOUSES.

The average poultry-breeder likes to live in a rather nice looking house himself, and as a beginner in poultry breeding he is likely to assume that an ornate poultry house is better than a plain one. Unfortunately for this theory the hen has no architectural sense and does not care how her house looks as long as she is comfortable. If the owner desires to make his poultry house architecturally beautiful there is no reason why he should not do so, so long as he confines his efforts to the outside, but it is a rule that applies universally that the inside of the house should be arranged entirely from a practical point of view.

This makes it very easy for every one to so plan his poultry house that it will come within his means and not exceed the cost he can afford to go to to provide for his stock.

In planning a poultry house we should consider these things: First, cost; second, comfort of the fowls; third, convenience as to feeding, cleaning and keeping free from insect pests.

The matter of cost is governed somewhat by the number of fowls that must be provided for. That is a fixed factor which cannot be changed, each man being a quantity by himself. One man may have twenty-five and another five times as many and the amount of room needed will depend directly on the number of fowls to be sheltered.

The comfort of the fowls depends on warmth, light and ventilation. Of these warmth is most important and ventilation, as generally understood, of least importance. Light is a close second to warmth and should never be neglected, for fowls will not thrive in the dark nor do their best unless they are given a free chance to get where the sun can shine directly on them.

Convenience should be sought so as to make it easy to feed the fowls, easy to clean the house and easy to keep it free from insect pests. It is with this matter in view that the accompanying illustration of a cheap poultry house is given.

The house as shown is 10x13 feet, faces the south and is eight feet high on the south side and seven feet on the north or lower side. The outside walls may be constructed of either double flooring or boards, with battens on the

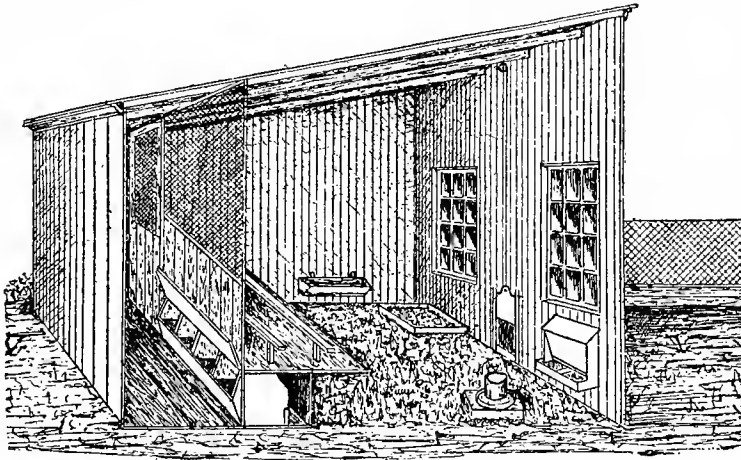
window in winter and in the coolest corner of the house in summer.

The perches are shown so plainly that no explanation is necessary, except to say that perches, dropping board, nest boxes and every other inside fixture should be so arranged that they can be taken out and cleaned without trouble at any time.

As will be seen, this is about as plainly built as it is possible to make a poultry house. It is in effect a square box with a shed roof, and such a house may be extended indefinitely, according to the number of fowls that are kept. It is easy to apply disinfectants to any part of such a house, and to whitewash it is only a matter of putting the wash on plain walls, which are accessible and have nothing attached to them to prevent going over them rapidly.

If the dropping board is always kept dusted with air-slaked lime or sifted coal ashes, they will not only be easy to clean, but the dust will make it impossible for lice to crawl about from perch to perch, and they will in effect be prevented from crawling back and forth from one perch to another, as the dusty lime or ashes is death to them.

This design is given as embodying all the good points of



Interior View of Practical Poultry House.

outside and tarred paper between. It is always well to leave a two-inch air space between the two walls if the inside ceiling of flooring is fitted tightly together and the outside cracks are closely battened, as the dead air space thus made will make the house warmer in winter and cooler in summer.

The passage, as shown in the illustration, has a board floor and the poultry room has a floor of dry earth. In winter this floor should be covered with short straw, leaves or clean litter of this kind, in which the grain that is fed should be thrown to keep the hens busy scratching in order to force them to take necessary exercise.

The divisions between the poultry rooms and hallway, if there are more rooms than one, should be boarded about two feet above the floor, where there are no roosts, and from there to the roof should be made of wire netting, as shown in the cut.

The arrangement for nests is shown in the illustration. This makes it convenient to gather the eggs from the hallway.

The dusting box is placed where the sun can shine directly on it through one of the windows, and on the south wall is shown a hopper in which is kept a supply of grit, while the water fountain or vessel stands before the other

a cheap poultry house which is convenient and may be made perfectly comfortable. Any one who can handle a saw and hammer can do all the work on such a house except hanging the doors and putting in the windows. The inside arrangements are all that is necessary. As to the outside the builder can make it as ornamental as he wishes.

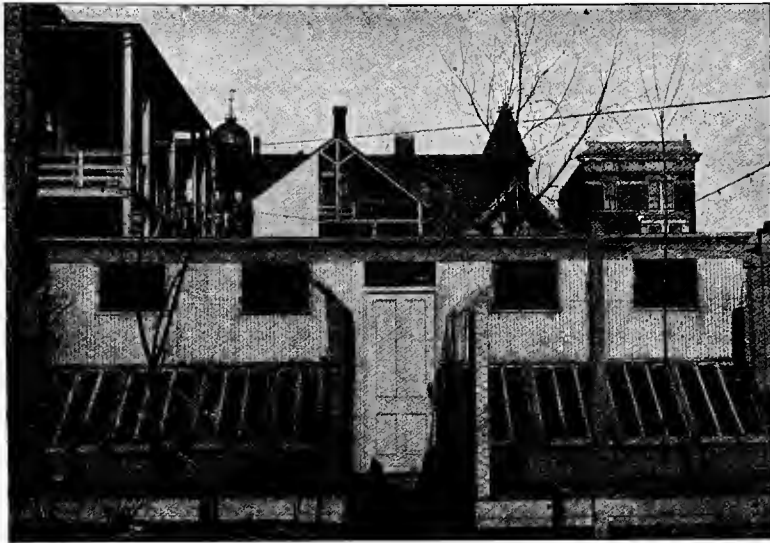
A poultry house built by the writer last year is on this same plan practically, with the exception that instead of only one room there are eight and the partitions between the rooms were tight from floor to roof, being made of flooring. There is a door in each partition, hung on spring hinges, and instead of two windows in a room there is but one, containing sixteen lights ten inches square. This building is covered sides and roof with Neponset roofing, with battens every eighteen inches. This is painted with red "iron-clad" paint and trimmed with white. Such a building costs \$234 complete, the carpenter getting \$80. This is less than \$31 a room. The building cost too much, even at the high price of lumber. It could be built for about \$200 under favorable circumstances in a country place. This building sheltered Brown Leghorns and Plymouth Rocks during the severe weather of last winter, and not one of them was touched with the frost, the hens laying freely during the cold weather.

POULTRY HOUSE FOR A CITY LOT.

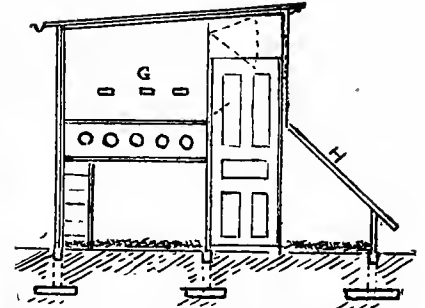
BY JOHN RAMCKE.

It is very difficult to construct a poultry house that serves for both winter and summer, more especially where room is not plentiful, as on a city lot; but in the illustration and plans given the object is to show a convenient mode of pro-

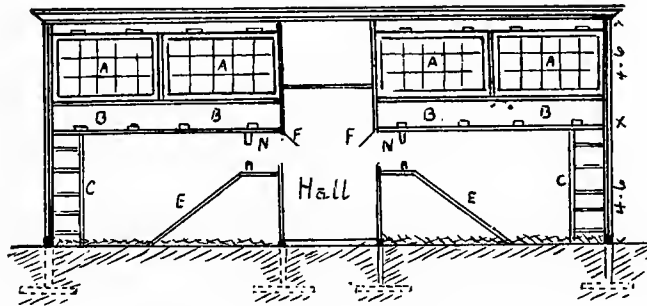
ing floor; 10x14 feet for each apartment, and a hall 4 feet wide. It is 4 feet 6 inches up to the roosting floor and 4 feet 6 inches from there to the roof, which is of gravel. The outside inclosure and the roof are constructed of double flooring with tarred paper between them. The second floor or roosting place is inclosed with windows, A A A A, which



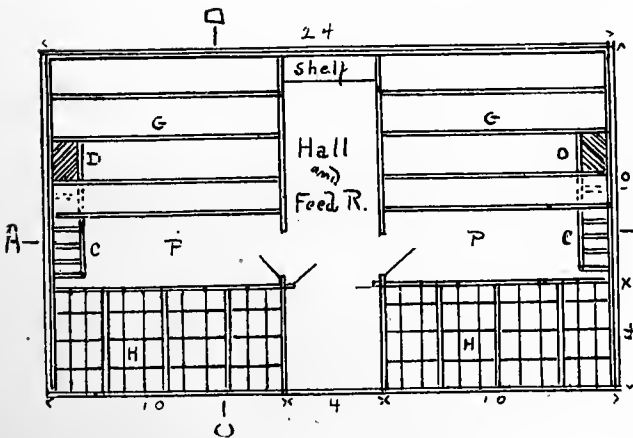
Outside View of Poultry House for City Lot.



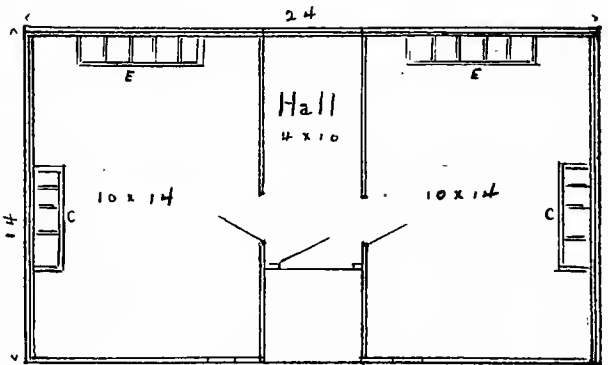
Section C D—House for City Lot.



Section A B—House for City Lot.



Upper Floor of House for City Lot.



Lower Floor of House for City Lot.

tecting the fowls when on the roosts in winter, and also to give them the benefit of the cool air in the summer. The figure shows a winter protection against draughts of air.

The general outline is made plain in the cuts; it keeps the fowls warm in the winter and provides ample room for exercise, giving plenty of floor space. The house is 14x24 feet on the ground floor and 10x24 feet at the second or roost-

are arranged to swing up against the ceiling in the summer, as shown by dotted line. Below these windows are clean-out doors, B B B B, which can readily be opened and the floor cleaned from the passage P in front of them. The ladders C C lead to the roosting place through an opening in the floor, D D. The nests, N N, are reached by ladders, E E. The location of the nests is under the roosting place

floor, and very convenient to get at from the hall by opening the little doors, E E.

The roosts, G G, which extend across the poultry house, are resting on brackets at either end. The scratching place, or the first floor, has no wood floor, but the ground is covered with leaves or cut straw, and gives the fowls plenty of exercise in winter and is well lighted by the windows, H H, in the front.

By putting the roosting place on the second floor the

with drop siding on the outside, the inside of the studding being first covered with tar paper and then with matched boards, leaving an air space between the outer and inner boarding, thereby keeping out the heat in summer and the cold in winter. The floor is constructed of planks resting on 4x4 sleepers, bedded in cinders or sand. A cement floor would be much preferable on account of keeping out rats and other vermin, and the extra cost, which is about double that of the wood floor, would pay for itself in a short time.



NORTH-ELEVATION.

Double Poultry House.

scratching pen extends under and occupies the entire space of the house, thus economizing space and affording a larger scratching pen than could otherwise be made in a small yard.

The cost of material for constructing such a house is about \$55, not counting labor.

For a smaller place one-half of the house could be built.

This house could be built cheaper, but Mr. Ramecke believes in a double wall perfectly tight and draught-proof. An ample amount of air is furnished the birds and the ventilation is fully sufficient, and his birds have never suffered for want of it. Mr. Ramecke's birds have never had roup or lice, and he believes in sanitary prevention by keeping the houses clean.

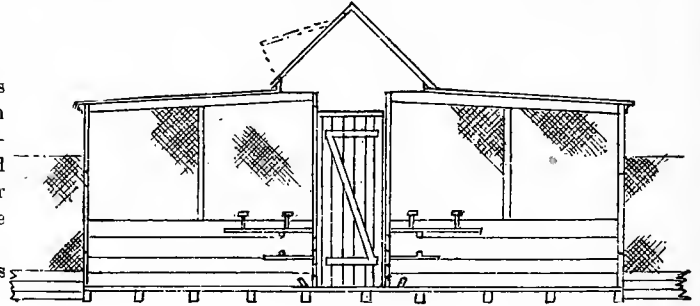
Thirty birds can be comfortably accommodated in this house, though this could be increased to forty.

A DOUBLE POULTRY HOUSE.

The illustrations given are a floor plan, south and north elevations and section of a double poultry house. The advantage of a double poultry house, as presented in this issue, is the southern exposure in the north pens as well as in the south pens, while the gangway is in the center. It makes the work much easier for the attendant to take care of the different compartments. The house is planned to be 80 feet long and 24 feet wide, making each room 10x10 feet

A cement floor, being much colder than a wood floor, would in winter have to be covered with about two inches of sand and litter, which would at the same time give the hens exercise in scratching for their food.

The nests and feed troughs are conveniently reached from



SEC-AB

Double Poultry House.

the hall by little doors or slides, as shown in the section. The roosts are fastened to the dropping floor, and the nests under this floor should be arranged so they can be removed, so as to facilitate the cleaning of every part. Perches should be at least two inches wide. Fowls will cling to one edge of a wide perch and the width will give opportunity to rest



SOUTH-ELEVATION.

Double Poultry House.

and the gangway 4 feet wide and the storage room 17x20 feet. The north and south walls are 7 feet 6 inches high, and the roof has a pitch of six inches to the center and is covered with tar roofing felt. The skylight is four feet high above the roof and has windows on the south side, allowing the sun to shine into the pens on the north side of the building, the hall and dividing partitions all being inclosed with wire netting three feet above the floor. The outside walls and roof should be constructed of 2x4 studding

the weight on the shanks. A very narrow perch makes it necessary to bear the weight of the breastbone, mainly in one spot, and thus it becomes bent to one side or pressed in. Old fowls have their breastbone hardened so that they will stand the pressure without bending, but all should have wide perches.

The skylight windows should be closely fitted and so arranged that they can be opened for ventilation during the day, but closed at night, except in warm summer nights,

when they may be kept partly open. If the house is properly cleaned and aired during the day no ventilation is necessary in cold weather, as it is very difficult to ventilate a poultry house without causing draughts of air on fowls at night. There is not so much foul air in a poultry house as may be supposed, and no house is built so tight but that it will admit some fresh air. The windows should be made movable and covered on the inside with wire netting to prevent the fowls from breaking the glass. The storeroom is placed on the north side of the building in order to get the majority of pens to the south side of the building. The roof as shown is not as costly as a high gable roof would be, and if the rafters are ceiled underneath, forming an air space, it will be much warmer in winter and cooler in the summer than a high roof. The material for a building according to the illustration, if constructed of materials as above described, with a wood floor, would not exceed \$450.

It would pay breeders to erect sheds in the fall for the growing stock. This could be cheaply done in the following manner: Set four posts into the ground to form the corners of a shed, say twelve feet long by seven feet wide. Board up the side from which the prevailing rains come and let this side be one of the long ones. The front posts should be about four feet high, the rear ones six or seven feet, so as to give a proper slope to the roof. This will make the long open front the lowest and thus prevent the rain from driving in very much, even when it comes from the unexpected quarter. Nail a strong board across the front for the roof boards to rest upon. This board preferably will be a two-inch or an inch and a half plank. A similar one forms the top of the boarding on the rear. Nail on the roof boards and cover with roofing paper or shingles. Neponset red roofing paper makes an excellent roof. Nail across the ends a six-inch wide board about eighteen inches from the ground as a support for the scantlings used as roosting poles. Such a shed will make a good place for the chickens, and being open on three sides will furnish them with plenty of fresh air, something very necessary for their health. It would cost in this locality about as follows:

Four posts at 25 cents, \$1; 200 feet hemlock, .015, \$3; two scantlings 2x3, .018, 22 cents; nails, 10 cents; roofing paper, \$1; total, \$5.32.

The labor can be done by the poultryman, and he can charge for that whatever he thinks right.

Such a shed will have these advantages: It will furnish a good roof for chickens; it will be airy, and yet being open on all sides, but the rear will have no draughts; it will make a shelter on rainy days; it will gradually accustom the chickens to being housed, so that when it becomes desirable to take them into winter quarters they will be partially accustomed to them; it will prevent much sickness among the chickens, and its cost will be saved several times over the first season, while it will last for quite a number of years.

Chickens accustomed to the open air when first brought into winter houses are often made sick by the change. They are attacked with influenza and inexperienced breeders imagine they have the roup. They doctor them for the trouble with some proprietary remedy, and as the chickens get well they attribute the recovery to the virtues of the remedy. As a matter of fact this distemper usually runs its course in a few days or a week or two, and most of the chickens will recover without any doctoring. The very best remedy is plenty of fresh air, and if the windows are thrown wide open the recovery of the chickens will be hastened. And just here is where comes in one of the advantages of the shed we have described. It is a partial training for the going into winter quarters. It gradually accustoms the chickens to a less free supply of air from what they had received in

the branches of the trees, and they are therefore less liable to have this distemper. In fact, view the matter in any light and such a shed is a real help toward successful chicken raising.

But it is no protection against the depredations of vermin like skunks and coons and foxes. If one is situated where they must guard against these a modification of the shed should be made. A bottom board should go around the four sides and be set well into the ground. One end should be boarded, or at least a door should be provided. Wire netting, such as is used for fencing, may be tacked securely to the open sides, and even the door may be simply a frame covered with netting. This will secure the poultry from the depredations of such enemies, and will not much interfere with the circulation of air. It will add somewhat to the cost of the house, as a door post, a frame for the door, two hinges and a hasp or hook, and the netting and staples for fastening it, must be provided, as well as the four bottom boards. Even with these changes the shed will be an inexpensive structure, whose value will be received many times over before its usefulness is exhausted. We certainly advise those who never tried such a shed to build one this season. If it is provided with wire sides it will be a handy place to set hens next season, and as a setting house will be worth its cost.

A CHEAP AND CONVENIENT POULTRY HOUSE.

The needs of the great majority of poultry raisers are amply provided for by building a plain, convenient poultry house, supplied with the necessary fixtures, nest boxes, roosts, feed boxes and suitable room for scratching shed for exercise of fowls and their protection during stormy and warm weather.

The illustration shown here provides for all these, and the building can be constructed cheaply, giving safe protection and accommodation for the fowls.

A house of convenient size, as illustrated, should be made 10x10 feet, with eight-foot posts at the highest point. The roof should have sufficient slope to freely allow drainage of rain at about an eight-inch slope to the rear. In an ordinarily mild climate, common lapped siding can be used for the sides; where the winters are severe, further protection can be given by a double siding or with tarred paper. A cheap roofing, and all that is necessary, can be made with tarred roofing paper, fastened down with strips of lath. This house needs no built flooring, a dirt floor answering the purpose.

The open shed, the same size as the house, is a very essential part of the building. The fowls have access to this through low doors. In the hot days of summer it provides an artificial shade, and during stormy weather protection from rain, at the same time giving the fowls the exercise they require. A layer of leaves or straw should cover the ground on which food is thrown, making a perfect scratching shed, which all traditions and experience prove is absolutely necessary to good health and contentment of fowls.

When space is limited and a free range is neither possible nor required, as is the case where a number of varieties are kept, runs should be inclosed with wire fencing, connected with the building.

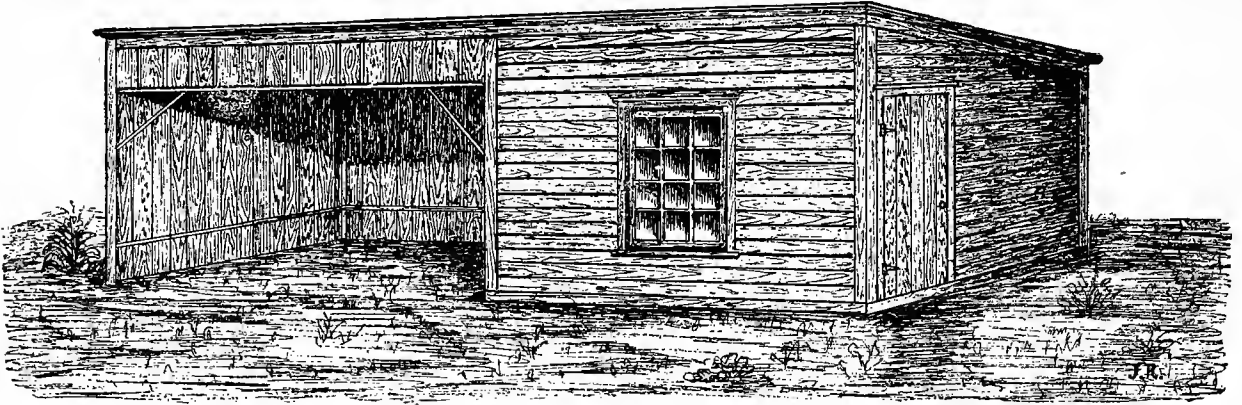
The usual position to secure the best possible advantage of light is with a south frontage.

The description and illustration give simply the barest outline of the essential points necessary in an ordinary shelter for one's fowls. The building must be governed by the needs largely, and in case a large number of fowls are to be provided for this building can be duplicated, and in such event the cost of the several buildings or sections

reduced. To prevent the ravages of rats and other predatory enemies of the feathered race it may be necessary to sink under the walls of the building a foundation of brick or crushed glass to prevent their entrance into the building.

a significant fact, too, that some of the grandest prize winners have the most modest surroundings.

There are, however, many elaborate and beautiful houses built for the accommodation of poultry which are in har-



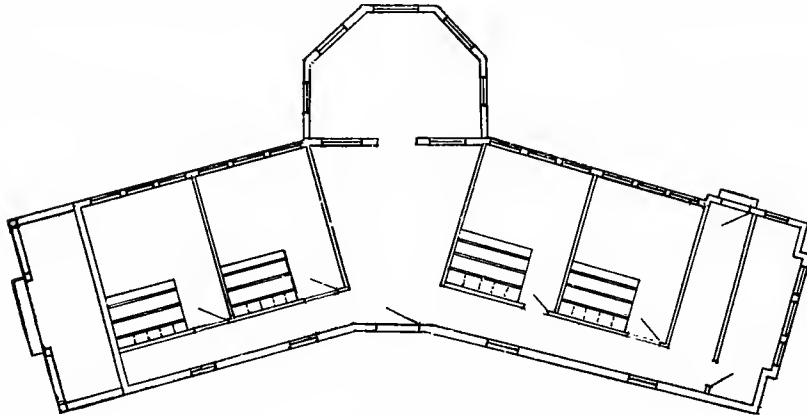
Cheap and Convenient Poultry House.

The material for this building can be easily bought for \$24.

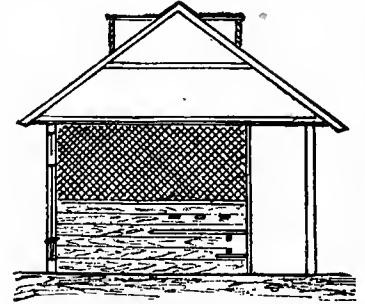
A CHICAGO POULTRY HOUSE.

Costly and elaborate buildings are not necessary adjuncts to the care and raising of fowls. This is demonstrated by

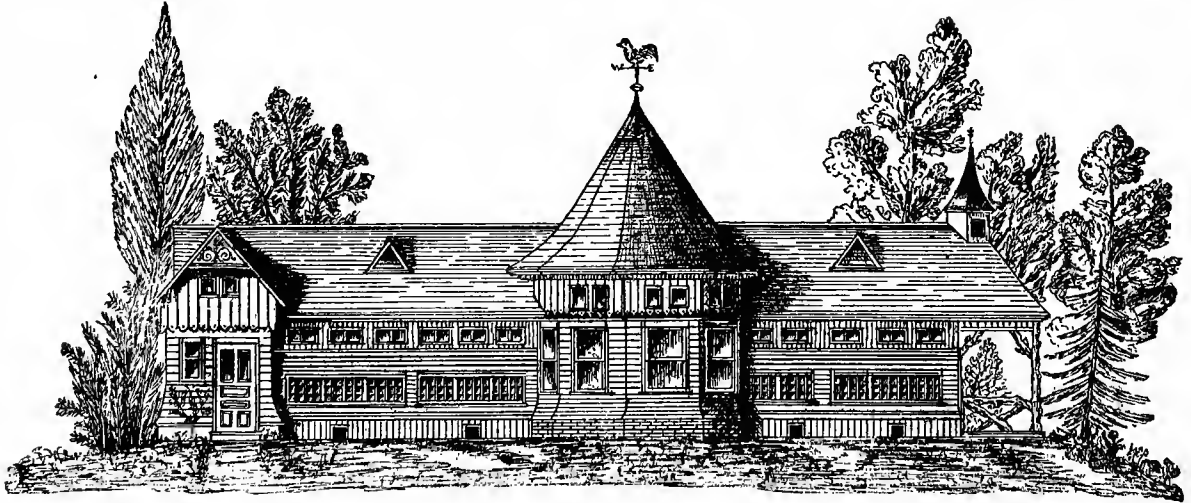
mony with the tastes and surroundings of the owners, and which further demonstrates the cosmopolitan nature of the poultry fancy. The illustration given here is of a poultry house erected in one of Chicago's suburban towns. A grave fault with the average of the more expensive houses is the



Floor Plan.



Side Elevation.



Poultry, Pheasant and Quail House.

the fact that successful poultry raising, involving thousands of dollars yearly, is carried on where the investment in building provides only for adequate shelter, space and labor-saving conveniences at a merely nominal cost. It is

liability of sacrificing the practical features for the ornamental, but in these plans they are combined.

The house is intended to accommodate poultry, pheasants and quail. It is built at an angle from the center simply

as a pleasing architectural feature. A porch is added at the east end, fronting the owner's residence. The pheasants occupy the semi-circular room in the middle of the building. This is a room open to the ceiling, the entrance for the birds being through the small windows under the eaves. Perches are used, and in the center of the room is an old dead tree, the branches of which also afford roosting places. The birds are confined in a yard inclosed and covered by wire netting. The quail house at the west end is also provided with the same wire netting, to provide ample exercise for them. The door at the left opens into a hallway adjoining the quail house, and this hall extends the entire length of the house at the rear of the poultry rooms. These rooms are four in number, supplied with good light, have dirt floors and the usual perches and dropping boards, which are movable. The nest boxes are reached from the hallway.

The general dimensions of the building are 60 feet long, 15 wide and 8 feet high in the clear. The side elevation shows the general arrangement. A flock of fifteen birds can be conveniently housed in each room, making a capacity of sixty birds, although this could be increased to eighty if necessary. The cost of this building at Chicago prices was about \$8.50, although it could probably be done at a less price, according to cost of labor.

PROPER LOCATION OF A POULTRY HOUSE.

(See illustration on page 11.)

The location of the poultry house is a matter of considerable importance. If the land is level it does not particularly matter where the house is located as regards the lay of the land, but care should be taken to so place it that buildings will not keep the sun from shining on it all day. Very frequently we see poultry houses so placed that a barn or other outbuilding stands between them and the sun in the early morning or late afternoon. If we could have everlasting summer this would be an advantage, but unfortunately we must think of long and cold winters, and it does not take a very tall building to shut the sun out of a poultry house for two or three hours in the winter. This prevents warming the building by the rays of the sun and should be avoided. We have always thought shade trees make the best shade for poultry of anything that can be had, and for this reason would place a poultry house on the north side of trees if we could always choose the location. Trees furnish shade in the summer when it is needed, and if on the south side of the poultry house they protect it from the fierce rays of the summer sun, but in winter, being bare, they allow the sun to shine directly into the house.

Where the ground is rough or broken it is frequently very easy to so locate a poultry house that it will be under the protection of a hill from the coldest winter winds. We have seen some extremely comfortable poultry houses built by digging a place in the side of a hill facing the south and building the house in the excavation. Such a house will have the whole front and part of the sides exposed, while the back will rest against the bank of the excavation.

This matter of location should be seriously considered when planning to build.

The illustration shows so plainly how to build a cheap and practical poultry house that it needs but little explanation. This house is only adapted to level ground, as it has a hallway in the rear, which is used for storing feed and from which the eggs may be gathered from the nests through sliding doors in the back of the nest boxes. The perches are above the nests, the top of the nests serving as a dropping board. The supports of the perches should never touch the walls at any point, and the dropping board should be kept constantly covered with air-slaked lime,

sifted coal ashes or very fine road dust. Never use wood ashes for this purpose, on account of the alkali in them, which ruins the value of the droppings and spoils the shanks of the fowls. If these two points are kept in mind it will be easy to prevent mites from getting a hold in the house. Keep the perches and their supports away from the side walls and keep the dropping board covered as indicated above. If this is done the mites are isolated on the perches and easily combated if they appear.

The nests should be just high enough so the fowls can stand under them comfortably, and if the large breeds are kept a wide running board or a step should be provided in order that they may get in and out comfortably. The floor may be of any material, but should be kept covered with three or four inches of sand or earth and this covered with straw or other litter.

The glass covered run in front may or may not be used. Its value is a matter of dispute. Personally we do not use such an addition at all, preferring to put the glass in the front of the house. A good many good poultrymen are in favor of such a run and there is good argument in support of its use. In any case the wall between the run and the main room should be continued down to the ground and only a small door left through which the fowls could run in and out. The sash should be so arranged that they can be easily lifted off to let air into the run and to clean it when cleaning is needed. From these hints the man who has but a single flock can construct a poultry house that will meet every requirement.

DESCRIPTION OF A MODEL POULTRY HOUSE.

A Poultry House Fully Illustrated and Described—The Result of Years of Experience With and Care of Fowls.

THOMAS F. RIGG.

About the most important requirement on a poultry farm is the buildings. Fowls must be properly housed from Nov. 1 to May 1 to do well, and, consequently, to properly reward the owner. I have built several houses, but the one recently completed, and which will be briefly described herein, is, in my opinion, a model. In the first place the location is an ideal one. The building is situated in a clearing, on a southwestern slope. With the exception of this clearing and a like one to the north of the house the whole tract is heavily timbered with oaks and willows. A short distance west of the building, of which the roof can only be seen in the photograph, is a generous spring. This supplies the range stock with fresh and cool water of the best quality during the warm months. On the banks of the stream, of which the spring is the fountain head, the birds are free from the scorching sun, for along the stream the timber is so thick that in most places the sun's rays cannot penetrate the dense foliage. And how the youngsters do like it, and how they do grow! The whole tract is seeded to red clover and blue grass, and back from the stream this makes a luxuriant growth. The house here described faces (as all others on the place do) to the south, of course. It is 16x48 feet. It is made of the best grade of lumber throughout. The sides and ends are of drop-siding. It is ceiled inside, sides, ends and overhead with shiplap. On the inside, between the drop-siding and the shiplap, the best quality of building paper was used. This prevents the cold air entering the dead air space, and what little does get in cannot find its way into the house proper. The house is well floored. On the roof the best grade of red cedar shingles were used. I have learned that it is not well to build a poultry house with a shed roof, because the front or high side will be to the south, and the sun in winter being so far south that its rays strike the shed roof so slanting they do not assist in warming and drying out the house.

With a cone roof the conditions were reversed. The windows are of double sash, making the total window space $2\frac{1}{2} \times 5$ feet. Each sash is so set as to be raised or lowered as desired. Storm windows are added in winter.

This house is given over entirely to the breeding pens. Each of the four pens has an outside run, 116 feet long and 12 feet wide, with the exception of the east one. This has a run 116x16 feet. As will be noted, these runs are planted to trees—cherry and plum. The trees are yet young, but will soon supply shade. The runs are seeded to red clover and blue grass. In the construction of pen partitions five foot wire netting was used, with a board on the bottom.

The Interior.—A sketch of the pens is herewith shown. In the construction of this house the aim was to combine as many good things as possible. By so doing the welfare of the fowls is taken care of fully and the work of attending them reduced to the minimum. D is the door by which the building is entered from the east. The hallway extends the entire length of the building on the north side and is

lice-killer, as are the nests. The nests are placed two feet from the ground. They are made roomy and are entered from the end, there being a passageway in front of the nests. The side facing the pens is tight, as is the slanting top. This makes the nests quite dark, and the top not being level the birds cannot roost thereon. The hallway fence is made of small square pickets, three feet high, with wire netting extending above to the ceiling. The eggs are gathered from the hallway by reaching into the nests between the pickets. L & C represents small boxes containing lime, grit and charcoal. These boxes are small (cigar boxes will answer nicely) and set upon the floor in the hallway. The fowls can secure the contents by reaching through between the pickets. By having the boxes in the hallway the materials are not scattered out of the boxes and wasted. The dust boxes are each 3x3 feet, 6 inches high. The pen divisions are made with wire netting with boards on the bottom two feet high.

The morning feed is given in shallow troughs. As soon



Model Poultry House.

four feet wide. Each pen is 12x12 feet. It will be seen that in the furnishing of these pens the only floor space given up to any fixture is that occupied by the dust bath, D B. This is important, for during the long months when the fowls must of necessity be confined they need all the floor space possible. Each pen is entered by a door, D. The roosts are designated by R. The roosts are ten feet long, there being two in each pen. They are made of 2x4 timbers and are placed with broad side for fowls to roost upon. They are placed upon dropping boards in the form of a platform 10 feet long by 4 feet wide. The roosts are nine inches above the dropping boards, the dropping boards being two feet six inches from the floor. The platform constituting the dropping boards is held in place by hinges connecting with the pen division boards and by two legs in front. This allows us to keep the whole free from vermin. Every two weeks the platform is raised by means of a pulley and thoroughly painted on the bottom side with liquid lice-killer. The droppings are removed three times a week. Every two weeks the roosts and upper side (as well as lower side) of the platform is gone over thoroughly with the

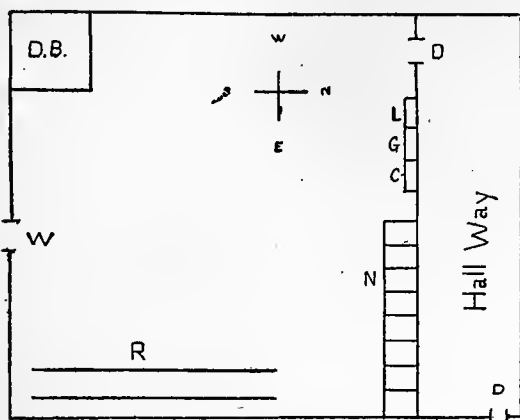
as the meal is over the troughs are removed from the pens and hung up in the hall.

The Water Troughs.—One of the very best egg producing materials is warm water. In the average poultry house about the most neglected duty is watering the stock. The water trough here shown is a very practical one. It is three feet long, four inches wide on inside and three inches deep. It can be made of common boards. Get the length of your trough inside and proceed to make the floater. Take an inch or half-inch board, the length and width of inside trough, and cut out in the middle and to within one inch of either end a piece three-quarters of an inch wide. Upon the top of this board nail a strip of lath on each side of the opening so that each strip will come flush with the opening. This floater now place in the trough and it will float upon the surface of the water. The water in the opening, 3, will rise even with the bottom of the lath, and thus the surface of 1 and 2 will be at all times dry. The fowls cannot get their combs or wattles wet. There will be colds contracted by having wet faces. This trough is especially desirable for the breeder of any of the crested varieties. The trough is

HOW TO BUILD POULTRY HOUSES.

set on the hallway floor and the fowls secure the water from between the pickets. It is always clean. It is the best thing of the kind I have ever seen or used.

Labor-Saving Devices.—Upstairs in the attic are four feed bins. These are of necessity small, but will hold a winter's supply of oats, wheat, barley and shelled corn. A tube runs from each bin down into the hallway, each bringing feed into

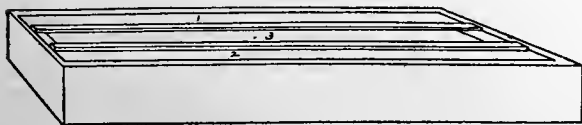


a box resting on a shelf. From these boxes the feed is taken at feeding time. There is no running for feed or carrying of same. It is right there at hand and the grain can be fed as desired. I find it better not to have small grains mixed. If kept separate this way it can be mixed at feeding time as desired to meet the conditions. In the west end of the hallway is located the soft feed bins. Here, too, are a pair of scales used in weighing birds. The liquid lice-killer and other necessary things are kept in a small cupboard on the west side of the hallway. The droppings are used about the fruit trees and upon the grass range.

The ground upon which the building is located has a decided western and southern slope. This makes the space beneath the western portion of the building roomy. There is a door in the foundation on the south, and the room is occupied as storage place for brood coops and the like.

Some of my fellow fanciers who were here when the building was in course of construction tried to induce me to put a glass front in the high portion of the foundation and use the basement as scratching sheds. But I have had an experience with damp basement scratching sheds and did not care to repeat it. I can keep the fowls busy in these pens as described. The floor is covered with straw and they must scratch for every particle of grain they eat. If fed as per the plan given last month they will find no time to be idle.

The Range.—The building to the north, of which a portion of the roof only could be shown owing to the foliage of the huge oaks, is a poultry house and barn combined, 48x60 feet. Here is kept the bulk of the stock, and it is fitted up not only to accommodate this stock, but also the large



amount of grain and clover hay kept constantly on hand. Here, too, is the bone cutter, one of the things which no man who is raising poultry can possibly afford to be without. Since using a bone-cutter I have increased the egg yield 33 1-3 per cent. Not only this, but the fowls are healthier

and the chicks grow more rapidly and consequently develop more quickly. And when it comes to getting a bird up to weight for an exhibition there is nothing that will do it so quickly as a feed of green cut bone, milk and a feed of cornmeal and ground oats.

At the close of the breeding season the males which headed the pens are taken to a range and there kept all summer. No females are on this range, the males roosting in a small shed which is open to the south. They, too, have shade and running water. The females used in the pens are also turned out to grass.

The brood coops containing the chicks are scattered in a grove through which water runs. They forage on the clover and blue grass pasture or in the shade of the trees at will. They are kept here until removed to the yards and winter quarters.

Cost of House.—This house cost \$250. As stated, it is built of the best material and the workmanship is first-class. It was built to last. As roomy a house can be built for less money, of course, but I believe in building well, and know of nothing in connection with this house that I would care to do without.

THE ROOSTS.



THE instinct of self-preservation prompts fowls to perch on the highest point they can attain when seeking their quarters at night. This is done because they naturally desire to be far above the reach of danger from below, and they go under shelter to avoid the enemies that fly in the air. This instinct of the fowl is well known, and yet some breeders construct their roosts in such a manner as to have the rear cross-piece higher than the next and so continuing until the first one is quite low. If any one will take a look into the quarters at night after the fowls have retired it will be seen that, no matter how much room there may be on the roosts, a portion of the lower space will be unoccupied, while the higher poles will be crowded, the fowls being as compactly pressed together as though the packing process had been purposely done to get them all as high as possible. There are several objections to such roosts, not only so far as the discomfort of the fowls is concerned, but because they are unsightly, unhandy and filthy. The gridiron roost, with its low and high perches, is an obstacle in the way of cleaning the coop. It takes up unnecessary space and it compels the heavy fowls to jump higher at the risk of knocking over the small ones and an occasional fall is the consequence when coming off. Not only are the feet injured, but bruises and jars to the body are also the result.

Perches should all be on a level with each other, and should be made easily removable. By so doing the fowls will not crowd each other and the perches can be cleaned and washed with coal oil occasionally. No injury from getting on or off will occur, and no conflict for preference of position will take place, to say nothing of superior ventilation, facility of removal of droppings, access of the attendant and beauty of arrangement.

ROOSTING WITHOUT ROOSTS.

An Accidental Suggestion Followed Out — Lighter Breeds and White Fowls May Be Housed Without Roosting Poles— Hints as to Ventilation.

R. W. DAVISON.

The question of low roosts, high roosts and ladder roosts has been pretty thoroughly discussed, but the question of no roosts has been neglected. True, it is not a new subject; but few have seriously considered it. I discovered its advisability by neglect. I neglected to attend to the ever-present

lice in one of my roosts until the pole and dropping board was alive with them, and to make quick work of it I carefully carried board and roost pole outdoors, saturated them with kerosene and applied the match. After that I saturated parts of the inside of house. To make sure I left the board and roost pole outside, and as the floor was well littered with straw I thought I would let the fowls roost on it for a time.

My chicks have now been roosting on the floor over three months. I think that I will never put the roost back again and am considering the advisability of moving all roost poles from my other houses.

At the time of giving the morning mash I throw a few handfuls of wheat among the straw, especially in the corner where the chicks sleep, and in a short time all the droppings will disappear. At night I see that the straw is clean and thick in the roosting corners.

The house should be cleaned once a week, but if left two weeks no bad smell will be perceptible. In cleaning I carefully shake all droppings out of the straw and move it to the front of the house, while I rake and scrape the droppings away. Afterward I change the straw to the cleaned space and finish the job. The floor is of sand. With this method the droppings do not accumulate in one spot and become heated, but are scattered and dried by being mixed with the sand, thus preventing fermentation and the escape of odor.

The birds keep very clean, seldom soiling a feather. Being low down, they escape all draughts and keep much warmer than if perched up on a roost pole. It is easy to protect the birds from cracks here, as a piece of tarred felt run around the wall will do it. The birds keep in fine health, notwithstanding the house was open—you could see through it anywhere—until freezing weather set in.

I would not recommend this plan for a large flock quartered in a small house, but for small flocks—fifteen or twenty birds—it is fine. I believe more winter eggs will be the result because of the warm corner. The house should be perfectly bare except for a few low nest boxes.

Speaking of health, reminds me of H. S. Babcock's plea for fresh air. His claim is that hens will winter better—less disease or colds—in an open than in a closed one. This does not agree with my experience, for I make all roosts as tight as possible and have no ventilators. My birds seldom have colds and I do not lose over 2 per cent from all causes per year.

This fall I covered my houses on the *outside* with tarred paper (roofs and side). It is all right to line on the inside, but if only one lining is to be used let it, by all means, be on the outside. Good, cheap sheathing paper will last—on the sides—for several years. We can make a tighter job by so doing and with less trouble.

Several of my houses I lined on the outside, as stated above, while some I did not, and one already had an outside lining on, but it was old and had a few small holes. The fowls—pullets—in this house and the unlined houses caught heavy colds in the fore part of December, while the birds in the lined houses did not get any. The former are getting better from the effects of spongia in the drinking water and a fixing up of the houses. I never had anything like it before and if I had not taken these colds in hand at the start I would soon have had the roup amongst them.

Strange as it may seem to some, yet I do not think the houses had much to do with the fowls taking cold; yet it might have had a little to do with it. These cases of colds were only among the 75 pullets purchased late in the fall—November. I do not know what kind of care they had received, but I have reason to believe their only roosts

were the trees until I purchased them. They were not as fat as they should have been and they probably had to hunt for most of their food. I put them in my close houses and fed them largely on stimulating food, and there is where I probably made the mistake. I gave them all they would eat while my own chicks I fed more sparingly, for they were fat enough when I put them up. I yarded my own chicks early in October while the boughten ones I did not yard until late in November.

Mr. Babcock is both right and wrong according to my handling. I do not use ventilators, as I said before. During warm nights I have the houses open. During medium cold nights I leave one window partly open, according to the degree of cold, and during cold weather I shut the houses up as tightly as possible.

The purchased pullets were not in perfect health and I believe the sudden change from tree roosts to tight roosts, together with the high feeding, produced the bad results. My own chicks were in perfect health and the change from the fields to the yards was made during mild weather and they became gradually acclimated, so to speak. Mr. Babcock is a thoroughly reliable man and does not recommend a thing until he is sure of it and his experience is on his side; but, as for me, give me tight roosts. As to the purchased pullets, I should have followed Mr. Babcock's method for a time at least and not attempted to either force the fowls or placed them immediately in winter quarters. They should have been gradually put in prime condition and then placed in their permanent quarters. The question depends largely upon the fowls themselves.

I remember reading in *Farm-Poultry* about a breeder, in Vermont I think, who kept his laying stock in houses with slat fronts during the winter and eggs were abundant and fowls healthy. I like to have at least half of my fowls laying during November, December and January, and, although I have never tried the open house plan, yet I have so little faith in it that it is very likely I will never try it.

I know, from experience, that no matter what plan we use we can never have success unless we give our chicks unlimited range until they reach the laying period. The best plan of poultry house is the open-front scratching-shed plan. Heavy muslin tacked on frames can be hinged so as to readily close up the open front during stormy weather, but at all other times these frames should be open and if the floor is littered eight inches deep the fowls will keep warm by scratching for small grains—a few handfuls thrown in occasionally—and at the same time get plenty of fresh air and sunshine, which after all is of more importance during the winter than the food.

ROOSTS AND DROPPINGS-BOARD.

The accompanying sketch illustrates a handy method of supporting both the roosts and dropping-board. The necessity of having everything possible about the poultry house movable, and of giving the fowls every available inch of floor space, is becoming thoroughly, and I believe, universally understood.

Poultry houses and yards need not be fancy, but they should provide to the greatest possible degree, such elements as are conceded to be absolutely indispensable to the welfare of the stock. "Whatever is worth doing is worth doing well." Put that method into practice in the management of your poultry, and construction of all buildings and accessories, and note the satisfactory results.

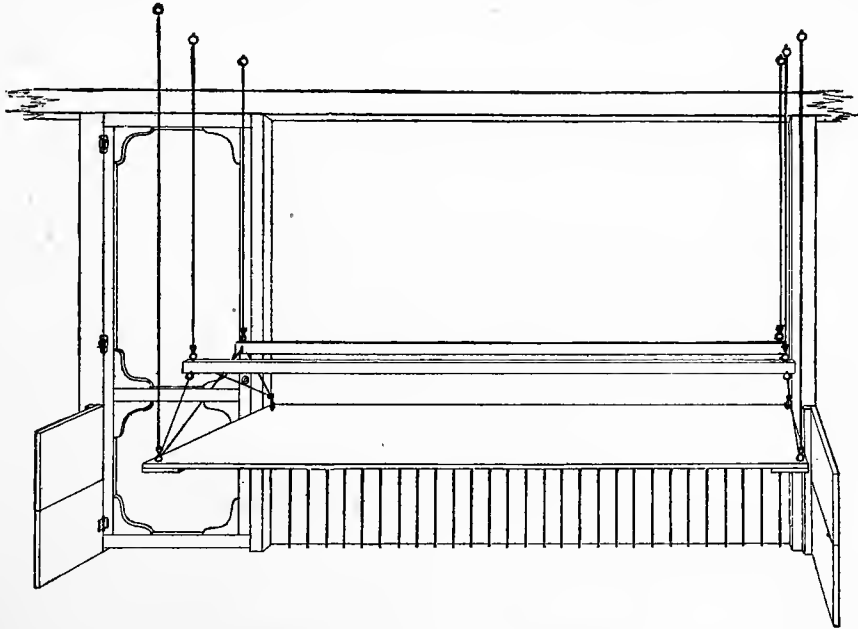
The accompanying sketch is self-explanatory, and regarding it we will merely add that the view is from the south side of the pen, looking toward the alleyway. The droppings board is supported on the side next the alleyway by

heavy hooks and screw eyes, the screw eyes being fastened into the studding. On the front side it is supported from the ceiling. Picture wire is very strong and pliable, and consequently best adapted to the purpose; strong cord or small rope, however, may also be used, where picture wire is not available. The roost or roosts are suspended in the same manner (from the ceiling) and are stayed to prevent swinging, by wires and hooks, as shown. Droppings board may be hung at any desired height from the floor, and the nest boxes—located underneath where eggs may be gathered from the alleyway, or a grating can be put in, and the fowls fed the soft feed from a trough in the alleyway, as per drawing. It may of course be of any width or length to suit one's needs and should be built of matched lumber. The advantages of supporting roosts and droppings board in this manner, are: the floor space is unobstructed, thus greatly facilitating cleaning out the pens. They are readily removed and replaced, and simple and inexpensive to construct. And by painting the hooks and eyes frequently with liquid lice killer, one may successfully combat lice and mites. In cases of unusually

as to raise them successfully, once they are hatched. Much depends upon the health and vigor of the parent stock, the manner of keeping the eggs before incubation and proper management during this period; and truly we have a good start toward the desired end when we can place in the brooders strong healthy chicks. But unless we have good brooders, and the chicks be given the proper management, we shall attain to very indifferent results.

The incubator is a machine which it will, in most cases, be found unprofitable to attempt to construct ourselves, but anyone at all handy with tools can build a brooder, constructed upon the right lines, which will meet every requirement. It is with the view of assisting those who wish to build their own that I give herewith a description of a style of hot air heater, which is inexpensive, simple and to be depended on to do its part successfully every time and under all favorable conditions.

The heater is simply a drum, having the top double seamed on, preferably without the use of solder. The bottom is made in the form of a cover, viz., it has a collar two inches high, double seamed on, and the drum fits snugly inside



Plan of Roosts and Droppings Board.

long droppings boards, they may need a brace lengthwise along the under side to prevent sagging. Or an additional hanger will answer the same purpose.

HOT AIR BROODER.

A Simple, Inexpensive and Practical Artificial Mother, which is within the Reach of all Poultrymen—Plans and Description.

BY E. A. PHELPS, AUSTINBURG, O.



WHILE many a breeder tries to crowd along late hatched chicks, in an endeavor to bring them to proper size and weight for the shows, it behooves us to take some steps to have some stock which shall be hatched early enough to fully mature in size and feather by the first of December. Given fully matured stock,

we shall experience little difficulty in putting birds into the show room fully up to, if not over, weight.

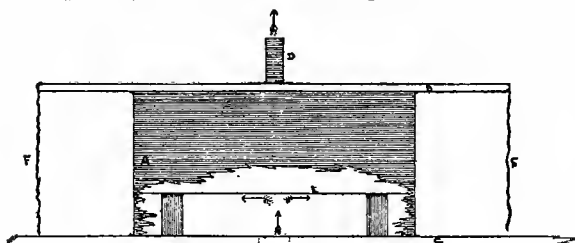
To accomplish this result we must abandon nature's method, time and manner of hatching and rearing the chicks, and right here the incubator and brooder come to our aid.

It is not so difficult an undertaking to hatch the chicks

this collar and is worked down until it rests full upon the bottom when putting the heater in place. It will be understood, therefore, that the bottom, as above described, is made separate from the drum, so that said drum may be lifted up and out. A hole three inches in diameter is cut in the center of this removable bottom, to permit the bottom being made separate from the drum, so that said drum may be varied in size in accordance with the size of the lamp chimney used, but should not be any larger than necessary to permit the chimney to be freely inserted or withdrawn. The sides of the drum are straight, as shown in Fig. 1, and are ten inches high. The diameter may be varied to suit the number and age or size of the chicks to be brooded. A drum twenty inches in diameter will brood fifty to seventy-five chicks until they are three weeks old, when they should be put in a larger brooder or the number reduced. A two-inch tube is put into the center of the top. That is to say, this tube is two inches in diameter and four inches long, or it may be any length necessary to carry the fumes from the lamp out of the brooder entirely. See Fig. 1.

Fig. 2 illustrates a heat deflector, which is needed to throw the heat that would otherwise pass directly upward and out of the drum, against the sides of same. This

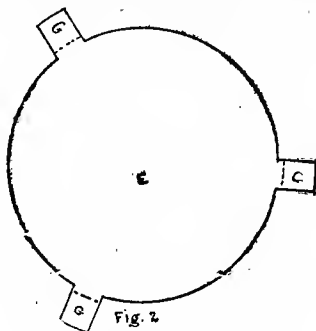
may be made from a piece of sheet or galvanized iron, as follows: First cut the iron in one piece into a 26-inch circle, after which mark (from center) a 19-inch circle. Now mark out the legs, shown on Fig. 2, G G G, which are three inches wide. Then cut them from outside toward center exactly to the 19-inch circle. Now following the 19-inch circle, cut around from leg to leg, when you will have a circular piece of iron, 19 inches in diameter, with three legs, each $3\frac{1}{2}$ inches long. Mark each leg across (as shown by dotted line, Fig. 2) $\frac{1}{2}$ inch beyond the edge of the 19-inch circle, and bend them over, so that they will stand perpendicular. This completes the deflector, which should now drop easily into the drum, the legs downward and rest-



Hot Air Brooder.

ing on the bottom of the same. There will then be a $\frac{1}{2}$ -inch space between the edge of the deflector and the sides of the drum, the three legs centering the deflector. E, Fig. 1, shows deflector in position.

To form the hover proper, construct out of half inch lumber a circular cover, 32 inches in diameter, in the center of which cut a hole large enough to slip easily over the pipe, in top of the drum. Tack around the edge of this wooden cover a strip of heavy woolen cloth or felt, 10 inches wide, and slit the same every two inches. Now tack another strip of felt around, and slit it also every two inches, but so that it will break joints. The wooden cover can now be placed on top of the drum, the two-inch pipe projecting upwards through the hole cut to receive it. The felt hanging downward, to within half an inch of the bottom, forms the



Hot Air Brooder.

hover, six inches wide, all around the drum, and will be always warmer than the air elsewhere in the brooder and the chicks pass freely in or out at will. The brooder box, for indoor use, may be made four feet wide, and six feet long on the inside, and twelve inches deep, bottom being made of matched lumber. Cutting a hole through this floor six inches in diameter, place the removable bottom of drum over it, and with screws fasten the same down tightly. Put the drum and the wooden hover cover in their places, and your brooder is complete and ready for operation, except for the cover, which should be made in the form of two doors, each 2x4 feet, hinged on outside edges. These doors should be, rather, frames, covered with one-inch mesh wire netting.

The brooder box is set on legs to raise it twelve inches above the floor of the building in which it is used, and the lamp set underneath, the chimney of same projecting a little way into the drum. The heater, by the way, should be located at one end of the brooder box, and thus leave the rest of the room for the chicks to work around in when small. Larger pens may be constructed and an opening cut in the end of the brooder opposite the hover, admitting the chicks to more room, and from thence to outside runs, when the age of the chicks and the weather permit it.

PLAN FOR BROOD COOP.

BY E. A. PHELPS, AUSTINBURG, O.

When the hatching season is again at hand it behooves those who will depend on biddy for an incubator to see to it that she is provided with proper quarters to rear her young. New brood coops must be made, or the old ones repaired, cleaned and whitewashed inside. Don't wait till the hatch is completed, and then in your unpreparedness knock together any old thing to put hen and chicks in. Such shiftlessness is invariably accompanied by the same laxness in other features of poultry management, and is not tolerated by those who are making a success of the business.

There are brood coops and brood coops, and many of them are very satisfactory. Others are worse than no coop at all. The writer, like many other breeders of experience with different styles of coops, has found both good and bad features in nearly if not quite all of them, and it is with the hope that some unfortunate looking for something better may be aided, that I shall attempt to illustrate and describe herewith what I consider just a little nearer perfection, than any other brood coop I have seen or used.

When we consider that in the early spring there are many days so chilly and wet that the chicks should not be allowed outside, it must be plain to all that brood coop should be of such construction as to permit of keeping the chicks inside, without discomfort. Such a coop must be roomy, dry, reasonably warm and light inside when enclosed; and as *cleanliness* is one of the watchwords of poultrydom, it must permit of being quickly, easily and thoroughly cleaned. The coop in question is two feet wide, three feet long, eighteen inches high under the eaves and two feet high at the peak. The roof and a portion of the sides and ends are in the form of a cover, readily raised, or lifted entirely off. The bottom or floor is movable, and can be easily removed and replaced when cleaning out. Being three feet square it forms a platform in front a foot wide, for feed and water and also for the convenience of chicks when the coop is raised off the ground by legs or otherwise.

The doors, for use nights and in bad weather, are glazed, and held in place by buttons as shown. When not in use they are hung against the ends, out of the way, yet always handy when wanted. The rods are of quarter inch iron, set in holes five-sixteenths inch in diameter, one inch apart. This permits of their being readily removed or adjusted to form two, three or four inch openings, those in illustration being set three inches apart.

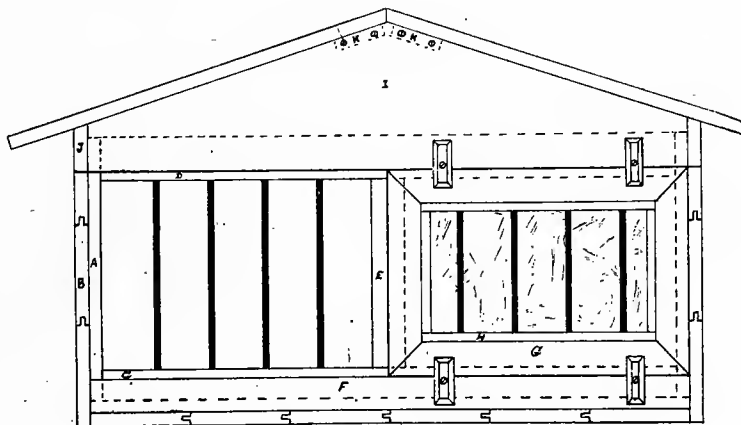
The material used is seven-eighths inch, planed and matched lumber. Six inches wide and twelve-foot length will cut without waste. Eight of these boards will furnish sufficient material for the entire coop save the pieces forming the front and back of the cover, which are cut to form the pitch of the roof. These two pieces require a board full six feet in length and full nine inches wide, to allow cutting in two, cutting the pitch, and jointing. The bill of material required to complete this coop is as follows:

- 8 boards, 48 square feet $\frac{3}{4}$ x6-12 matched flooring; pine preferred.
- 1 board, $\frac{3}{4}$ x9-6; pine.
- 10 feet of $\frac{1}{4}$ -inch iron rod.
- 2 lights of 8x14 glass.
- 1 strip of galvanized iron, 6x30 inches.
- 1 gross $1\frac{1}{2}$ -inch screws, No. 9.
- 6 medium heavy hooks and screw eyes.

First, rip out of the matched stuff four pieces for corners, three inches wide and fifteen and a fourth inches long. Right here let me say that this coop is of simple construction, and not nearly so complicated as it may appear at first glance. Anyone at all handy with tools can with a little care turn out a creditable job, and the only tools needed are a sharp rip and cut-off saw, jack plane, hammer, screw driver, five-sixteenths-inch bit and brace, mitre box and work bench with vise when possible. Now, cut from your matched stuff six pieces, exactly two feet long, being particular to mark and saw so the ends shall be square. Take two of these and plane off the groove to gain a square edge. Next, taking one of these pieces and two having the tongue and groove, drive the three together till all joints are tight, and measure upward fifteen inches,

line and screw to place. Line across $\frac{3}{8}$ inch from back edge, and set the other batten to that line. Put in the screws, and the floor is finished. It will take three pieces three feet long to form the back, the groove being planed off from one and one piece being ripped to make the back *fourteen and one-eighth inches high when put together*. Now being ready to put in the back, let its top edge come up flush with top edge of the ends, and fasten to place, setting screws both through the back and into corner pieces and through the ends into the back boards. The ends will now be noticed to project $\frac{3}{8}$ of an inch below the back, this space being filled by the thickness of the floor when same is in place.

We are now ready to go ahead with the front, and first in order come the strips C and D, which are each $34\frac{1}{2}$ inches in length. The strip C is $1\frac{1}{8}$ inches wide, and strip D is $2\frac{1}{2}$ inches wide. When you have ripped out these pieces and planed them to required widths, place them side by side in the vise, their top edges flush. Now mark the center (eighteen inches from either end) and *across both strips*, mark one inch each way from the center, which is where the strip E will come. Now having these strips still in the vise, edges up, take your 5-16 bit and bore holes one



Plan for Brood Coop.

and with square or other straight edge mark across the top board. This line should divide the board almost exactly in half. Now rip this piece in two *just outside* the mark, to allow for jointing with your plane. These three pieces on which you have just been working should (when again driven tightly together) measure 15x24 inches, and constitute one end of the coop. (See B illustration.) Proceed in like manner with the other three pieces for the other end. Next, line across these pieces which are to form the ends of the coop, $\frac{7}{8}$ inch both front and back, and lay on your corner pieces, $3 \times 15\frac{1}{4}$ inches, letting them come *inside of and just up to the line*, their lower end $1\frac{7}{8}$ inches above the lower edge of your bottom board to allow for the thickness of the floor and battens holding same together. Now, having corner pieces in place, put in your screws, and the ends of your coop are done.

For the floor, *which should be made next*, cut seven pieces of matched stuff, each three feet long. It will take seven pieces to get your three feet length because six inch matched stuff loses in matching. Drive the seven pieces together tight, after having taken the groove off one piece, then match and rip the seventh piece to have the floor measure 3x3 feet. Now cut two more pieces three feet long for battens to hold your floor together. Plane off the tongue and groove. Line across your floor $12\frac{7}{8}$ inches from *front* edge, and set one of the battens inside of and up to this

inch apart *between centers*, commencing at the ends and working toward the center. This should give you exactly fourteen holes from ends to the marks one inch each way from the centers. It will require some care to bore these holes through $2\frac{1}{2}$ inches of wood and keep them in the center of $\frac{3}{8}$ inch material, but it can be done by watching to guard against slanting the bits in any direction. The holes should be bored *through* the $2\frac{1}{2}$ -inch strip and $\frac{3}{8}$ of an inch *into* the $1\frac{1}{8}$ -inch strip; and since the strip D will stand directly over the strip C when in place, the holes must be in practically perfect alignment to allow the iron rods to slip easily through D into C, a feature only to be gained by measuring the distances for the holes exactly the same on both strips. This can be accomplished with greater certainty when the strips are side by side in the vise, when, should it be necessary to vary the distance between holes, the variation will be the same in both strips.

The strip E is $11\frac{1}{2}$ inches long by 2 inches wide, and may be toenailed to D with eight-penny finishing nails, and C being but $1\frac{1}{8}$ inches wide, ten-penny finishing nails may be used to fasten the lower end of E in place by nailing right through the strip C into the end of E.

The two strips C and D being now fastened together by E, fasten them in place by screws through corner pieces A into ends of D and with ten-penny finishing nails through the ends B and corner pieces A into C. The top edge of D comes

flush with the top end of A and the lower edge of C comes flush with the bottom end of A, the face of both C and D coming flush with the front edge of A.

The strip F is three feet long by 2 inches wide, and when set to place its bottom edge comes $\frac{3}{8}$ of an inch above the bottom edge of the ends B. Fasten by screws through B into the ends. The face of F is flush with front edges of the ends B.

It will now be seen that the corner pieces A and the strips C, D and E form stops for the doors G, which come next in order. These are made of 2-inch strips mitered at corners and nailed with the eight-penny finishing nails. They are each 12x18 inches and leave 8x14 inch openings. The glass is held in center by $\frac{3}{8}$ -inch strips tacked in with $\frac{3}{8}$ -inch brads, these strips being behind and in front of the glass.

Strips corresponding to D but one inch wider are cut to fit in between corner pieces A across the ends, across the back, their top edges coming flush with the top of corner pieces A.

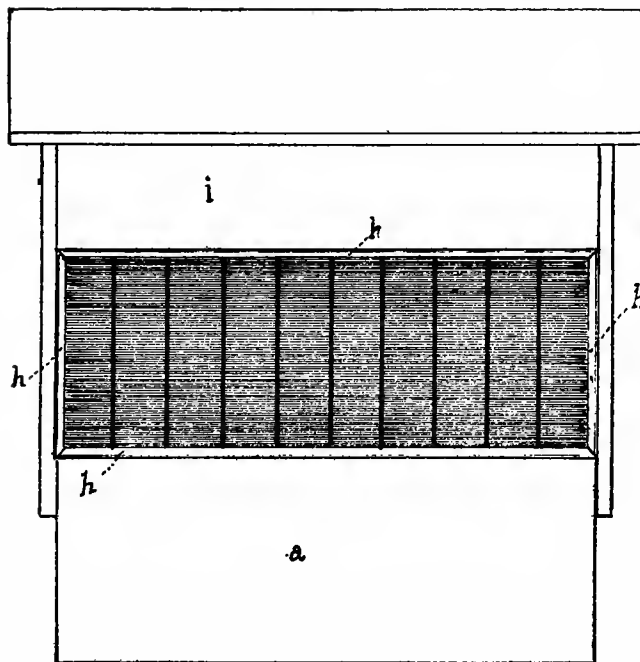


Fig. 1

it may be depended upon to raise the chicks in almost any weather. The floor may be held in place by hooks and screw eyes on inside or by pegs through the ends B. A good coat of paint will add much to its appearance and durability.

After the hen has weaned her brood the coop will afford shelter nights and during storms, until cold weather forces the flock into winter quarters.

You have all noticed how after the chicks are weaned they cling to the coop where they have been hovered by the mother hen, and how hard it is to break them of seeking shelter therein. No need to change them in this coop till winter. It is a brood coop and open front summer coop in one, easily cleaned and accessible to whitewash. Keep dry dirt and litter inside.

BROOD COOP.

BY E. A. PHELPS, AUSTINBURG, O.

Herewith are presented sketches of a coop, which we think for neatness and the comfort and safety of the hen and chicks is a little ahead of anything we have yet seen or used. We are adopting it entirely this season. The essential features of a good brood coop are: Abundance of light and fresh air, warmth, dryness, security from rats and all small animals, freedom from direct draughts and portability. It must be easily accessible to clean out. We have built and used several styles of coops, each of which

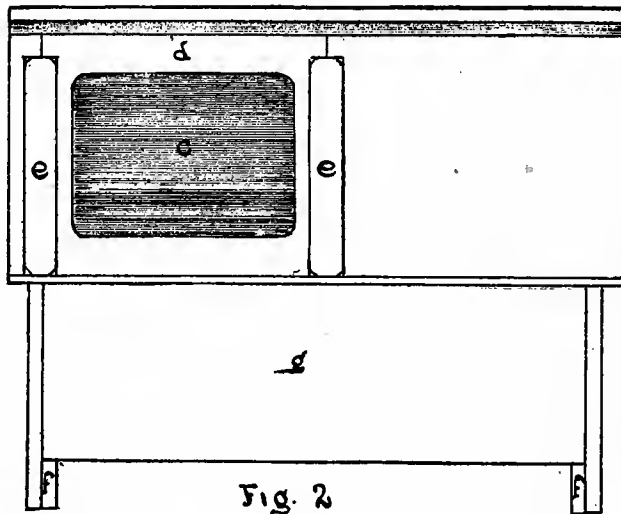


Fig. 2

Sections of Brood Coop.

These three strips, with the strip D, form a collar so to speak, over which fits the cover I. These extra strips should be screwed to the ends B and the back, and not only act as a collar, but serve to break joints.

The boards forming the front and back of the cover are cut 36 inches long, the pitch being 6 inches, from 3 inches wide at the ends to 9 inches at peak. The pieces forming the ends J are, of course, 3 inches wide by 24 inches long, their top edges being planed to same pitch as the pieces I, and are screwed to them. Three-inch strips K K, 22 $\frac{1}{2}$ inches long, are put in between the pieces I to support the roof boards at the peak.

Roof boards are cut two feet long, which gives them a projection of four inches at the eaves. Allow also for three inches' projection over front and back. Drive roof boards together as tight as possible at joints, and use plenty of screws. Put the strip of galvanized iron on with heavy tacks to prevent leakage at the peak, and your coop is done, unless you wish to provide legs, which can be easily made adjustable to any height.

I have called this coop a combination brood coop, because

possessed good features, but have found nothing so convenient to work with and in every way so desirable as this one.

The coop is three feet square and thirty inches high at the highest point of ends. The sides are cut thirty-four and a quarter inches in length, and should be nailed inside the ends. Or, properly speaking, the ends nail onto the sides, as shown in Figs 1 and 2.

The ends should be made first, and may be of boards twelve inches wide, which are most convenient to use, and we are taking it for granted that you will use lumber seven-eighths of an inch thick, matched and planed. Square one end of three twelve-inch boards, join together, and nail a strip three inches wide across the ends you have squared. This strip serves two purposes. One to hold the boards together, and the other to support the floor. See F F, Fig 2. Now measure up from the bottom twenty-four inches, and mark it for height of front side; thirty inches for peak and fifteen inches for back side. Line from point to point and saw off, and you have one end. The other being formed in the same manner. A board twelve inches wide, g Fig.

2 (laid horizontally), forms the back side, the bottom edge resting on the cleats, f f. I, Fig 1, shows a board eight inches wide, which forms the upper part of the front side, the lower part being formed by the door a, which is a board twelve inches wide, and hinged to the bottom of the coop. During the day this is left open and serves the purpose of a runway from the ground up to the floor of the coop and at night is shut tight; also in stormy weather, if desired. Light strips (h, h, h, h) seven-eighths inches thick, form a rabbet against which the door swings, and in which are set the three-eighths iron rods shown in Fig. 1. We set rods three and a half inches apart. The bottom fits snugly inside, and slides in and out on the cleats, f f. To it is hinged the door a. An opening is cut in the steep side of the roof, ten by fourteen inches, c, Fig. 2, over which is placed a fourteen by eighteen pane of glass, d, the glass being held in place by strips two inches wide, c c. The glass should come close up under the projecting portion of the roof, which will not leak. The portion of the roof containing the window is hinged to the flatter part, which is nailed fast. Holes four inches in

hang a door to the corner. That made the brooder house 18 feet long! the door was on the north side. I had one window put on the east side, and bought three old sashes of a carpenter for ten shillings and put them on the south side a short distance apart on a little steeper slant than for a greenhouse, so the sun shone across the inside and made it very nice for little chicks. I thus gained over two feet more ground for the chickens to run on, so that it was nearly 11 feet across on the ground. I roofed it over by first laying on lengths of poultry fence, that is lath nailed on these 13-foot strips; then I laid on that old newspapers and wrapping paper and cardboard boxes, just what I could pick up, and on top, strips of tin and oil-cloth, and nailed oil-cloth against the wood-house so the rain could not beat in, and when I got it done it was a nice cosy place for little chicks. With the heat from two brooders it was warm enough for their health, and for the materials and time it did not cost over \$5.

After I had hatched over three hundred chickens and eighty-five ducks, in an incubator, I was called back to the shop to work, but tended the flock night and morning, and

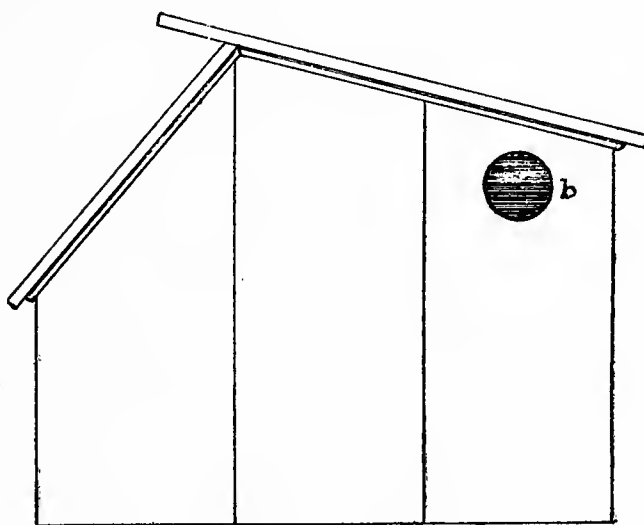


Fig. 3

Section of Brood Coop.

diameter are cut in each end as shown at b, Fig. 3, for ventilation, and on inside we tack wire screen.

In this we have a coop which we can make proof against rats, weasels and the like at night. The floor is three inches above the ground and never wet, and affords no place for rats to burrow. It is easy to clean out, all that is necessary being to remove the bottom, clean and replace, and easy to get into. It is also neat, roomy and comfortable at all times. If painted and taken care of this coop may be used from year to year for almost a lifetime, and costs about one dollar and a quarter, if you build it yourself.

A CHEAP BROODER HOUSE.

In these times when one has to use economy, says a writer in *Country Gentleman*, I thought I would describe the way I made a cheap brooder house and a cheap brooder for raising chickens. I did not have much capital to operate with; so I rigged things up cheaply. The wood-house was about fifteen feet long. I had some old boards and sawed five rafters eight feet long and rested four, one end of each on cleats nailed up against the wood-house, and one on a joist three feet away from the wood-house, so I could

the family cared for them during the day. In this way we raised about all the chickens and seventy-six of the ducks; half of them were Rouen and the rest White Pekin. We raised the whole on a part of two ordinary city lots, the chickens in one and the ducks in the other. People came and bought the chickens as fast as they got large enough. I sorted out and kept about all the pullets, for I think there is more money in them to keep them for laying than to sell them for their meat. If of the laying breeds, especially Leghorns five months of age, they can be brought into laying so that from that time they will bring in a steady income, to be replaced when they are two and three years of age by young pullets. The lot where the chickens ran and some twenty laying hens was about thirty feet wide by forty long, and before they got big enough to sell, I had to be very careful how I walked around among them without stepping on them—they were so thick. I either swept or scraped the surface of the yard every few days and sprinkled sand. Yet I kept them all healthy, and not one had the gapes. It seems queer to hear of others stating that their chicks had the gapes. I put a little salt in their food from the start, and have not had any have the gapes in twenty years.

NESTS AND BROODY HENS.



IT IS well known that when a hen makes her nest and lays her eggs away she not only hatches a larger brood of chickens, but they are healthier than if hatched in an ordinary nest in the poultry house. The reason for this is, says Wm. Cook in *London Poultry*,

easily explained; however, there are exceptions to every rule, and I do not desire to be misunderstood, for it is possible for a hen to sit on a straw stack or even bare boards, and bring up a brood of healthy chickens, as was instanced by a case which once came under my notice, of a hen which sat on an old oak beam (where the wood had rotted away) in an old thatched barn, and brought up a brood of chickens as strong and healthy as possible.

When a hen makes her nest away it is constructed in the soil, and is quite round in shape, the deepest part being in the middle. We should always keep to nature as much as possible, even in the construction of a nest, for it will be seen at once the advantages of adopting this plan. If only one egg is laid it will roll to the center, and the sides, sloping, act as a rest for the hen's legs when she is sitting, while her feet are at the bottom of the nest; she also does not require to spread her wings so widely as if the nest were made flat. There is also another advantage; the heat of the hen's body draws the moisture from the soil, and this softens the inner membrane of the eggs. When chickens are hatched early in April the inner membrane or skin is very dry, and adheres to the fluff of the chicken, and holds it a prisoner after the egg is chipped. Thousands are lost every year in this way.

When a hen has laid a number of eggs in a nest, every time she goes in to sit on them she turns them, not perhaps right over in every case, but if they are noticed it will be seen that each egg has been moved. Partridges, pheasants, and ducks, particularly wild ducks, will turn their eggs, and I suppose it is instinct. I may mention that if eggs are kept for sitting purposes they ought to be turned over every two or three days, but a better plan is to stand them on the small ends, as they will then keep perfectly fresh for many weeks. Of course they ought to be set as freshly as possible, but this hint may be useful to some poultry keepers who have valuable eggs for sitting and are unable to get broody hens.

My reason for not recommending nests to be made with straw in the cold weather is because each piece of straw has a hole up it, and that conducts the cold air to the outside eggs, particularly those under the hen's wings, and as the hen turns the eggs twice or three times every twenty-four hours it is possible for her to spoil every egg in the nest; it frequently happens that more than half are spoilt. Although the straw has a knot in it this does not prevent it from conveying the cold to the outside eggs, for it must be remembered after the hen has been sitting about two days the heat of her body renders it brittle, and it cracks when she moves to turn the eggs. In this way the temperature is often lowered 30 degrees, the eggs only registering from 70 to 75 degrees, whilst those under the hen's breast are from 102 to 104 degrees.

A nest should never be more than 15 to 18 inches square, and there should not be less than six inches of soil, which should be damp, and well beaten down with the hand. To do this it is well to put on an old glove in case of pieces of glass or thorns. It should be made quite round, and the size varied according to the hen. The operator will find it easy to widen the nest a little afterwards if necessary. A handful of lime should be sprinkled over the inside, and a little fine hay put on top of it. The hay should be

very short and well beaten down, for the moisture which the hen's body draws from the damp soil causes the lime to adhere to it, and thus makes the sides much stronger.

There are two or three advantages in using lime in the nest. In the first place, the hen, when sitting, often breeds vermin, particularly if an egg gets broken in the nest; the lime prevents the insects from increasing. Then when an egg is broken the contents run to the bottom, but the lime being there enables the owner or attendant to clean the nest out without upsetting it, as the lime absorbs the egg. If a nest is made in the way I have described, a hen can cover seventeen eggs better than she can twelve in an ordinary nest.

When making a nest do not simply place a few pieces of straw in a wooden nest box and put the eggs in and set the hen, for if made in this way in two or three days the nest becomes perfectly flat and the hen is compelled to sit with her legs straight out, which often causes cramp, owing to the uncomfortable position of the bird her wings also have to be spread very much to reach the bottom, and it is only really good sitters which will stand this. If the nest is made as here described the eggs do not roll when the hen turns them, and when she goes into them they give way and do not crack or break. A piece of bag or canvas should always be placed in front of the nest box to keep the bird quiet, and also to prevent the laying hens getting to the eggs.

Hens which are removed to sit in a fresh place, or which come from a distance, should be placed in a large coop during the afternoon and be given a plenty of food, such as Indian corn and barley; and placed on the nest just as it is getting dusk, or by candle or lamp light. Half the number of eggs should be put down at first and the hen placed steadily on them. It is well to stroke her gently down the back before putting her on the nest, and if she is at all restless the attendant should not hold her by her legs or wings, but keep one hand in front of her to prevent her from escaping. If she does happen to make a start the attendant should place both hands round her body, and when she has been gently placed on the nest the left hand should be put on her back, whilst she is slowly rubbed underneath with the right. In this way, as a rule, the wildest hens can be tamed and be made to settle down, and an ordinary hen can be made to sit on a table even if she does not want to sit; not to hatch eggs, but for a few minutes.

The day after the hen has been placed on the nest she should not be taken off unless she is very quiet and docile, and has become accustomed to her abode. The second day she may be taken off very gently and placed in a large coop or small building, fed and watered well, and lifted carefully to the edge of the nest. In nine cases out of ten, if managed in this way, she will take to the eggs quite naturally. Amateurs often make a great mistake here; they turn the hen out in a wire run, and after she has fed, make her wild in their endeavors to catch her, which frequently upsets her so that she will not take to the eggs again.

In all cases broody hens should be provided with a dust bath every morning; they look for it when they are taken off the nest, and it helps to keep them free from vermin whilst they are sitting. Any number of hens can be taken off the nests to be fed and watered at the same time, but the coverings for the front of the coops should be let down, so that the birds cannot see the eggs, for if they do they are almost sure to go to them instead of eating their food.

It is very important, particularly early in the season, that the hens should be taken off the nests for the morning meal, during which they should be watched in order to ascer-

tain whether they eat, for if they do not two calamities may befall the poultry keeper. First, the hen may leave her nest two or three days before the eggs are due to hatch, because her strength gives way owing to insufficient nutriment. Secondly, if she has strength to sit for the twenty-one days the eggs are usually two or three days later in hatching, because she has not sufficient heat in her body, and she has to forsake her nest before the chickens are hatched. As sitting hens go so long between each meal it is best to feed them on some sort of hard corn, as this lasts much longer than soft food.

I cannot give the number of eggs that should be allowed a hen, as both the hens and eggs differ so much in size, and a great deal also depends on the state of the weather; but for fair sized hens about thirteen ordinary eggs will be sufficient, in the early spring, but a larger number may be given if the hen be set in warmer weather. I have set twenty-four eggs under one hen and hatched twenty-two chickens. But this is far too many, as a rule, and if there is any doubt as to the number to give a hen, it is best to be on the safe side and give too few, for if a hen has too many eggs she may let a different one get cold every time she turns them, and thus spoil the whole batch.

NESTS—MORE OF THEM.

A Kind that We have Named "Cages" Wire Nests and What We Think of Them—Nests in the old-Sod Poultry House—Pen Pictures of Sod House Living.

NELLIE HAWKS.

Two years or more ago we visited the yards of a poultryman friend at an adjoining town, and we saw there, built against the wall, a long length of cage-like compartments. Impressed with the idea of the utilization in this manner of wall space as well as floor space, we informed our host that we should surely infringe upon his "rights," so long as he had no patent secured or "applied for." We did so at once, with the results that we have a nice lot of cages ourselves now, and there are more in contemplation.

Said cages are largely used for nest places, and we have found nothing that pleased biddie on the place equal to them. As soon as the first one of them was finished and straw lined a general scramble for possession took place among the laying hens, while the rest stood by eyeing this poultry house innovation as if to inquire from whence it came and for what particular purpose.

When building them our main thought was of the handiness of such compartments when wishing to confine any number of fowls that were to be sent out to fill orders, and for holding certain ones when the judge was on the grounds for the purpose of banding and scoring them, and for confining broody hens whose services were not needed. In fact their uses are so many fold that we went immediately into a state of wonderment that we had been so stupid all those years gone by as never to have thought of making use of wall space in any such way. But, we live and learn, and we are always on the outlook for something new to add to the conveniences of our poultry plant. And after all, every day we are wishing we could conscientiously add another one hundred dollars' worth of little items here and there in the way of small houses, yards, etc. Always ambitious over poultry house and yard improvements. But all in good time. We often console ourselves with the thought that, "all things come to those who wait." But we are prone to add that with the waiting a vast amount of planning and labor must be also calculated in with the rest.

The cage formed nests are simply a cage-like compartment, built against the wall and with the wall for a back. They

may be as large or as small as space permits or prescribes, and may be fronted with lath, window wire screening or poultry fence netting. We did not succeed in adding a great amount of beauty to our cages when building, for we are not carpenters, and did not feel that we cared to engage the services of a carpenter. When we build another poultry house, however, we shall have the carpenter do whatever is necessary to insure "looks," even to making nest places in cage form. For we like things to look nice as well as to be handy, though it adds not one whit to the profit of it all. The biddies lay just as many eggs, without a doubt, in the home-constructed cages as they would in a plush-lined, silver-barred one, but there's no gainsaying the fact that the latter named cage would look the best.

But to have plenty of them and to have them kept in ship-shape—clean, tidy and comfortable (not infected with mites and lice), is the main thing. Each cage must have a door, or doors, as the case requires. And once you build one of them you will surely build more of them.

Every nest on the place was at once abandoned when this new style was presented, and even yet the novelty has not worn off. To have one of them closed against entrance is considered a calamity, and protests are in order from the laying hens.

We have tried the wire nests that we have seen advertised and written about, but ours have been sent to the rubbish pile. In the first place they would not hold the eggs. The meshes of the wire are too large. The nest may be well lined with straw but by the time biddie has fixed her nest to suit her the eggs will be rolling towards the bottom of the nest while the straw is on top, and presently eggs are lying broken on the floor or ground. We lined those we tried to use with strong new cloth. This kept the eggs from falling through, but it did not keep the nests from being "tippy" things. And no matter how securely we might think we had them fastened they were always bent all out of shape and tipped sidewise. We didn't like them, threw them away and went back to boxes, etc. This was before the introduction of wall cages.

Thinking of our varied experience in nest building takes me back to the days when sod buildings were the only kind that either the biddies or ourselves had to call a home. We are not exactly anxious to go back to the sod-house living ourselves, but how often I do wish for the sod poultry houses I once owned for my fowls. I began the rearing of Standard bred fowls when just this way situated. My very first thoroughbreds were housed in sod homes, and they found them all the heart could wish for. Had we remained upon the farm it was our intention to turn our four-roomed sod house over to the biddies as soon as we could build the frame one wanted for ourselves, and I think we have both regretted (husband and I) that we did not stay there and carry out our plans. Such a home for fowls you cannot imagine. I'd give \$100 any day to have that very building moved where we live today. The sod house of their own, though good, perfectly warm and in good order, was not built to stand as was the house of our own, nor so well furnished, of course. For this reason it is the house we lived in that we covet for our flocks of fowls at present. But in this case, as in most others, covetousness is worse than useless.

In that poultry house the nests were hung on the walls. Heavy, sharpened stakes were driven into the solid sod walls and the box nests were made to hang thereon. Soap boxes and cracker boxes, and an occasional heavy box was fitted up for hanging on these stakes. There was no breaking them down when once put up. Large, wide boxes were first put up, and on this would stand another and smaller one, leaving the lower box projecting far enough to make a good step for the hens to rest on when going to the nests.

They were, when needed, placed three tiers high. They are easily taken down (except for the lifting part of it) and were often taken out of doors, the nesting burned and boxes well smudged and scorched, fresh straw put in and everything made tidy. We were just as interested in our cleaning days then as now, and we would exchange every frame poultry building on the place if we could for the four-roomed house that we called home, and that *was a home*, and a cozy one, too, for our flocks of today.

For nesting we have tried everything and we are content with straw linings, and have no use for hay or excelsior. Garden soil for the foundation of the nest is liked for setting hens, but for laying hens it is not at all necessary to subject oneself to do much heavy lifting and hard work.

NESTS AND NESTING.

A Barrel-Nest One of the Favorites—Garden Soil for Nest Foundation—An Occasional Hen Finds No Use for a Nest—Queer Ideas and Queer Attempts.

NELLIE HAWKS.

Every imaginable kind and description of nests have been tried at one time and another, and we have come to the conclusion that we do not so much care in what form the nest may be for our biddies, as that it be roomy, easy of access and kept clean.

To meet the latter requirements necessitates care. Nests become unaccountably soiled and lose the cozy look of poultry hominess that a freshly filled nest-box always has when first arranged. We fashion it on nice shape and think it pretty nice. But bidy and I disagree as to what a nice looking nest really is, and she proceeds to lay every straw in a different direction from the one I have left them in, and then informs me that I don't know much about nest building after all. All she asks of me, she says, is to furnish the compartment for a nest, and the something suitable to line it with, and she will do the rest. For all the world like a fussy housekeeper. I think I know how to enter the spirit that she manifests when insisting upon putting things where she wants them herself. I want to arrange my home according to my own ideas of the fitness of things, and so understand what my poultry-house friends mean when insisting upon being given the same privileges. Still, I always crush down the nesting when furnishing new, and around the egg places in what seems to me a pretty neat looking shape. But for the last part of my work I receive no thanks whatever. But I'm not working for thanks. I'm working for pleasure and profit, and although I found the pleasure side of the caretaking of poultry long before the profit side was understood as it has been of late years, I still admit that the profit part of the work adds materially to the pleasure side of it all.

"Once upon a time" we had what we termed a set of barrel nests, and we were much in love with this manner of making them. "But fashions change," and when these went to staves we supplied their places with something else. We intend having more of them some day though, and shall get better barrels for them, and take more pains in making them, to have them substantial and lasting. They were simply a half barrel each, with hoops tacked to the staves. The bottom of the barrel made the bottom of one nest, but the head of the barrel being absent, the second nest was bottomed with gunny sacking or strong cloth of some kind tacked around the outside of the barrel at the bottom. There was no one here having sufficient of cooper ability to fit in a good wooden bottom. Our barrels were only salt barrels, and they are never well made. Another time we shall invest in good solid barrels and have nests worth while.

We like these nests and the biddies went wild over them at first. They are of so companionable and social a nature

that they insist upon crowding three or more deep in a nest, unless said nest be large enough to admit of their sitting side by side. That was one beauty of these large, round nests.

In saying that the biddies went wild over them for a time I trust no one will accuse me of exaggeration, nor will any one who knows bidy's nature as well as I do. I have lived with them until I know many of their peculiarities, and they have learned mine. We understand each other remarkably well. People who pay no attention to their fowls do not discover all these little idiosyncrasies of which they are as unmistakably possessed as ourselves. I have always noticed that a new nest of unusual shape and conditions was to the biddies much like a new toy to a child, or some handsome new piece of furniture to a woman. [As they help so decidedly in furnishing the new pieces of furniture and the new gowns and bonnets and various other desirable articles, why not cater to the biddies' whims and fix new nests for them? I do, and enjoy it all with them.]

For nests for setting hens these half-barrel ones are ideal, for their good points are so many. In the first place the setting hen has plenty of room about her, so that she does not feel cramped or look cramped. With two or three pairfuls of dirt in the half-barrel, a rounded nest can be fashioned that is *just right* in all its proportions. All that is needed to complete is a handful of soft straw for the eggs to rest on. Lice do not live in dust piles, and by dusting the setter with insect powder when she is given her nestful of eggs, neither mites nor lice will trouble her all through her setting siege. If an egg be broken and the nesting soiled, it is quickly gathered out, all the lumpy dirt that may have gathered from the egg wetting removed, the dirt given a stirring up, nest newly rounded, a handful of fresh litter put in and soiled eggs washed off with a warm wet cloth, and everything is in order again. To keep other hens out we always made large squares of lath work to put on over these nest places, and weighted them down with some heavy article so that would-be intruders could not step on them with weight enough to tip them off. When chicks were hatching there was never fear of their being a danger that they might fall out of the nests and be chilled or injured before we should find them. They were safe, and with plenty of room to be running about in their own domain, when they were strong enough to begin to peep out into the world, and to care to go upon an investigation tour on a small scale.

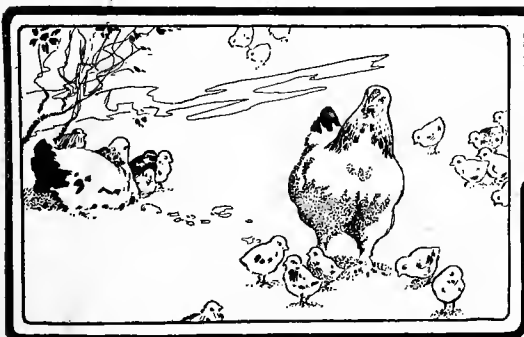
Soap boxes and cracker boxes are the very commonest of common, every day nest-places. They accommodate two or three Leghorns very nicely, but for Plymouth Rocks are none too large for the accommodation of a single hen. No matter how many nests may be furnished, there is usually some preferred one among them that they all want to occupy, and at the same time. It is often a matter of wonder that eggs are not broken more frequently than they are, for we can't very well stay at the poultry houses all the time, settling the difficulties that arise between the hens. We can only furnish them a number of nests and admonish them to "be good," and then leave them to their own devices. For this reason we prefer *large* nest places rather than so many of them. Any number of them will not be gone near at all.

I have often wondered what manner of reason it was that was brought to bear, and what the ideas of the biddies that occasionally seemed the personification of contrariness when persistently insisting upon doing the queerest things. They have, unmistakably, ideas of their own, and there is nothing more headstrong than the hen that sets herself about doing what she has planned out to do. One hen this summer insisted on depositing her egg, every day, on the

bare floor in a very narrow hallway. In due time she concluded to "set," and think you she could be induced to set in any other place than right on that bare floor, and in that identical chosen spot? She was in the way and it was no place for her. She even refused to occupy a box that was fixed with straw and eggs for her, and that box so low that I did not believe she would discover it was an inch above the floor. Placed on that nest and coaxed with all the persuasion that could be mustered, she would leave the eggs in the box and cuddle imaginary eggs under her on the floor again. Day after day she was invited to step out doors and give up her chosen "calling," if she would not be sensible and set in a sensible way. But for weeks she persisted and clucked, and she outwitted me at last.

And what do you suppose was the ideas and the reasoning of the Leghorn hen that for a long time made daily efforts to deposit her egg in the ventilator pipe that runs up the inside of the poultry house wall? She persisted in

it until she was forced to abandon the plan from having no more eggs to deposit anywhere. When she began laying again she must have forgotten the notion or during her days of rest and meditation have seen the folly of her ways. That ventilator pipe was colored and glazed all over the entire length of it from the broken eggs that went sliding down its tin sides. A partition in the house came within an inch or two of the side wall pipe and it was a partition that had a slanting top instead of reaching to the roof. She would stand upon this partition top, balance herself as best she could and drop the egg as nearly at the center of the pipe as was possible. It was, of course, broken each time by the sharp edges of the tin spouting cutting the shell. That hen found no use whatever for a nest. If caught and shut in a cage she would pace back and forth like a caged lion and if liberated, back she would go to that partition and ventilator as fast as her swift Leghorn legs and wings could carry her.



KEEP SMALL FLOCKS.



ONE requisite to success in poultry keeping, the importance of which is generally overlooked by most farmers, and perhaps many fanciers, is to avoid keeping too many fowls together in one flock. There are several good reasons for this injunction, and the rule applies with equal force whether the fowls are kept in confinement or allowed to run at liberty, as they generally do upon most farms. Increased liability to disease breaking out and destroying the flock should alone afford sufficient reason for keeping small flocks but there are a number of others equally important.

No more females should be allowed together than can properly be attended by one good vigorous cock, for where several are allowed together someone is generally master of the situation, and keeps the others in such subjection that they are of no use, and the eggs perhaps have no greater degree of fertility than if but one were present. And if this is not the case, it is in my opinion very deleterious to a flock to have several males of different types running promiscuously with them. In thousands of instances not enough care is exercised to breed only from extra fine thoroughbred males. It matters not what breed or grade of stock the hens and pullets are, any flock can be constantly improved by placing at its head one good thoroughbred cock, and changing him every year by sending away for another, perhaps of the same breed but not related. This system of management always builds up a flock, while any flock which is allowed to run with several grade cockerels of different types is bound to degenerate. And to properly carry out this principle small flocks are a necessity. For these reasons, when planning and building a poultry house, I should make it long and narrow, and divide it up into sections, each to be connected with a yard to accommodate not to exceed twenty-five fowls.

Pointers.

IMPORTANCE OF A GOOD SHED.

Apart from his poultry houses the farmer needs a cheap chicken shed. He can get along without it, to be sure, but it is a great advantage to have one. Chicks do well enough in coops when the weather is fine, but when a cold north-east rain, that lasts two or three days, sets in there is trouble on hand, and probably the loss of several fine broods of early hatch. A good chick shed can be built for a small sum, and when once built is good for fifteen or twenty years. Seven feet high in front, five at back, six wide, and twenty long is a good size for the farm. The coops for the hens may be fixtures, or they may be movable so they can be set outside when the weather is fine. In either event there should be a small yard in front of the building, fenced with netting, so that the hens and their broods can be let out in fine weather, and still be kept close to the shed. If a shower comes on suddenly while they are in the yard it is but the work of a moment to run them inside, where they will be perfectly safe. This one advantage alone ought to be sufficient to induce every farmer to build a chicken shed, for very often the chicks saved from a single storm will nearly repay its cost, to say nothing of the racing and chasing and worry thus avoided.

With a good dry chicken shed at his command the farmer can begin the work of hatching early in March, or even in February, and by doubling up the broods and resetting half the hens get a large number of early chicks all ready for the first worm that dares to show up, and the first tender shoots of grass. Without a good chicken shed every February or early March chick costs more in work and time to raise it than it is worth. Most farmers will provide good quarters and all necessary conveniences for young stock of all kinds except chickens, and for this very reason they find the rearing of poultry unprofitable. With a reasonable outfit of buildings, etc., almost any farmer's wife will make more clear profit from a bunch of fowls than he will from any other kind of stock on the place.

After providing sheds and coops—which should be done at once—fasten up the old chronic sitters and get them to work, the earlier the better, for the early chick brings the best price. In setting a hen I believe it is the best plan to set her in a closed box, and to go around once a day, gently lift her off and feed and water her right there, then allow her to

return when she is ready and close the box. I advocate this plan because when a hen is sitting on a nest full of eggs her feet are down among, or under them, and many hens have a way of going off the nest with a flop and a jump, and the eggs that are resting on their legs get kicked out of the nest or smashed. By lifting them very carefully this "bad luck" is obviated. Then you are sure they are fed (and whole corn is the best feed) and that they are not losing flesh at the rate of an ounce a day, and cooling off so fast that they cannot supply a sufficiency of heat to hatch half the eggs under them. Stick a pin here, and before you again wail about a bad hatch, think the matter over, and see if you did *your* part toward insuring a good one.

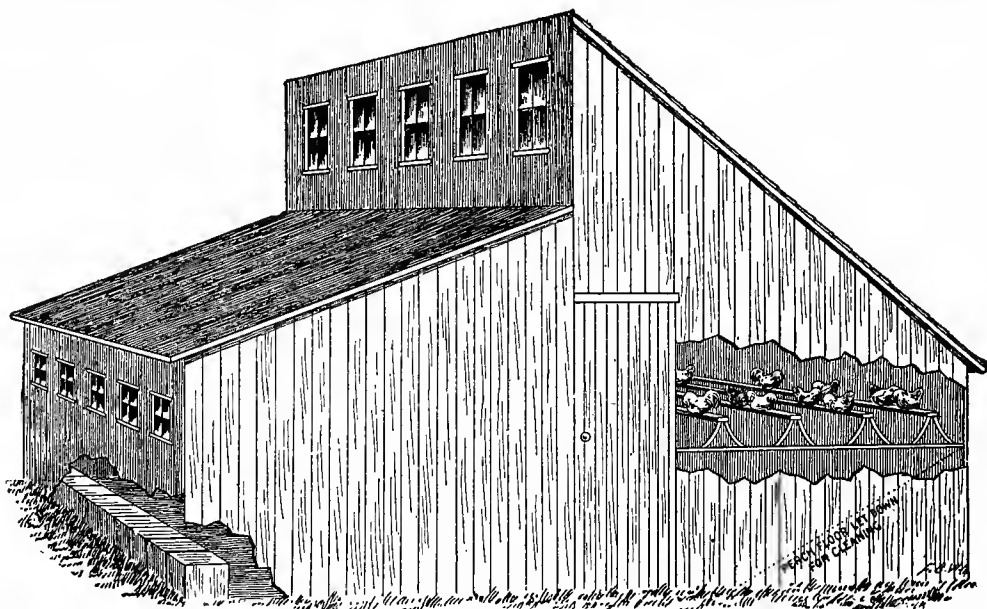
A capital and inexpensive house may be made by driving four uprights into the ground upon a square of 4x6 feet and weather boarding the sides and roof, taking care that the feather edges overlap each other sufficiently to exclude draughts and providing a window and a door. The floor may be rammed down hard and covered with a sprinkling of dry mold and the perches and nest boxes placed in their

dampness appears. I have taken particular notice of this the past winter by comparison with two of my houses, one white-washed and the other not. Give a heavy coat. The lime absorbs dampness. My houses are built 8 inches off ground and filled in with clay well tamped down, which makes a good, dry floor and house. Overcome dampness and you will have less trouble with roup. I use no ventilators, but air the house every day and I am having less trouble with sickness in flock.

A GENERAL-PURPOSE POULTRY HOUSE.

We have made poultry houses on every imaginable plan, and we find the above style of house an all-round, handy and good one.

It will be noticed that the sun reaches both back and front of the house. The hinged platform for the perch with horses to rest on gives the entire floor space of building for a scratching-shed. The sun shining on the perches and platform keeps them dry and healthy for the fowls. By removing the perches the front side of the platform lowers to the floor, thus making



A General Purpose Poultry House.

places; then all will be ready for the reception of the birds. This sort of building is, of course, a fixture but it may easily be made movable by sawing off the stumps of the uprights and adding a wooden floor. The addition, too, of an upright stay or two along the boarding in the inside will add considerably to the durability of the structure and prevent the boards from opening when subject to the rays of the sun.

A protected shed, dry and free from snow or ice, is desirable for fowls. Even the chicks hatched in winter are benefited by such a run, after they are feathered. In case of such treatment, of course extremes of temperature must be avoided. A hot brooding room and a cold runway would not do; but young stock that is made accustomed to moderate warmth in the brooding room will seek the freedom of an outer shed. Too much freedom is not approved of by those who force their broods. Still, when natural conditions are approximated the health of the stock is made more assured. Such a plan is certainly beneficial to the old, or laying fowls. In a dry and well sheltered place, nature asserts itself and gives the birds a better dress.

My experience has been that by whitewashing the inside of the poultry house with a spray pump in the fall, no

it easy to scrape off the droppings and to apply vermin exterminators.

The absence of colds or swell head will be noticed if you keep your fowls in a building of this kind. There are no chances for drafts of cold air going up among the fowls, and the sunshine through the day evaporates the poisonous odors. —From *Catalogue of the Sure Hatch Incubator Co., Clay Center, Neb.*

One of the evils to avoid is crowding. We do not like to kill good birds; we keep too many. The result is sickness, lice, death. If we would have a good chicken for dinner every Sunday in the year, out of an average flock of 100 birds, the 50 that remain would do better. Keeping the best only would improve the flock. It is the lower half of the flock that works the evil. If half of the specimens in the poultry yards of the United States were killed for the table between now and November 1, the quality of next winter's chicks would be doubled and the prices increased.

Here are some facts, learned by fifteen years' experience in breeding fine poultry: Warm houses, dusting places and scratching pens are a necessity. Coal oil sprayed over roosts monthly will exterminate lice. Leaves make the best and most healthful nests. Hard coal ashes and cinders make

good grit. Bran, middlings, cracked corn—equal parts—with a little salt, mixed in warm, greasy dishwater, is the right morning meal; with wheat for noon and whole corn for night. The best cure for roup is a hatchet—this disease is constitutional and can be transmitted. To sell eggs from fowls once afflicted with roup is wrong.

Select a warm place away from the windows for roosts, and have an inclined platform under them to catch the droppings; from this the manure can be scraped often in a box and emptied, as it will be very quickly and neatly done. When so arranged the house can be kept clean with very little trouble and the valuable fertilizer saved in its best condition. Provide ample runs and let them communicate by means of small doors through which the fowls may go in and out at will in mild weather and which can be securely closed when desired.

A half dozen small hen coops are much more useful than one massive structure affording an equal area. We all know that a coop of ten or twelve hens is usually profitable, whereas multiples of the same are rarely satisfactory. This is the great secret of running a large poultry farm. Divide up so that each individual bird may have as good a show and as much room as upon the ordinary farm, where not more than a score or two of fowls are usually bred.

As to the proportionate size of the house to the number of fowls kept, only he who remembers that "there is more profit in a house half full than in a house twice full" is safe from blundering at this point. The most level-headed practical poultrymen insist upon ten square feet per fowl. Contrast this with the room afforded 100 fowls in a 12x20 house, less than 2 1-3 feet of space to each (which is a common sight) and judge as to the chances for eggs in the latter case and take warning.

To remove broody hens from laying-room: Prepare a nest nicely in a low box in a shed or building where there will be no disturbance from other fowls. Make the transfer after nightfall and as quietly as possible. Keep a slatted coop over her for a few days, until she is accustomed to new place. Dust her with insect powder two or three times during period of incubation. Provide a variety of food, pure water and grit.

Our experience has proven to us beyond a doubt that fowls confined in pens or small yards do just as well as those in large yards or on free range—in fertility of eggs, in the number procured and in the health of the fowls. The requirements are clean quarters, but few fowls in a pen, fresh water, oyster shells and, of course, proper management all the way through. So if you have a small place, don't be discouraged, but go ahead.

In case of using a stove in a poultry house great caution is essential to guard against excessive heat in the day-time and the fire going out at night. Evenness of temperature at a little above the freezing point is desirable and a well-built house impervious of the chilling wind is better without a stove than one with many cracks and crevices with a stove.

An intending builder is quite apt to have theories as to how the work should be done, but if he will take care to find out the reason for those points which the experienced insist upon and will compare cold facts with his theories before, instead of after building, he will save much vexation of spirit and perhaps an equal amount of cash.

When 100 fowls are kept the house should be ample to prevent overcrowding. The rule for such a flock is to construct the house on a ground plan of 100x10 feet. This may not be convenient in many cases, but that ratio of space can be applied, and the sections built to accommodate ten fowls in an area of 10x10.

A shed, secured boarded on the exposed sides and open toward the south, should be provided for the fowls as a winter scratching-place. The floor must be dry and not covered with snow or ice but with litter of leaves or fine straw. There are very few days in winter, except in the northern latitudes, when the birds will not voluntarily seek such a place for exercise.

See that the floors are dry; do not bed too much; rather change the bedding or litter often, as soon as it shows any indication of dampness. If the floor is of boards it is easily dried and purified by sweeping with a stiff broom and scattering dry earth upon it and placing dry litter, such as chaff or short straw, upon the dirt.

If a thunderbolt should strike a building in which hens were sitting it is likely that the concussion might kill the chicks, but not one lightning stroke in a thousand is heavy enough to produce any distinct jar, even if the eggs were on a solid foundation, and cushioned as they always are in a nest they are not affected one way or another.

Five square feet of floor space, with 100 square feet of run per fowl, would seem ample. That is, a 12x20 foot house with a 40x130 foot run would seem enough room for 50 fowls. But experience shows that 30 fowls in this space will yield a larger profit. Fowls properly yarded pay better than when running at large.

Is the dust bath in your poultry house in proper condition? Is the grit box well supplied with good sharp grit? Do you keep fresh water before your fowls at all times? The latter is as important as the food you give them.

Give the poultry house sufficient ventilation to keep it dry. When the walls and roof are covered with frost and moisture there is not enough ventilation for good healthy stock. Fresh air is cheap.

Make the roosts for Asiatics not more than 12 inches from the floor. Use 2x4 scantling, with the 4-inch side up. Bevel the edges.

Do not keep too many fowls in a pen; it is far better to cull down closely than to do this, for a smaller number will do so much better.

POULTRY HOUSE ON A CITY LOT.

The Following Plans and Descriptions of a Poultry House for a City Lot Were Awarded First Prize in American Poultry Journal's Great Contest.

They were entered by by Dr. S. A. McWilliams and are, we believe, the most complete ever published anywhere.



It must be remembered that ordinary city lots are only 25 feet wide by about 165 feet long; that they have a sidewalk, if it is an inside lot, 3 feet wide, extending from the residence to the alley in the rear. This leaves but 22 feet for the widest part of the roof boards, or 21 feet 6 inches for the frame work, without siding. The lot may face the north, south, east or west, and the poultry house must face in the same direction as the dwelling, if it is built on the rear end of the lot.

If desired, the 22-foot building may be extended over the 3-foot passage walk just mentioned. This would give more room for storage above the walk. If the passage way is enclosed, and a door hung at its front and rear, much security would be added to the poultry yard.

Before building, one must consider many things. The size of the ground he wishes to occupy; its length and breadth. The foundation; of what it shall consist; whether of cedar posts, stone or cement. The floor; whether it shall be earth, boards, cement or brick. Its grade; how high above the surrounding earth. How shall rats be kept out. Its roof; whether flat or steep. The direction of the roof's pitch, whether forwards or backwards. The covering of the roof; whether boards and battens, shingles, tarred paper, or tar and gravel. Its division into pens; their size. The covering of the outside walls; whether rough boards and battens, clapboards, drop siding, or tongued and grooved flooring, running up and down, close and tight, with building paper underneath. The lining of the inside; if any, whether paper or tongued and grooved flooring with paper underneath. The material for the foundation; if posts, their length, size and location. The location of the doors and windows, and their size. The size and length of the studding, plates and rafters and their location. The interior arrangements for roosts, nests, water, grit, feed, etc. Where shall the supplies and tools of various kinds be kept? How shall the young flock be separated from the old? Where shall the show birds be prepared? What shall be done with the fighting male bird?

The value of a poultry house depends much upon the available floor space. If the utensils occupy the floor, they diminish the space for the fowl. On a city lot, the ground is scarce, but there is room above. In building, then, room above the chickens' quarters should be utilized for storage.

The breeder must consider that if he keeps fancy poultry there must be a place for everything used in connection with them. Where shall he keep bags of bran, middlings, cut clover, whole corn, cracked corn, wheat and millet seed? Where shall he set the bag of beets and barrel cabbage, the bag of grit, charcoal, cinders, oyster shells, summer drinking crock, winter lamps and kerosene? Where shall he keep the planer shavings, straw, leaves or other litter, the slaked lime, bath dust, lice killer, etc.? Where shall he keep the shipping coops, the training coops and the baskets for shipping eggs, the winter sash and summer doors?

He should have a place to keep that grand old male while molting, to prevent his being killed by that vigorous young cockerel. He needs a place to prepare that prize cockerel for the show. While preparing the pullets for the show they must have a separate coop. Where shall the shovel, broom, rake, hoe and manure basket go? the hammer, nails, ax and other tools? Can he afford the time to run through doors and 100 feet or more to the dwelling every time he needs

anything, and the same time to return them again? "Time is money." The more convenient the arrangements, the pleasanter the work and the less time required to do it. There are times when a fighting bird, a molting bird, or a show bird should be separated from the flock. This can be done by having a shelf floor or coop, high up.

BUILDING.

We should study every part of our building in detail beforehand. Is the ground too high or too low or too wet? We must arrange to lower it, if too high, or raise it, if too low or wet. A low, damp poultry house is sure to breed disease. How high above the surrounding ground should we raise it? What shall we use for the foundation—stone, cement or cedar posts? What are we going to breed—rats or chickens? If the latter, then we must use a long head and a wise one to prevent the former. The rats work while we sleep. How long and wide shall our building be? How many fowls do we expect to keep, young and old? The old and the young must be kept in separate apartments. The cockerels must be separated from the pullets, the sick from the well, etc. The height of the building must be considered. Is it to be so low that everything is to lie on the floor, curtailing the room for the chickens, and breaking our back while attending to them, with no places for boxes or tools or coops or feed or straw. We must decide on the width of the doors and windows, the slope of the roof and the material to cover it. Shall we build a cold shed or a warm house? Shall the walls be single or double, with an air space between? Shall the inside be lined with board or tar paper, which gives the pen a gloomy look? Shall we build warm for eggs in winter, or cold for frozen combs and frozen feet? What shall we cover the outside walls with? boards up and down and battens over the cracks? Clapboards or drop siding or tongued and grooved siding with paper behind it, so as to make the walls close and warm? The upright studs must be spaced so as to leave the proper openings between them for doors and windows. The Fancier derives much pleasure and recreation from his feathered pets. His other duties are arduous and confining. If his hen house is high enough for comfort, and everything convenient, he does his work quickly and with pleasure. An extra door or two will save many steps and much time. To the city fancier who works all day and can spare, only a short while, mornings and evenings and holidays to his fowls, surely time is money.

He must raise the floor of his poultry house high and dry, if needed, with sand, gravel or cinders. He must decide upon the height of his roof and its pitch. He must decide what he will cover the roof with, a gravel roof, paper well tarred, or shingles. In either case the pitch of his roof must correspond to the covering used. If a shingle roof, the pitch should not be less than 9 inches to the foot. If tar and gravel is preferred, then a fall of a half inch to one inch to the foot will do. The height of the building must be considered. The studding or upright posts should be obtained of the proper size and length. We must also consider what room we require inside the building. Nothing should be kept on the floor. No matter how much floor space we have we always need more. In large cities many buildings are torn down and there are so-called wrecking establishments where second-hand doors, sash, lumber, etc., can be purchased cheap.

ROOM REQUIRED.

If the building is too small, or too low, or too inconvenient, requiring too much time and too much backache, the owner will soon get too tired to continue in the business. He wants room enough to admire his fowl. No building should be less than 6 feet high in front for standing room in the clear, and 8 feet behind for scratch room, nests and roosts, the one above the other. For convenience, utility and economy of time, the house must be large enough to give sufficient wall

space for platforms 2 feet above the floor, on which to place the water can, grit, feed trough, nests, heating lamp, etc.

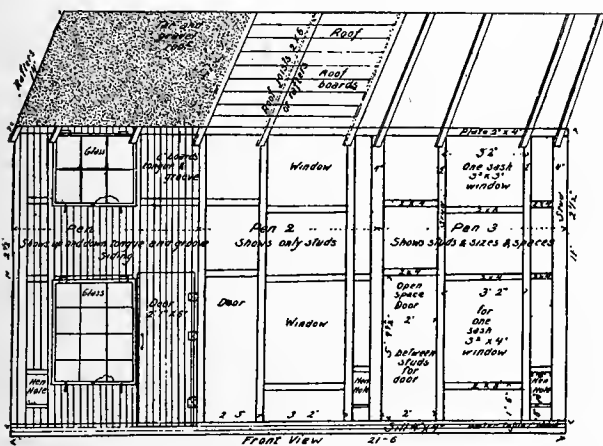
The nests need 20 inches more above said platform; above which again is the dropping board. From the dropping board to the roosts we allow 12 inches. The roosts need 2 or 4 inches. The fowl on the roosts need 30 inches more, and the roof, if boarded in, needs 8 inches more. The foregoing needs 8 feet; and 4 feet more should be added for storage and coops.

Outside size of frame of building, 21½ feet long by 12 feet wide and 12 feet high, without sidings.

On the 25-foot city lot we would build as follows: We would allow 3 feet for a walk from the dwelling house to the alley on one side of the lot. We would set our house 3 inches within the building line of our neighbor, to allow for roof projection above to keep the wall dry, and to give room for ventilation and rat wire projection below.

We are in great danger of getting into a lawsuit with our neighbor who owns the adjoining lot, if we permit any part of our house to cross our lot line. We may forget that our foundation posts and upright studding must be an inch within the line to allow for our outside siding boards.

The length of our house will then be 21 feet 6 inches from outside to outside, unless we include the 3-foot walk, which some do. They then partition off the walk through the house and use locked doors. This gives better protection against boys and thieves. In planning a building one should consider



Front view of house showing the three pens in different stages of construction.

as far as possible the lengths of all material used, so as to have as little waste as possible. We must consider whether we want a brick or cement floor, whether we want the board floor close to the ground, or 18 inches above, so as to allow a cool retreat in summer. As we are more interested in a winter poultry house and a floor that will not freeze, we select the brick or cement floor, at the same grade, according to which will cost us the least. We would see that the floor of our poultry house and 6 feet in front was not less than 6 inches above the surrounding ground of our own lot or our neighbor's, or the alley, when completely covered with brick or cement. We would make this building 21½ feet long by 12 feet wide, use 14 feet long joists for roofs, letting them project 6 inches over the alley, and nearly 18 inches over in front. The pitch of the roof may incline to the alley or the front. We prefer to have the highest part of the roof toward the alley and use a spout in front, and then conduct the water toward the alley or house drain. We would use a spout in either case, to keep the soil around our house dry. If the highest part of our house is at the back it gives us most room where we need it for utensils and coops according to our plans. If we did not need the room for storage and coops we would build the back only 8 feet high.

If we did not put in a stone foundation, we would put in 4 feet long cedar posts, cut off square at both ends. The outside should be covered with heavy building paper slightly overlapped, over which either clap boards or drop-siding may be laid horizontally, commencing at the water table. We prefer to have the boards running up and down on the outside, and transversely on the inside, with paper behind both, with a 4-inch space between. The ceiling also should be covered in the same way. To prevent rats or mice from ever getting up on that ceiling, the space between the studs should be boarded tight. It would also prevent the cold from the ceiling settling down between the studs.

NUMBER OF FOWLS.

The building herewith planned can be used for 10 or more in each pen. We have kept 20 in the same pen with careful attention. Or all three pens can be used for 15 fowl by giving them the run of all three pens, using only one pen for laying and roosting, and the other two pens for scratching; or the middle pen alone may be used for a scratching pen half a day for each end pen. Cheap muslin curtains can be drawn down over the fronts of the roosts and nests not wanted.

BEAUTY VERSUS UTILITY.

In the construction of this building we are recommending nothing but what is essential, useful and practical. If any one wishes to go to the expense of beautifying the building it can be easily done by putting narrow boards on the corners and beading them; by boxing in the rafters and putting on heavy moldings under the ends of the roof boards; by putting in extra casings for the doors and windows, and by putting extra boards along the sills, etc.

CONCRETE FLOOR.

If a concrete floor is desired, it may be made 3 or 4 inches thick. Take 4 parts crushed stone, 2 parts gravel and 1 part portland cement. Mix them thoroughly, then wet and spread evenly. On top of this mixture, while wet, we spread evenly and smoothly, not less than a half-inch of the following mixture, viz.: one part coarse, sharp sand and one part portland cement, mixed with water to the consistency of mortar.

BRICK FLOOR.

If a brick floor is decided upon, we purchase whole, selected, hard burned sewer brick, a sufficient number to cover the floor with their flat surface, or better, laid on their edges. Each brick is usually about 2½ inches thick, 3¾ inches wide and 8¼ inches long. Before laying the brick, the floor must be pounded down hard, smooth and level. Then scatter some sand over the surface, for the brick to lie on, and to fill in the spaces between the brick. The brick floor of this house is placed under the sills and close to their under surface, and close to the outside wall, to prevent rats or mice from having a hiding place under the sills.

For the brick floor we use regular tar paving cement, which is ready to put on when heated. About 1½ gallons are required to every square yard of surface, depending upon the closeness of the brick to each other. It costs about \$3 per barrel of 300 pounds. The hot tar is poured into the cracks on a hot summer day, and then a thin coat is spread over all the brick. This floor can be easily and speedily swept and washed, and the litter which is spread over the floor can be easily raked up into heaps for the grain. The ease with which labor can be performed on such a floor lessens expense and increases profit. If the floor is raised above the surrounding ground it will require a 12-inch board nailed around the outside of the sill to keep the inside floor from falling out.

RAT WIRE.

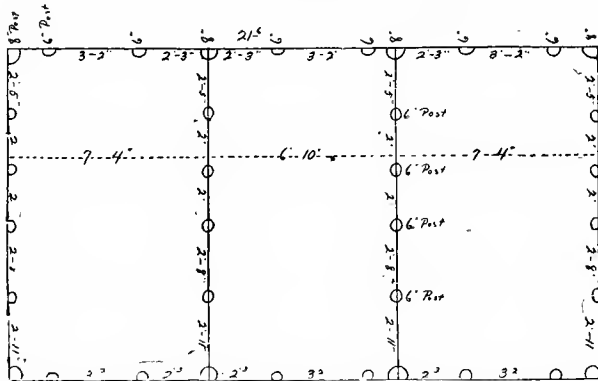
Around the outside of the floor and foundation posts of the house, to prevent rats from burrowing under the floor, we place heavy galvanized wire, No. 14, of ½-inch mesh, 2 feet or more wide. The wire should extend from beneath the lit-

the water table mentioned and attached to the middle of the sill 18 inches into the ground and then bent outwards 6 inches or more. Rats have not learned the trick of digging down 18 inches, then outwards 6 inches, then down again under the wire, and back again under the house.

FLOOR.

The owner of the city lot has no ground to spare, but he can build upwards. He can utilize all his floor space for scratching purposes, by placing all needed poultry appliances 2 feet above the floor on platforms, and all poultry appliances not in constant use close at hand upon a platform near the roof, instead of taking many steps back and forth to the house for everything needed. These storage shelves or platforms must be enclosed by sliding wire doors, to prevent fowl from roosting there. These shelves can be reached by a ladder which may be hung up on a wall when not in use. In addition to storage purposes, they can be used for a sick bird, a fattening hen, a prize bird, a sitting hen, etc.

Where the poultry house is to stand, the ground should be high and dry 6 to 12 inches higher than the rest of the yard. Even the yard should have no place low enough to hold water from adjoining lots. Hens will not wade through water or snow. A damp house means sick fowl. On a city lot arrangements must be made to allow the water to drain off to



The cedar posts shown above in the foundation extend one inch over the line and this portion should be trimmed off either before or after being set, so that boards could be applied smoothly to the outside surface of the posts.

the alley or house drain. Hence the grade of the alley must be considered. If the ground is not already high enough we would raise it 6 to 12 inches above the surrounding ground with sand, gravel, or cinder clinkers. If an earth floor is used in a damp climate like Chicago, the floor and house will be damp by capillary attraction even if raised a foot high. The earth soon becomes foul and must be changed spring and fall. This would usually be a heavy expense upon a city lot. Upon the earth floor the litter soon becomes damp and musty. The earth is dug into holes by the fowl and causes waste of time and much inconvenience in cleaning and raking the litter into heaps for the grain. A board floor may be used if the outside is made rat proof, and rats are not allowed to get inside. Flooring tongued and grooved and smoothed on the upper side should be used.

A thin coating of hot tar should cover the floor to prevent the floor becoming saturated with fowl filth. If the boards are not tongued and grooved, but merely laid close together they will separate sufficiently to permit small grains to fall through and be lost. The dampness below causes the floor to warp and twist out of shape.

RATS.

They are ever with us seeking what they may devour. They are the greatest evil the poultryman on a city lot has to contend with, and he who builds a poultry house without considering Mr. Rat's capability for destruction, will sooner or later, if he continues in the business, have to remodel his floor or quit in disgust. A board floor, laid near the earth,

furnishes an ideal rat harbor and prevents dogs and cats from getting underneath. Rats will eat everything the fowl will eat and also the fowl themselves. They love no better hiding place than under a board floor, laid on or near the soil; a board sidewalk, a brick pile, a wood pile, a board or any other covering. They will burrow under the floor from the outside. Hence the foundations must be well protected and every hiding place must be avoided, if the fancier wishes to raise fowl. We had thirty-six fowls killed by rats in one night; others report twice as many. No expense must be spared to make our building rat proof, as it is expensive to feed rats with grain and chicken meat. If a board floor be desired, it should be laid 2 feet above the soil and should be double for the sake of warmth. One-inch strips between the double floor would be sufficient for a dead air space.

TWO FEET UNDER THE HOUSE.

Some advocate raising the board floor some 12 to 24 inches above the ground, so as to allow a retreat for the fowl during hot, cold, or wet weather, but it has no advantages over the floor of the pen, and has some disadvantages. If you want to drive the fowl into the house, they run under it. If you want to catch them they run under it. If raised high, it is difficult to get in and out of the house. If left low, it is a harbor for rats and foul, dead air. Eggs laid there are difficult to get, unless one lies down on his stomach and crawls in. In zero weather the floor is ice cold, etc.

FOUNDATIONS.

For our foundations we have decided to use cedar posts 4 feet long. The four corner posts and the four partition posts are to be 8 inches across the top. The remaining posts are to be 6 inches across the top. It will not do to allow the roof boards or any other part of the structure to trespass on our neighbor's property. Therefore, although our lot is 25 feet wide, we allow only 21 feet 6 inches to be included in our frame work. Three inches is allowed at each end for the outside boards of wall and roof, and 3 feet at one end for the walk to the alley. The width is to be 12 feet, not including the roof boards or siding. Having laid out our ground carefully, we proceed to dig the post holes the required depth, also carefully, not going deeper than required. We would stretch a line straight and level to guide us. We would straighten and flatten the outer surface of our posts, cutting off about an inch, after the posts were set, and make an allowance accordingly. The top of the posts must be level, and their sides straight. The top of the posts are to come even with the top of the finished earth, brick or cement floor, the thickness of which is to be calculated for. We divide the building into three equal pens, therefore we set the center of the division posts 7 feet 3 2/3 inches from the outer side of the finished corner posts. When lined inside, the distance between the walls will be about equal, viz.: 6 feet 8 2/3 inches. The cut shows the distance apart of the centers of the other posts, which we place under the studding for their support.

END VIEW OF STUDS AND RAFTERS.

The studs, plates and joists or rafters should be sized straight and true. Where the rafters lie on the plates they are fitted snugly with saw and chisel before being nailed.

The end view is given to show the arrangement of the sill, studs, plates and rafters. We first spike down our 12-foot 4 by 4 sill to the posts at each end, being careful to have their outside close to the building line determined upon. They must also be level and straight. We next put down a 4 by 4 sill along the front and back, fitting them in snugly, but between the others and with the same care, and always putting a cut end upon the center of a post. We then set up a row of 2 by 4 studs along the front at the proper distances apart, each one being placed on the sill over the center of a post and spiked down. We use 4 by 4 studs for the corners and division front and back. Each stud must be

cut square at each end, and of the same length, viz.: 11 feet 2½ inches in front and 11 feet 8½ inches at the back. As they are set up it is customary to tack long boards diagonally across them to hold them in place. The narrow face of the stud is directed outwards. At the outside ends the flat surface of the stud must be flush with the sill and placed vertical. Over the complete length of the front and back studs, now set up and spiked down, a 2 by 4 plate will be laid on its flat surface and spiked down to the studs with 5-inch wire nails. At each end a diagonal board must be tacked to the end stud and a post, to hold them in a true vertical position. Now we are ready to place the 2 by 6 rafters on their edges across the front and back plates, and directly over the studs. We prefer to use rafters 14 feet long and permit them to extend 6 inches over the back and the balance over the front, to keep the back and front dry. However, if preferred, 12-foot rafters could be used. If so, then we would make the building 2 inches narrower than the present plans call for, which is 12 feet wide sills, and the outside boards in addition. In either case the wide side of the rafters must be flush with the outside of the corner studs. All rafters must be securely nailed. The 2 by 4 studs are set with their narrow face outwards along each end and accurately fitted in between the sill and the rafter at the proper distances apart and properly spiked down. At the top of the stud the back half not cut off is allowed to extend up behind the rafter and be spiked to it. The first stud from each corner of the end, is placed one inch from

with which we line the inside of the building, so as to make a dead air space of 4 inches.

The next stud is set so that its center will be 4 feet 5 inches from the outside of the back sill. The next stud 2 feet between centers. Two feet must be left clear between the two studs in front for the inside door. While the distance between the centers of the adjoining two studs will be 2 feet 8 inches. Cross pieces 2 by 4 inches are nailed between the studs to strengthen and for nailing to.

FRONT VIEW.

The front view of the building shows it to be 21 feet 6 inches wide and 12 feet high between the water table and top of the plate. The studs are 11 feet 2½ inches long, back and front sized to a straight edge. They are 2 by 4 inches. Each stud is supported by a cedar post. On the outside of the building the 2-inch surface of the stud is set outwards, while in the partition the 4-inch surface is set lengthwise with the partition. The building is divided into three pens of equal width when completed, if boarded up on the inside of the outer walls, and the outer sides of the middle pen. From the outer side of the sills to the center of the first partition stud is 7 feet 3-3 inches, leaving the center pen between the center of the partition studs to be 6 feet 10 inches. If the building is only to be 8 feet high, one window will be required in front, but we prefer to have the building 12 feet high, and place one window above the other. We prefer the doors in front because when doors and windows are wide open it almost makes an open scratching shed. The door openings are 2 feet wide between the studs and 5 feet 10 inches high. The door when made is to be 2 feet 1 inch wide and 6 feet long. It is to overlap a half inch on each side stud, a half inch above and 1½ inches on the sill below. Our upper window sashes are 34 inches wide and 36 inches long and lap over onto the studding half an inch all round. We use an upper sash hung on the outside by the top and a lower sash hung by the lower surface on the inside. We place the top of the window sill 18 inches above the floor or bottom of the sill of the building. The hen hole is 8 inches wide and 16 inches high clear on the inside. Its mode of construction will be explained elsewhere. The front view shows the mode of construction. Pen 2 shows the studding as used for the whole front. The front of the other pen shows the tongue and grooved flooring running up and down, which is the method we use. Two-inch strips running up and down can be placed on the corners if clapboards are used. Transverse pieces 2 by 4 inches are used to strengthen the frame and for nailing the outside boards to. The space between the studs for the upper and lower sash is 33 inches. The depth of the upper sash before and behind is 36 inches. The depth of the lower front sash is 4 feet.

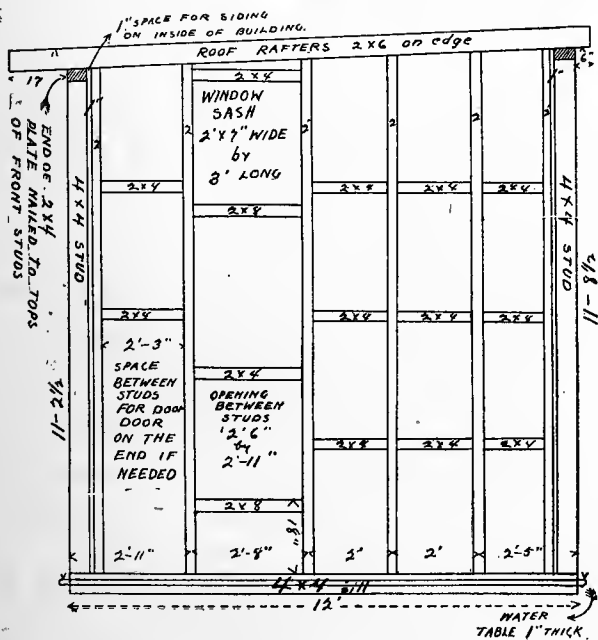
ROOF COVERING.

Each one must decide for himself what roof covering to use. If the covering is to be of shingles the pitch or slant of the roof must not be less than 6 inches to the foot, better 9 inches. If of tar and gravel, then the pitch is usually made steeper if desired, only so that the gravel don't roll off. If of paper, covered with roof paint, then the pitch should be from 4 to 6 inches or more to the foot. A gravel roof 22 feet long by 12 feet wide would cost about \$12, if covered with four thicknesses of No. 2 Cincinnati wool roofing felt, well mopped between the sheets and properly fastened to the building, the whole surface then covered with the best roofing composition, over which is placed a heavy coat of clean screened gravel. This would last for five to ten years without repair.

There are many kinds of paper coverings which are accompanied with directions, and caps and nails, for applying.

WATER TABLE.

To the center of the 4 by 4-inch sills which are nailed around close to the outside of the upper surface of the posts,



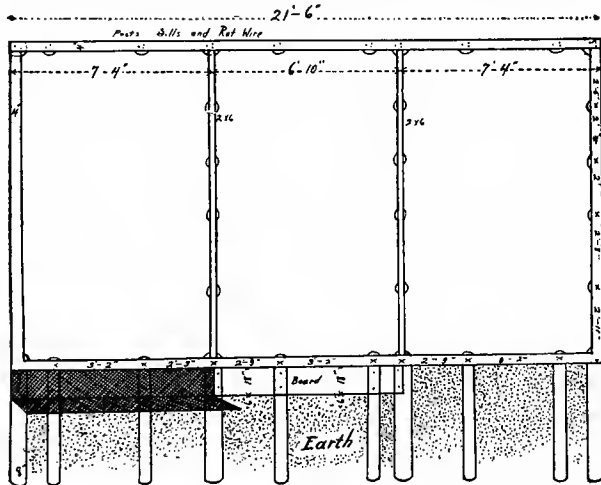
End view showing plan of rafters, studs and spaces, also for end door and windows if desired.

the stud to allow for boarding up the inside. The center of the second end stud from the front is placed 2 feet 11 inches distant. The next stud 2 feet 8 inches distant between the centers. The next one 2 feet between centers, and the center of the next stud is placed 2 feet 5 inches from the outside of the back sill. The rafters having been all spiked down in place, we next turn our attention to the partition studs. We first put down a 2 by 6 sill extending across the building, and exactly in line with the center of the 4 by 4 studs at the front and back, and spike it to the stud, sill and posts. The 2 by 4 partition studs are set lengthwise along this sill and extend to the rafters, to both of which they are spiked. The studs are placed over the cedar posts. One 2 by 4 stud is set 1 inch from the back stud, and another set 1 inch from the front stud. This allows room for the boards

we would nail a 1-inch strip 2 inches wide. This would look well, make a so-called water table, and protect the sills from rotting. We would attach this strip by nailing from the under side. Before nailing we would bevel about one-eighth inch off the under edge which is to be attached. The upper surface would then throw the water out, and the outer and lower edge being the lowest, the water would drop off, instead of leaking backwards to the sill. To the sill, beneath this strip, and close to it, we would nail all around the frame work or building a 12-inch board. Before nailing on these boards, we would see that the posts were smooth and plumb or vertical. This board will support the soil and flooring inside, and also keep the floor warm. But this is not enough, as the rats would eat holes through the corners and dig holes underneath.

WATER AND GAS.

The fowls need fresh water, their utensils must be washed. How and where shall it be done? Shall the utensils be carried to the house, making a muss there, or shall the water be carried to the utensils, in either case much time will be consumed. It would pay to carry a supply water pipe deep in the ground to the poultry house from the dwelling house. A small sink connected with the water supply would be exceedingly useful. This sink could easily be connected with the same drain that carried the water from the poultry house



This drawing shows 4x4 inch sills spiked to the cedar posts around the outside, also the two 2x6 inch floor partition joists resting on the cedar posts, on their edges, also the front cedar posts in the ground, also 12 inch boards nailed to the outside of the cedar posts to keep the earth in, and the cold out, and heavy wire netting tacked to the outside of the board and posts to keep out the rats.

spout. If a gas pipe was carried from the house in the same ditch to the poultry house it would also be a most useful convenience for use in the dark mornings and evenings of winter, when the busy city fancier must do his poultry work. This gas could be utilized for heating the poultry house in extremely cold weather, with much less danger in its use. What a saving of time for the fancier who would have to trim and fill and clean his lamp so often. We also use city gas for our incubators.

HEN HOLE.

We place the bottom of the hole 8 inches above the sill. The hole through which the fowl pass in and out must be made of a size suitable for the cock. We make the inside of the hole 8 inches wide by 16 inches high. Its construction permits the cover over the end of the opening being opened and closed from the residence by means of pulley and wire. The boards composing this hole are smooth on all sides and are placed even with the lining inside. The cover of the hole, inside and out, is made of 2-inch stuff in order to give it sufficient weight to close the opening tightly. Its upper edge is beveled to fit before applying the hinges to the top. A screw eye is inserted near the lower edge of the lid to lift it

by. The top and the cover lids should be made of 2-inch stuff. The sides and bottom of 1-inch stuff planed smooth. The top should extend 2 inches inside through the building, and outside of the building 5 inches, so that the lid when raised can lie back safely against the side of the building. The sides and bottom should extend through the building, and outside of the building 4 inches at the top and 12 inches at the bottom. The top, bottom and lid should extend over the sides. The lid is beveled at the top so as to fit close to the cover before being hinged. A screw eye is placed near the bottom of the lid to lift it, by hand or pulley. In summer the board door is unscrewed and a heavy wire door put in its place. We use half-inch wire mesh to prevent mice from getting in at night. All our pens are made with cat holes between them to be opened and closed when we please. The top extends 2 inches over both doors, so that water will not so easily run down behind the lid. The hole inside of the building should also have a hinged cover which can be hooked up when not in use. The sides and bottom board inclosing the hole should not project much beyond the siding inside. The top should extend over the boards outside and inside 2 inches for attaching the hinge to the 2-inch lid underneath it.

VENTILATION.

In summer the house should be clean and wide open. In zero weather an open house with cracks means frozen combs and few eggs and severe colds. A tight house, closed tight, means dead air, still air, foul air, impure air. If the inside air of the closed house was at the same temperature as the outside air there would be but little interchange of air between the two. This dead air would be so debilitating while the fowl are locked up there day and night in severe weather that the fowls would become sickly and dull and but few eggs would be laid, and in spring the eggs would not be hatchable. If there was no artificial heat the fowls' combs in many cases would be frozen and their eggs would not be fertilized. We advocate pure air and a sufficient quantity, slightly warmed in severely cold weather. We use our windows for ventilation. We do so in our dwelling, upon the same principle. In winter we let pure, fresh air into our dwelling through the bottom of our outer storm sash, and up between the windows, then into our dwelling through the top of our inner window, having our curtains hung below the openings.

WINDOWS.

Windows should be obtained before commencing the house, so that the studding can be spaced properly for them. The window frames we use are 34 inches wide by 36 inches high and contain six lights of glass 10 by 16. The number of lights is immaterial. We use double windows for winter. We fit the sash to the outside of the studs within and without and allow them to overlap the studs at the sides and the cross bar above a half inch. This saves lumber and labor. The lower cross bar upon which the sash rests should extend outwards as far as the sash and have a downward slant of half an inch. It should be smoothed off on the inside so as to be level and even with the inner surface of the sash. We take a smooth 2 by 8 piece, the proper width, and fit it in between the studs at the proper place, allowing it to project inwards and outwards far enough to be even with the outward surface of the sash, so that the spring hinges or buttons will fit properly. The studs should also be planed smooth wherever exposed. We hang the windows in the following manner so as to make ventilators out of them. What we need in a winter poultry house in zero weather is warmed fresh air without drafts. The inner window is hinged at the bottom by applying the hinge to its inner surface and the inner surface of its support. Two buttons 2 by 2 inches attached to the cross bar above, will hold the window tight. A small chain of any length desired, attached by a screw to the center of the cross bar above, can be held by any one of its holes, by the point of a nail driven into the upper edge

of the sash at its middle. This will permit the opening of the sash any distance. The inner sash open at the top, the outer sash open at the bottom, permits of any ventilation desired in winter without draft, when the doors cannot be opened. The outer window should be hung at the top with spring hinges; being hung at the top, protects from rain, snow and wind. With a screw eye in front near the bottom, a pulley overhead, and a wire stretched to the house we ventilate according to the weather. In the summer it can be removed or pulled up out of the way. A button or barrel bolt at each side near the bottom will keep the outer window closely shut when desired. If the building is 12 feet high, a second window should be inserted in front, above the other, near the roof, and built the same as the lower ones. For summer use we attach No. 19 wire, one-inch mesh, to the center of the window frames between the sash.

END WINDOWS.

One or more windows can be put in as desired, which would give much needed light in winter and much ventilation in summer. The neighbor's buildings may render them useless below, but may not interfere with the upper ones. They are to be hung the same as in the front, with spring hinges, pulleys, ropes and wires to be operated from the house. The inside windows opening at the top protects from wind, storm or cold, by directing the wind upwards, not down upon the fowl. The outside windows protect from

each. The hardware man will tell how to put them on. Gate or door strong wire spiral spring, 12 inches long, costs 25 cents each. Three-inch wire door pulls, 2 cents each. Iron brackets to hold up shelves can be gotten in sizes from 3 by 4 inches, up to 16 by 18 inches.

DOORS.

We would put a light double swing door between each pen, and a door into each pen from the outside in front, and a door between each yard 6 feet from the house on the outside, so as not to interfere with the fowl standing in front of the house. We would put a movable 8-inch board beneath the swinging doors inside, which would lessen the required length and weight of the door, keep the door above the litter and prevent the fowl from running through the opened door. We would also put 12-inch movable boards in front of the outer doors inside to prevent the litter from being scratched out into the yards. We would also put under the yard doors 6-inch movable boards, to permit the doors to open easily over hardened snow or ice; also along the line of the open gate our stop fastener, which holds the gate open at once, and permits it to close by merely touching it with the foot. A wire handle, with a screw hole in each end, is used on each door to pull it open.

FRONT DOORS.

They are placed outside of the studding, and allowed to overlap them, and the cross bar above, a half inch, and to extend down over the sills in front to the water table below, the same as the siding does. They are made of tongued and grooved 1-inch flooring, 2 feet 1 inch wide by 6 feet long, and attached with screws to three pieces, one inch thick and 6 inches wide by 2 feet long. These three cross pieces are intended to rest between the studs. The upper one to rest just below the overhead cross piece, the lower one close to the floor below and the middle one between the other two. The doors are hung with three summer door spring hinges, or if a stiffer spring is wanted, we use the ordinary steel butts and a spiral spring. The hinges are screwed over those cross boards.

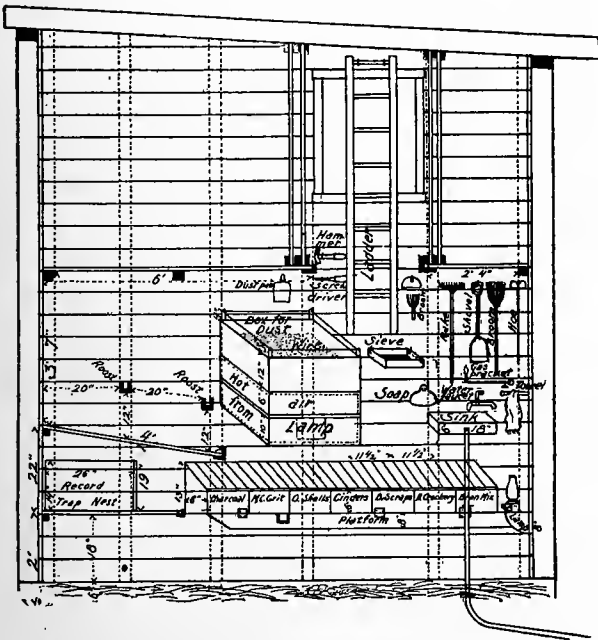
It is important to have the door close after one quickly when they go out or in, as the chickens are sometimes very quick to get out when we don't want them to. The door is kept open by a hook and eye and kept closed by two buttons 2½ inches long, or barrel bolts 4 inches long. A hook and eye or bolt is used inside to close it. An inch strip is used around the inner edge of the door between the cross pieces, which helps to form a dead air space; then the whole inside of the door is covered over with building paper. Inside the door, between the studs, a 12-inch board is set, to prevent the litter from being scratched into the yard. It is set in grooves made by screwing pieces one-half inch square to the studs and is easily lifted out.

END DOOR.

A door from the sidewalk into the house would be a great convenience, and save much time. The door space left is 2 feet 2 inches by 6 feet. The door is to be made and hung the same as described for the front doors, overlapping the studs and head piece a half inch, and extending over the sill down to the water table below. A wire handle to pull the door open, and spring hinges are convenient and time-saving. The owner may prefer other hinge butts, and locks, and door knobs; if so, they are easily put on. Two 3-inch barrel bolts, or 2-inch buttons may be used to hold the doors closed on the outside if locks are not used.

PARTITION DOORS.

The two inside partition doors are made 2 feet wide by 5 feet long. The door frame is made of inch lumber 3 inches wide. The top and bottom rails are cut 24 inches long, and the side pieces are cut 5 feet long. Extending 3 inches from each end of the four pieces, a piece is cut out from the flat surface, half its depth, even and squarely. We use a saw and square. It is well to cut out these pieces at each



One end of the house inside, boarded up with 6 inch tongue and groove lumber.

rain, snow or storm, by opening at the bottom. Being two windows; when shut they leave an air space between them which protects from the conduction of zero weather. The end windows being placed in front of the fowl, protect them from draughts when wide open in summer, while giving them unlimited fresh air. The high windows having spring hinges can be easily manipulated by pulley and wire. They can be taken off in summer or let down.

HINGES.

We use spring hinges on all doors to save time, and to prevent fowl from getting through with us. The 3-inch wrought steel butt costs 7 cents per pair. The cast iron are no good. The screen door spring-hinge costs 10 cents per pair. The fine wire Pullman coil door spring No. 3 is 18 inches long and costs 8 cents each. The Torrey door screen single rod spring, 3 feet long, costs 15 cents each. Another effective spring, the vertical, consisting of two vertical rods bent at the top and curled at the bottom, worth 25 cents

end from the same side. The ends are then screwed together squarely with four screws to each corner. Use $\frac{1}{8}$ -inch screws, size No. 8. The frame is covered over with 1-inch mesh wire, No. 19. These doors are hung with 3-inch, summer door, spring hinges, which cost 12 cents per pair. Under the door we place an 8-inch board between the studs, and 2 inches above this we hang the door. We also leave a 2-inch space above the door. The smaller the door the lighter it will be.

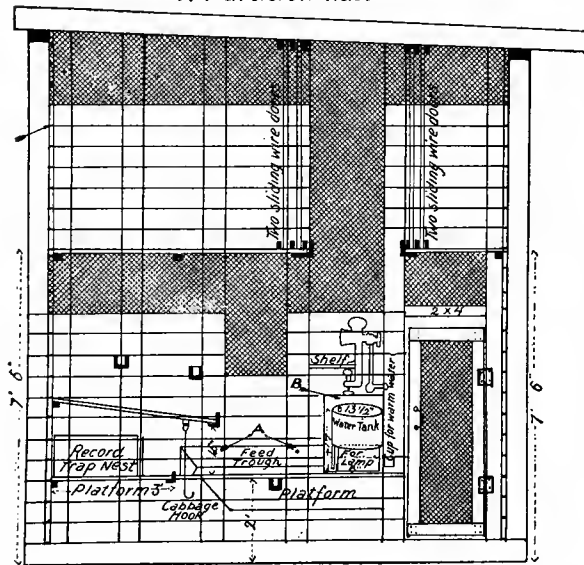
SUMMER DOORS.

We use summer doors on the outside of our building, framed and covered with wire, similar to the inside doors. They are made of the same size as the outside doors without hinges. When the front doors are opened straight out and hooked in that position, the wire doors are set in their place, and held there merely by the back edge of the front door, and the same bolt that holds the winter door shut. It is kept from dropping down by the water table below.

YARD GATES OR DOORS.

The three outside partition gates or doors in the yards are made in the same way as the inside partition doors, except that we make them 6 inches wider and cover them with No. 14 wire of 3-inch mesh above, and 1-inch mesh wire over the lower two feet. The bottom boards, under the doors or gates, permit them to swing clear of litter or snow.

A Partition Wall



They are easily lifted out, being set in grooves made by nailing pieces a half inch square and 8 inches long to the posts on each side of the board.

NEST PLATFORM.

Our nest platform consists of 1-inch boards, 10 inches wide and 36 inches long, extending from before backwards. Its under side is placed two feet above the floor. It rests behind on a strip 1 by 2 inches, screwed on with brass screws to the rear wall. In front, it rests on a 1 by 1 inch strip screwed to the lower half of a strip 1 by 2 inches set on its edge. This strip extends between the side walls, and rests snugly in a slot at each end. These boards are planed smooth on both sides and do not overlap each other.

NESTS.

Five or six nests can be placed on the platform. Any kind of nest can be used, closed or open. They can be laid on the platform so as to allow the fowl to go in from the rear, or the front. If they go in from the rear the front can be closed with a board hinged so as to be lifted out of the way to collect the eggs in front, while the birds lay in the dark, behind. We prefer the Record Trap Nests, which are 13 inches wide, 26 inches long and 19 inches high, leav-

ing 10 inches in front for a stepping board for the fowl. As the hen enters, the door closes after her. One of the advantages of this nest is that one can tell from a distance whether a hen is on the nest or not, and then can tell which hen has laid. These nests are placed close to the back wall, and have 10 inches of a platform in front, upon which they hop before entering the nests. There should be head room enough to permit the hens to get into the nests comfortably. The nests sit on the platform and are easily removed and soaked with liquid lice killer, or other disinfectant. The loose boards composing the platform are as easily removed also. The space above the nests must be enclosed with wire or otherwise to prevent the fowl from roosting on them.

ROOST PLATFORM OR DROPPING BOARDS.

The bottom of our roost platform is placed 19 inches or more above the nest platform. It should not be supported by posts on the floor, as they are in the way of the fowl and the attendant. The dropping board should be made moveable, yet tight enough to prevent the dirt from falling on the nests or floor beneath. It should be firmly supported. If hung upon wires, it is usually wabby and annoying. All lumber used in the inside of the building should be planed smooth, to avoid hiding places for vermin and their eggs. We place our dropping boards at the back of our pen in the following manner: Along the back and sides of the pen, at the proper height, we fasten strips 1-inch thick and 2 inches wide, to help support the dropping boards. The side strips are to be 6 inches lower at the front, which facilitates cleaning, and prevents dirt from falling down at the sides. These strips are fastened with brass screws. They don't rust and the strip can be easily removed and changed as desired. Brass screws are preferable for all other internal supports for the some reason. For these pens we make the dropping boards 4 feet long from the back to the front. Each board is from 8 to 12 inches wide and 1 inch thick. There is cut out from each edge of the board a half inch in width by a half inch in depth from the upper edge of one side and from the lower edge of the other side of the board. They are easily removed to soak their edges with liquid lice killer. Their edges overlapping prevent, the lime, sand, ashes, earth or other material placed on them, from falling through on the nests below. Some birds insist upon sitting upon the front edge of this platform. We therefore place a 2 by 4 in front, pressed close to the boards, which holds them tight in place and prevents somewhat the droppings from falling on the floor. This strip is held firmly in place by resting in a groove or slot at the sides of the pen. A 1 inch strip is nailed to the lower side of this strip to support the boards. The 4-inch side of this strip will be divided into three parts. Two inches will extend above the boards, 1 inch will be occupied by the ends of the boards, and 1 inch will be occupied by the 1-inch strip upon which the dropping boards rest. The upper portion of this pole is placed tight against the loose dropping boards, while the portion above the dropping boards helps to keep the droppings from being scratched onto the floor and furnishes a broad roost for the birds when driven off the roosts or cannot be accommodated on them.

JUMPING POLE.

Eighteen inches in front of the dropping board and half way between it and the floor we extend a pole between the walls of the pen to assist the bird in getting up to and down from the roosts. It is made 1½ inches by 2 inches and set in a slot at either end. It is easily lifted out of the way for cleaning, etc. It is also exceedingly useful for a rooster to hop up on when chased by another. It is amusing to see the looks of the chaser when he gets left thus.

HEIGHT OF ROOSTING QUARTERS.

The height should be not less than 4 inches above the top of the cock's comb when standing up on the roost. Our rooster stands 25 inches to the top of his comb. Less will

most likely subject it to being frozen, by conduction from a low roof, in extreme cold weather. A frozen comb causes the bird much suffering and renders it useless for breeding purposes during the breeding season. It also disfigures the bird. Imagine the suffering if our fingers should be frozen off. It takes weeks before it heals.

CURTAINS.

In extremely cold nights a muslin curtain may be let down in front of the dropping board. If the curtain is kept a half inch in front of the board, the foul gases will escape to the floor, and the curtain itself will admit the pure air through its interstices. In extremely cold weather two light frames covered with oiled canvas, can be hung overhead close between the top storage floors of our 12-foot building. The frames can be made of half-inch lumber hinged to each wall and raised by a rope or pulley. Each frame would be about 3 feet square and prevented from falling by a peg put into the flooring on each side of the upper floors.

ROOSTS.

Writers in the poultry journals and books inform us that narrow roosts cause crooked breast bones; and tell us to use 2 by 4-inch poles rounded on the top. Just stop and figure out the fact, that the narrowest flat roost gives a broader surface than the broadest pole with rounded top. There is not even a point along the whole pole, if perfectly rounded, that is as flat as a knife's edge. No! the top of the roost should be flat, and only the sharp edges smoothed with sand paper. A roost 6 feet long accommodates ten hens.

We deem two roosts necessary, so that a fowl driven from one roost can sit on the other. We find that roost poles 2 by 2 inches answer our purpose, while roosts 2 by 4 inches are twice as heavy. We leave a space of 20 inches between the roost and the wall. If we do not, a Minorca rooster's tail will be crowded over its back and spoiled. We also leave 20 inches between the roosts. The back roost is placed 6 inches higher than the front one, to permit the rear birds to see over the heads of the front row. The under edge of the roosts are placed 12 inches above the dropping board, to permit the fowl to go back and forth under the roosts. Their ends rest well in fitted slots against the wall, which are well soaked with liquid lice killer once a week, which prevents lice from taking that route. Poultry judges and visitors never find a louse on our fowl. We do not keep a poultry house for breeding lice, rats or mice. Vertical and transverse wires to hold up the roosts are theoretically ideal, but practically a nuisance. They are in the way, they are wobbly, insecure, unsteady and requires much time to secure and release them.

FREEZING COMBS.

Nither the comb nor any part of the fowl's body should be allowed to come near the outside walls in zero weather. We all know how cold we grow, in severely cold weather, if we sit near the wall or window. If we lay our hand upon them we soon feel the stinging cold by conduction. In zero weather wall or glass window where insufficient heat is kept to prevent it. For the same reason we see the water trickle down the outside of the pitcher if ice water is kept within it. Just so with the chicken hugged up close to the outside wall, it may freeze, while the others may be warm. The same applies to large single combs; they will freeze if exposed to a low roof. No part of a bird should be allowed to come within 4 inches of an outside wall in zero weather. The same applies to the large single beefy comb of the Minorca cock when standing up.

ROOST CANOPY.

During severe freezing weather we hang a canopy of cotton cloth, looking like an enclosed buggy top, up over the chicken roost, at a distance of 4 inches from the roof, back and sides. The housekeeper pulls the curtains down to keep the cold out. Every one knows how cold the air is be-

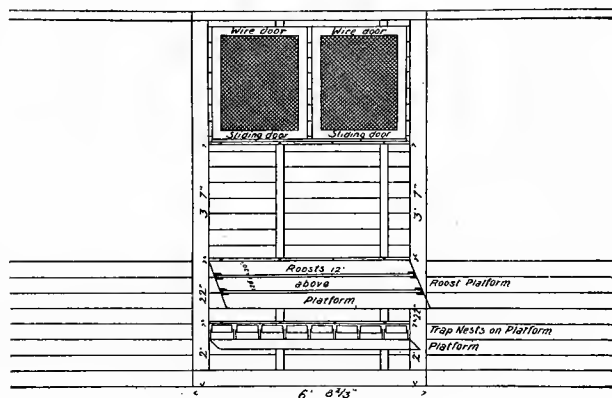
tween the curtain and the window. The seams are sewed closely together. At the corners and half way between are sewed little pieces of muslin made double and containing eyelet holes to hang it by similar to the tags at the lower end of men's short bosoms, to hold it down to the pantaloons. Vertical or cross wires above the roosts interfere with this most humane plan.

STORAGE AND COOP PLATFORM.

About 3½ feet above the roost platform we place the storage and coop platform. Its floor is made of tongue and grooved flooring smoothed on both sides. It extends from before backward, on a level, 6 feet. Has three supports under it, each 2 by 4 inches, smooth on all sides; one at the back, middle and front; each resting in slots against the side walls. The front support could be made to support its part of the floor by cutting out of it a piece 1 inch square and holding it firmly against the boards. Two sliding wire doors should be placed in front of the platform and it may be divided into two apartments for fowl, with 1-inch wire mesh, No. 19, or boards, if desired.

COOP DOORS.

The doors are made of equal size and extend from this floor to the ceiling. The frames are made of inch stuff, 3 inches wide. From each end of the four pieces constituting



Inside rear view of one pen.

one door frame, cut out a piece 3 inches wide and a half inch thick from the flat surface. Make all cuts perfectly square and true. Fasten the cut ends together with four screws and cover the opening with No. 19 wire, ½-inch mesh. The wire can be fastened to the inside of the frame with tiny half inch staples.

GROOVES FOR COOP DOORS.

Three strips of smooth wood a half inch square, the whole width of the pen, should be fastened with screws to the floor and to the ceiling vertically and horizontally, the one above the other, and far enough apart, to permit the doors to slide past each other from one side to the other. The partition should come from the back to the grooves for the doors. A spirit level should be used freely around all parts of the building, so as to have floor and partitions true, level and vertical.

A FRONT UPPER PLATFORM.

Another storage platform about 2 feet 6 inches wide can be placed along the front wall on a level with the previous one, or even two feet lower, and built on the same plan, using only two supports.

LAMPS.

For heating the chicken house when the weather is about zero we use large tin kerosene lamps holding about two quarts. Each one rests upon four tiny short feet and has two diamond burners which need no chimneys. We set one on a shelf in the corner by the hen hole two feet above the floor. The shelf upon which the lamp stands, in the corner, is triangular in shape and comes out from the corner 12

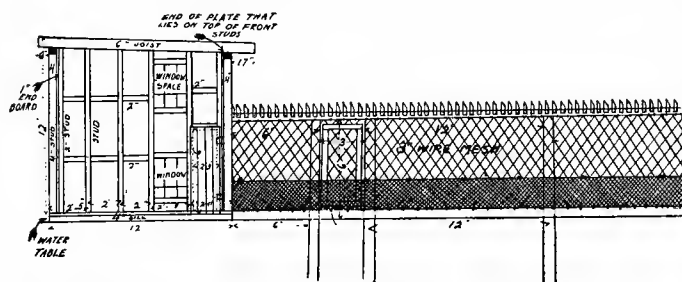
inches in the center and 16 inches at each side. This corner is lined all around with tin. We cover the shelf with tin, and also tack a piece 7 inches wide to its front edge to keep the flapping wings of the fowl from blowing out the lamp. About two feet above the lamp we slant a piece of tin upwards and outwards to prevent dirt from falling over on the lamp, and to throw the heat outwards. We place in front of the whole $\frac{1}{2}$ -inch wire netting to keep the birds off, to keep out the litter and let out the heat. We fasten the wire loosely with staples on one side, and stretch it on the other side over hooks.

WATER TANK FOR WINTER USE.

This is made by the A. H. Company, Toledo, Ohio. We set it in the center of a partition between the pens so as to furnish warm water for two pens. It is made of galvanized iron. It is round, has a diameter of $13\frac{1}{2}$ inches and a depth of $8\frac{1}{2}$ inches. This round tank sets upon a square box $8\frac{1}{2}$ inches deep by 8 inches wide, which contains the lamp for heating the water in winter and heating the house. A small drinking cup is attached to each side, one for each pen. The cup is connected with the fountain above. The whole sets on a platform two feet above the floor, which gives ample room for the fowl to hop up and drink, without danger of getting their wattles frozen by freezing water. A beveled tin shelf is attached above it and covering it, so as to prevent fowl from sitting on it.

GRIT BOXES.

Our grit boxes are made either single or with two or more in a bunch, as convenience dictates. Each compartment or box is made 12 inches long, 7 inches wide, 6 inches deep in front and 13 inches high at the back. The boxes should be



Skeleton view of end of house showing fence extending from it. Posts are ten feet long and five inches across the top. Pickets on top are made of $\frac{1}{2}$ inch stuff $1\frac{1}{2}$ inches wide and twelve inches long and are $1\frac{1}{2}$ inches apart. Posts are two feet six inches in the ground.

low enough to permit the fowl to pick the grit from the bottom of the box, wide enough to accommodate the roosters' combs, and slant enough upwards and backwards to prevent the fowl from perching on them. Everything within the pen except the roosts must be so constructed as to prevent the fowl from perching in or on them. To prevent fowl from getting into the boxes or perching on their edges slats are nailed over the boxes from the back to the front. We make the slats of stuff $\frac{1}{2}$ inch square with rounded edges. A space of $2\frac{1}{2}$ or 3 inches is left between the slats. We make a frame for the top of the boxes and cover it with the slats and hinge it to the front of the box or boxes, so that we simply lift the hinged frame forward when we wish to fill or clean the box. In making the boxes we let the bottom board extend out two inches in front of it, to which we fasten an 8-inch platform with hinges. The hinges are strong enough to support the platform and any fowl that may be picking grit.

DUST BATH.

We find that the width of our finished pen is 80 inches and that we have room for four nests each, 13 inches wide, and a dust box 28 inches wide by 24 inches before back. It therefore fits in between the slats that support the platform on which the nests rest. For winter use we place a kerosene lamp under it which we light occasionally to keep the dust dry and to help remove the chill from the house.

We make the dust box 18 inches deep and divide it by putting in a partition 12 inches from the top. The 6 inches under the partition we line with a sheet of zinc or tin, to hold the heat and to protect it from fire. If the dust is too cold or too damp fowl will not use it. We set this box 1 inch down over the outside of another box, a close fit, which contains the kerosene lamp, but which has no cover. An inch strip is nailed around this lower box to hold the upper box up. The lower box is made 11 inches outside depth. A place for a hinged door is cut out of the front of the lower box. The width of the door must correspond to the width of the lamp. Our lamp is made of tin, has two diamond burners on top and four half-inch long props under it. The total height is 6 inches. The reservoir of the lamp is 2 inches high, 8 inches long, 10 inches broad. The front door frame is made like the other internal wire door frames described and covered with fine wire, and fastened with a 2-inch button. This fine wire gives air for the lamp, prevents the litter from getting in, and the light if burning can be seen from the distance. The diamond burners need no chimneys. These lamps can be purchased from the Automatic Hatching Company, 1311 Broadway, Toledo, Ohio. This box placed by the corner under the dropping boards on the floor, can be easily reached from the nest platform. If not used there, a shelf 8 inches broad can be hinged to the front to hop up on. If not desired in the corner it can be set up in the place of a roost during the day. To prevent fowl from perching on the edge of the dust bath, we fasten securely 1-inch square posts in the corners of the dust box and extend them 4 inches above the box. Three inches above the edge of the box we bore holes through the posts through which we pull a wire tight. They cannot roost on the wire, if they cannot touch the board below. When hens begin to lay lively in the spring the dust box can be removed and two more nests set in its place. Four nests are sufficient for ten hens in the winter.

We prefer to hang our dust box above the grit boxes, close to the roosting quarters, and underneath it to place two stout brackets to help support it.

A SMALL MEAT AND VEGETABLE CHOPPER.

We use the new Connecticut meat chopper, No. 60. It is one of the most useful articles in the chicken house for grinding dry bread, meat or vegetables for chick or fowl. This we place attached to a shelf above the water tank and close to the partition door. Above the meat chopper we fasten a wide piece of tin, slanting in such a manner as to cover the chopper, and keep it from being fouled by dirt or fowl. This cover is so fastened as to lie up against the wall when not in use.

ELECTRIC BELLS.

These can be put in at a very small expense and sound an alarm when thieves attempt to steal the chickens. An additional bell in the chicken house on the same circuit might frighten them away never to return again.

TOOLS PLACED SO THAT CHICKENS CAN'T ROOST ON THEM.

On the boarded walls we hang up our chicken house tools. A broom with handle cut off short and a large eyed screw-eye inserted into the end, or a piece of leather fastened to the top to hang it up by. A piece of string inserted through a hole is a nuisance.

A whisk broom is also hung up in a handy place to brush our clothes before going into the house.

A rake, a shovel, a sieve for sifting hard coal cinders for the chickens, and a very fine sieve, 30x30 wires to the inch for sifting dust for the chicken bath.

A hammer and a screw driver are also hung up on hooks so that the flying fowl can't knock them down.

A heavy dust pan, 12 inches wide, is also hung up, made from heavy galvanized iron without a handle.

A small scraper about 6 inches long with semi-rounded top is also a most useful article.

WATER AND GAS.

If water and gas could be introduced they would be almost indispensable. Our sink is 12x24, which admits a pail and gives us plenty of room to wash our dishes. The faucet should not be less than 12 inches above the sink, to permit a pole to go under. A towel rack and soap dish is also provided. Gas or lamp hung up 3 feet above the sink gives the needed light to wash our utensils.

WIRE FOR CABBAGE.

We take a piece of No. 9 or 10 wire, the length we desire, so that when completed it will be 20 to 24 inches above the floor according to the size and jumping proclivities of the fowl for exercise. One end of the wire we bend around a screw eye so that it will move freely, the other end we bend a little more than half around, upon which we hook half a cabbage. The screw eye we fasten to the under edge of the front support of the roost platform, or from the ceiling.

SPIKES FOR BEETS.

We take two smooth pieces of inch boards 3 inches wide and 36 inches long. Through one of the boards we drive 6 inch wire spikes, 6 inches apart. The other board we nail over the heads of the spikes to keep them from falling out. The long spikes are not so likely to injure the fowl as smaller ones, nor are the beets so likely to be pulled off to the floor. We nail each end of this board, spikes up, to the studs at each side of the window 12 to 14 inches above the floor. This spiked board is placed in front of and below the window.

YARDS.

No. 19 wire soon rusts out on a city lot on account of gas, soot and other causes. We use No. 14 wire for this purpose. Sparrows eat up much of our hen's food, and cats carry off many of our chicks. Rats do the same.

We would therefore recommend that our yards be covered with wire, consisting of one inch mesh, and that it be placed high enough to permit us to walk comfortably underneath.

YARD GATE STOP.

This useful invention is placed just in front of the gate when wide open. It consists of 2 sticks crossing each other. Each piece is made of inch lumber 3 inches wide and of sufficient length to answer the purpose. One piece of the required length is sharpened at one end and driven into the earth just in front of the gate when wide open, and left sufficiently high above the ground to permit the gate to just pass over it. The other piece is made of sufficient length so that when screwed to the side of the piece already in the ground, near its top, at a point one-third of its length or less from the end toward the gate, so that when the long end touches the ground the end of the short end will rise up high enough to stop the gate from closing. The hole through this piece is made large enough to permit it to revolve easily around the screw, while the end of the screw is held firmly in the other piece of wood. When the gate is pushed open it passes over the top of the swinging board and pushes the short end down, when the weight of the long end causes it to drop and prevents the gate from closing. When desired the foot lifts the long end, which releases the gate and the spring hinges close the gate.

A Fattening Coop for Six Cents.



IN THE late fall many fanciers have a number of late chickens which they have reared, hoping to compensate themselves for some of the earlier failures. In spite of extra shade, feeding and care, most of them fall short of expectations, and as room is probably wanted, or the ground has become tainted and damp, and it is use-

less to keep them, with the hope that they may obtain a higher price later on, it naturally behooves the fancier to get rid of them in the most profitable manner without delay. He will find that if they are quickly fattened, and either sold or used for home consumption, that an infinite amount of bother and anxiety will be saved and that there will not only be less expenditure for food, but most likely more profit. For this purpose a cage is required having narrow fenestrations.

I know of nothing better than one made of plasterers' laths, a large bundle of which can be bought for 32 cents. A few of the laths, value about 6 cents, will make a good sized cage, three feet and a half long by fifteen inches wide. The laths can be used as they are, for the long pieces, and cut into three for the short pieces. To save time, several can be sawed through together into the required lengths; a few wire nails and a little ingenuity complete the coop.

It is best first to make the squares for each end and nail some short pieces to them. The long pieces can then be fixed, forming the top, bottom and back, and lastly, the front is made separately and nailed on, leaving one or two of the bars loose to slide in and out.

If a stand is required, it should, of course, be designed to bear the greatest strain when necessary; that is, the top



Mr. Bells' Fattening Coop.

pieces should run from the front to the back to support the length. A feeding trough can easily be made by nailing two narrow lengths of board in a V-shaped manner and fixing a couple of ends.

The whole coop can be made before breakfast; that is, if the meal is not too early, and as the cost is only about ten cents, when soiled it can be used for firewood.

If the birds are well dusted with insect powder at first, and the droppings removed daily, then on account of the cleanliness, free ventilation and comfort there should be nothing to retard the fattening process.

In wet weather a board can be placed on the top. I find about fourteen days the best time for fattening, without cramming, and prefer using a mixture of sifted barley meal with house scraps, which is eaten more greedily than ground oats and Indian corn meal. A little boiled rice can be given occasionally as a corrective.

W. K. Bell.

There should at all times be plenty of clean straw or other litter on the floor of the poultry house. Have it at least six inches deep and never feed whole grain anywhere else.



FIRST PRIZE POULTRY HOUSE PLANS

The Plans and Descriptions Here Presented were Entered in American Poultry Journal's \$50 Contest by C. A. Houck and were Awarded First Prize for the Best Plans and Description for a Poultry House Suitable for a Poultry Plant of Five Acres or More.



THE accompanying plans show the entire length of house to be 107 ft., the main part containing the incubator cellar, office, cook room and feed loft is 16 by 26 feet; each wing is 45 ft. 6 in. by 16 ft., outside measurements.

Foundation and cellar wall of stone 12 in. thick. Floor of cellar may be left ground or covered, first with 3 in. of concrete and then 1 in. cement. Depth of cellar to floor timbers 6 ft. 8 in.

Sills 6x8 in., set on edge, notched and spiked at angles, and ends made level.

Studding 2x4 in., set 2 ft., on centers, plumb and well spiked to sills and plates.

Plates 2x4 in., doubled and lapped at angles and ends and securely nailed.

Roof of 1x8 in. boards, covered with any good 3-ply roofing paper, corrugated iron or shingles—whichever builder likes.

Chimney of hard burned brick, 8 in. walls, 4x12 in. smoke flue, and form opening with flanged cover at base of flue for removal of soot. Form stovepipe opening 18 in. below ceiling. Place 2-inch flagstone cap on top. Build in lead in exterior walls of chimney above roof 1½ in., in joints, and to turn down 4 in. or more, as necessary. Base of large stones about 8 in. thick.

The double windows in front of pens should be made, one to swing in and back to wall out of way (the one farthest from water fount), the other to slide up and down. The swing window to be provided with a frame covered with oiled muslin to be put in when window is open for ventilation during winter or stormy



Floor timbers over cellar 3x8 in., 2 ft. centers. Over office and cook room 3x6 in., 2 ft. centers. Framed about chimney and wall holes and notched at ends for 1x6 in. ribbon boards, which are spiked to studding.

Rafters 2x6 in., 2 ft. centers, placed to pitch shown in drawings, notched for plates and bearing beams, and well spiked. Stiffen in main part with 1x6 in. anchor boards.

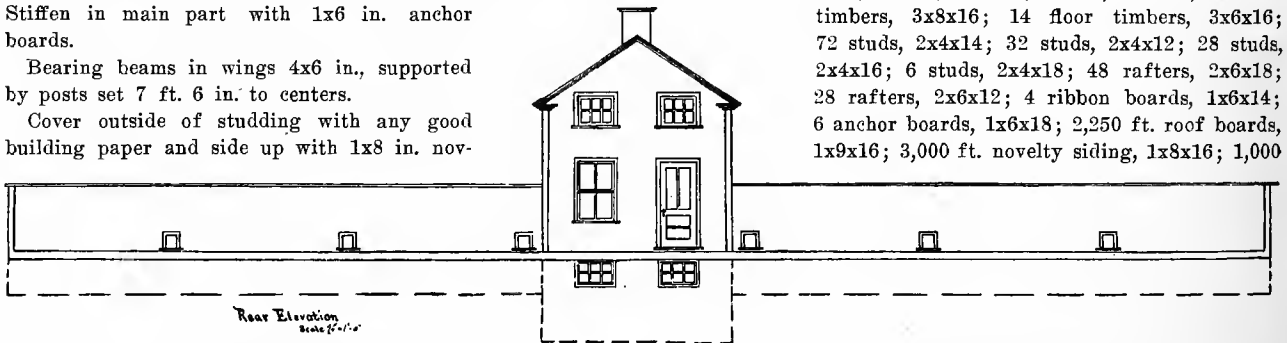
Bearing beams in wings 4x6 in., supported by posts set 7 ft. 6 in. to centers.

Cover outside of studding with any good building paper and side up with 1x8 in. nov-

days. This virtually makes an open scratching shed and roosting pen combined. Windows in incubator cellar to be hinged at bottom and swing in, so as to be opened to any distance desired. All others to be hung to suit the owner.

LUMBER LIST.

Two sills, 6x8x26; 4 sills, 6x8x16; 8 sills, 6x8x24; 12 floor timbers, 3x8x16; 14 floor timbers, 3x6x16; 72 studs, 2x4x14; 32 studs, 2x4x12; 28 studs, 2x4x16; 6 studs, 2x4x18; 48 rafters, 2x6x18; 28 rafters, 2x6x12; 4 ribbon boards, 1x6x14; 6 anchor boards, 1x6x18; 2,250 ft. roof boards, 1x9x16; 3,000 ft. novelty siding, 1x8x16; 1,000



elty siding or any other desired. Cover inside of studding the same way and ceil sidewalls, ends and roof with 1x8 in. shiplap. If located in a very cold place, the space between walls may be stuffed with swale hay.

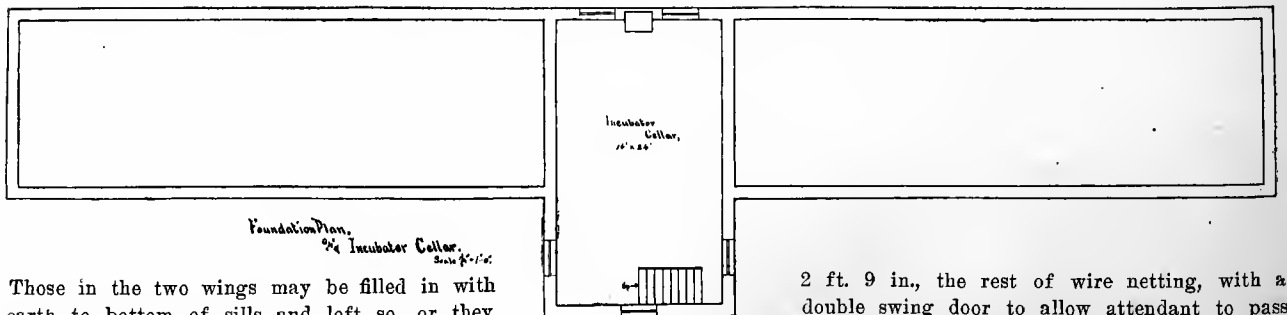
ft. flooring, 1x6x16; 4,500 ft. shiplap, 1x8x16.

The shiplap is for ceiling up inside of house, dropping boards and partitions between pens.

INTERIOR ARRANGEMENTS.

Partitions between pens are of solid boards to a height of

Floors in main building of any matched flooring desired.



Those in the two wings may be filled in with earth to bottom of sills and left so, or they may be cemented the same as the cellar. Some may prefer a board floor; in that case put in the necessary floor timbers and lay floor as in main building.

2 ft. 9 in., the rest of wire netting, with a double swing door to allow attendant to pass through from either way. Place partitions so as to make each pen 15 ft. square.

Droppings tables are 3 ft. wide, 12 ft. long and 2 ft. 6

in. above the floor, starting from the extreme ends of pens and running along back wall to within 3 ft. of next partition, thus leaving a space to get at the slide doors used as exits for the fowls.

For the large combed varieties it would be well to board up from ends of dropping boards to roof and have hinged frame covered with muslin to let down in front on extremely cold nights.

Two perches 11 ft. long and 1 ft. apart, hinged to wall 10 in. above tables.

Nests, a single row of box nests of a size and depth suitable to variety of fowls kept. These are placed under tables flush with the front, a board hinged to table and wide enough to reach down to top of nests hides birds from view while laying and keeps it dark enough to prevent egg eating.

Dust box is placed in the front right hand corner of the pen and is 2x4 ft. in size.

Grit, shell and charcoal box is placed under the windows between dust box and water shelf.

Water fountain is placed on a skeleton shelf in front left hand corner of pen and raised at a distance from floor to suit variety kept. This style of shelf is better than an ordinary board, as the fowls when drinking stand on perches each side of fountain and do not contaminate the water with their droppings.

The last three furnishings described are placed in the front of the pens, as fowls as a rule when working in the litter generally work away from the light, so do not throw so much dirt in boxes or water.

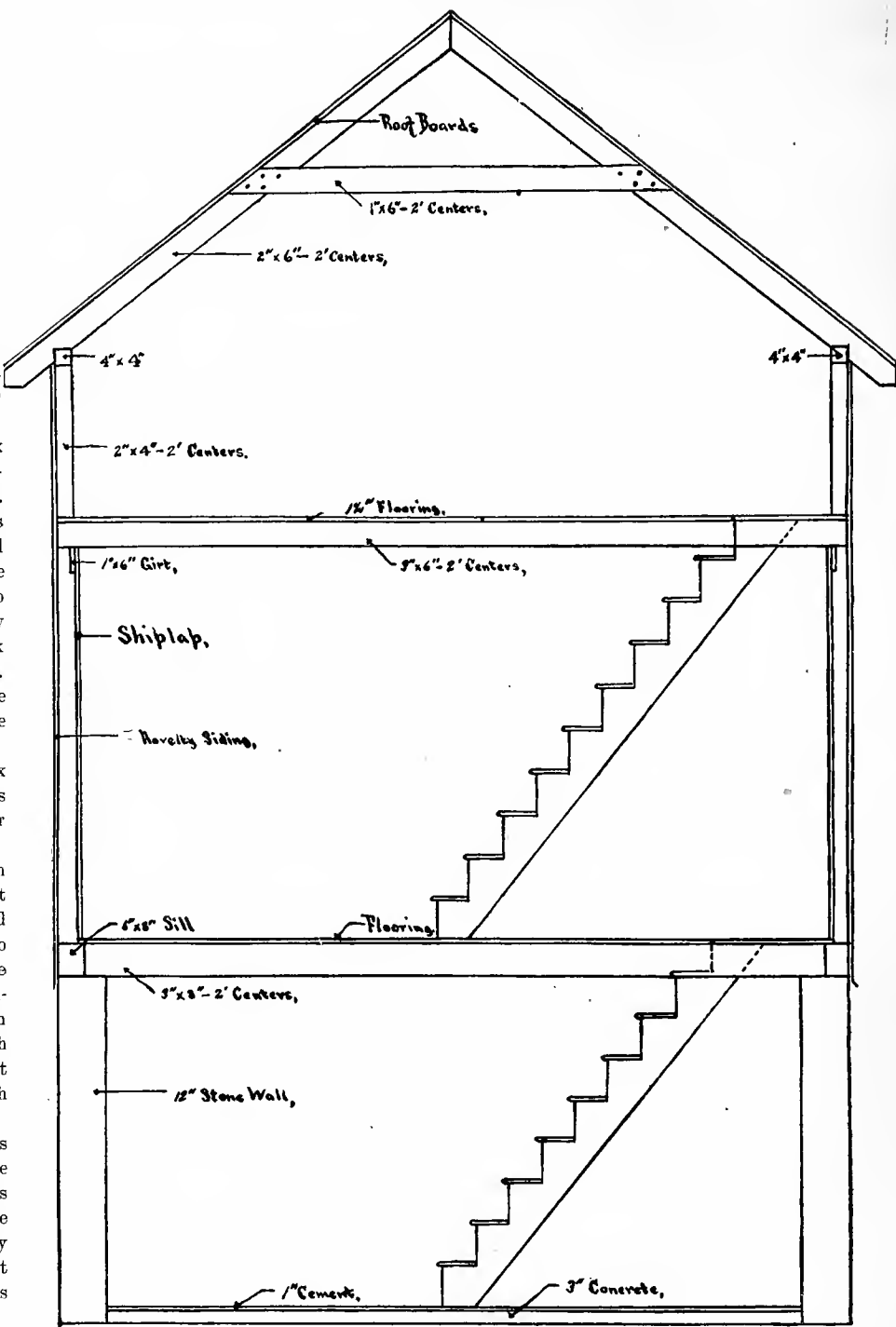
Runs with portable ends may be built from each pen to confine the birds during the breeding season if so desired.

The house may also be extended to any size by adding the required number of pens to either or both ends of those already built, remembering to have a solid board partition between every set of three pens to avoid draughts.

The foregoing I think to be a thoroughly practical and up-to-date poultry house, where unlimited range may be given the fowls on five acres or more of ground.

Some may object to this house on account of its not having an alleyway along the front or rear, but I have reached this conclusion by actual experience in experimenting with houses of different designs, both with and without alleys. For my part, I prefer giving the extra room to the fowls.

The sills, floor timbers, bearing beams and rafters are



Cross Section, Main part

← Scale

heavier than is necessary, but as I designed and intended building this house for my own use the coming spring I prefer to use the heavier lumber, as the location where I intend building is greatly exposed to winter winds.



PLANS FOR HOUSE ON A CITY LOT.

The Plans and Description given herewith were entered by Mr. Jas. Shackleton in American Poultry Journal's \$50 Contest and were awarded Second Prize



HEREIN it is assumed that any fancier, whether keeping one or more breeds, will need several pens.

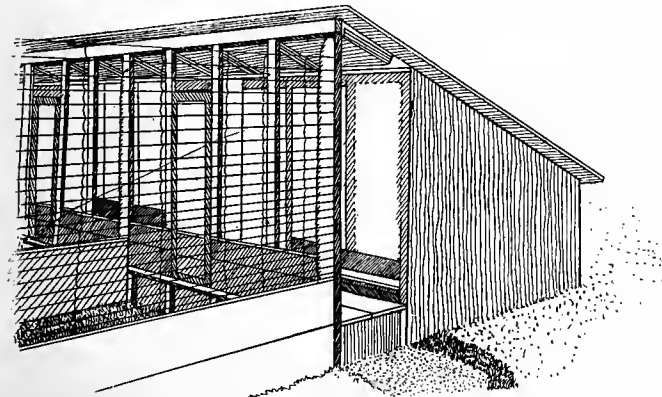
Space assumed available is 50x100 feet. The scheme is readily adaptable to smaller or larger spaces, or to different proportions. On space stated, designs provide for four houses, each for 15 fowls, or 60 fowls in all. Each house has a yard 12½x76½ feet, a hospital, and a shed.

The houses designed embody all modern ideas that seem to me advantageous, as well as seem possible on such limited space. The whole scheme is aimed to avoid as nearly as possible the bad effects usually present when fowls are maintained year after year on the same piece of ground.

Each house has a frontage or length of 12½ feet, and a depth of 12 feet, or with front corridor—which is 3½ feet in width—a depth of 15½ feet. All the floor space is available for scratching, except where the legs of the dust box are. The droppings board, nests and water vessel are carried on brackets so as not to diminish scratching space. Each water vessel serves two houses by being placed half way through a hole cut in partition between two houses.

Each house is 3½ feet high at back, 8 feet high outside front corridor, roof on a single slope downward from front to rear overhanging six inches or more both front and rear and at end of range.

The foundations, as drawn, are to be chestnut posts, 6 or 8



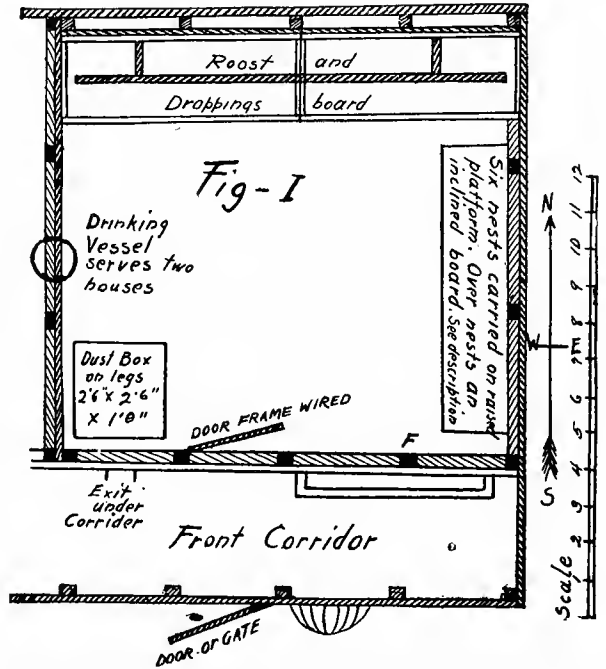
Perspective sketch showing parts of a range of four poultry houses and yards for a city lot.

inches diameter, sunk not less than 3 feet into ground. Before planting they are to be soaked in crude petroleum, which will give the posts much longer life than if this is not done. The posts are to be sawed off level at the ground surface, except the posts outside front corridor, which are to be sawed off level 11 inches above ground surface. There must not be fewer posts than are shown in drawings—a set of three every 12½ feet in row of houses—15 posts in all, and it will be better to place additional posts midway between where houses are, but not under front corridor, which will be 13 more posts, or 28 posts in all. If the ground is not higher at the houses, both front and back, than the surface thereabouts, it will be well, before sawing the posts, to raise a slight bank or elevation where houses are, which ought to be gently graded down into general surface when houses are finished. This will tend to keep houses dry in wet weather. When the bank is well tramped down, foundation posts may be sawed level.

The sills, 4x6 or 4x4 inches, of good rough hemlock, soaked

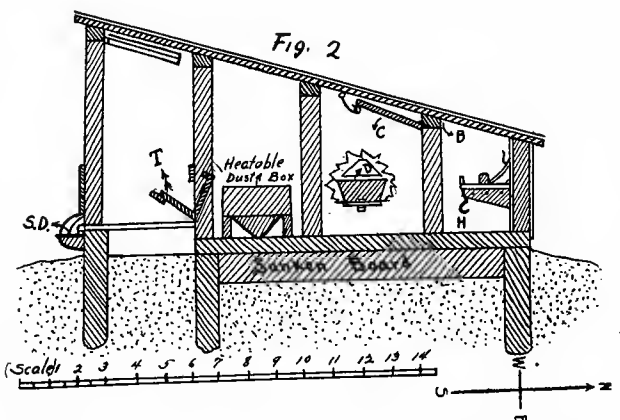
in crude petroleum, halved and spiked at intersections, are to be laid on ground over posts, supported by ground throughout length, and spiked to foundation posts. The sills must first enclose the whole range, then sills are to be placed crosswise at limits of each house.

Then 12 or 14-inch good rough hemlock boards, 1 or 2 inches thick, previously soaked in crude petroleum, are to be sunk edgewise, so that upper edge is half way up side of



Floor plan of poultry house for city lot. The arrangement in front corridor at right of exit is a tilting feed trough.

sills, as Fig. 3, and spiked to sills. These sunken boards are to enclose the range of houses, but not the corridor, nor are they needed between each house. Their purpose is to prevent entrance of rats, and hemlock is far more effective for that than any other cheap lumber. Before filling the holes about



Side elevation of house. B, position of roost curtain, if unframed. C, roost curtain framed and hung up during the day. D, drinking vessel in opening in partition between two pens. T, tilting feed trough in front corridor of house tilted as it would be when in use.

the boards it will be well to throw in as many well broken glass bottles as are attainable, usually plenty.

Then corner posts and studding are erected vertically on sills, spaced as in drawings. Corner posts 4x4 rough hemlock, studding 2x4 or 4x4 rough hemlock. Doubling corner posts where house joins house is advisable but not necessary. If corner posts are double a house may be removed without impairing the structure.

The back wall (north) is double. Shiplap 1-inch rough hemlock boards horizontally outside, then the studs three feet between centers, then 2-ply tarred roofing felt with overlap, then 1-inch rough hemlock boards, plain or shiplap. Studs here ought to be 2x4, with 4-inch sides to boards so as to leave only two inches air space. Space may be stuffed, but that is not necessary, and I don't like it, because most

folding back on Section A when open, and hinged to outside of post. Section D is to be covered from top down to board over trough opening, double sheeting, tacked to posts and lathed over edges. Section C has a door frame covered with double sheeting, swinging outward, folding back on Section D when open, and hinged to outside of post.

The corridor front is to be boarded up 18 inches from the bottom, except that one inch space is left at floor for escape of any water that may reach the corridor floor. The boarding may be omitted in that section where gate is shown on Fig. 1, but if so the wired door frame must reach to floor, and be boarded up for 18 inches from the base. This wired door frame should have single thickness of sheeting stretched over where wire is.

The front of corridor is to have single thickness heavy, unbleached cotton sheeting in frames, two sections hinged together, bottom section folding behind top section, top section hinged to cross rafter in front of corridor, as shown in Fig. 2.

The posts in corridor front that do not rest on foundation

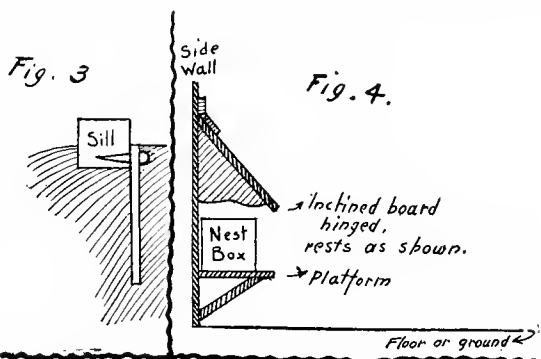


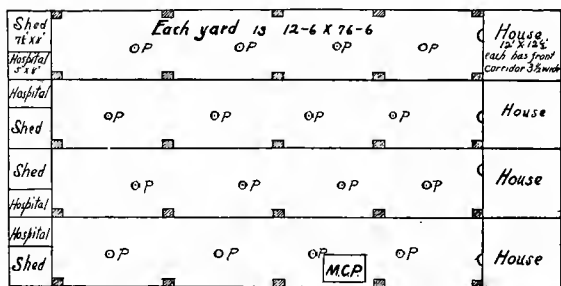
Fig. 3. Details of sill with sunken board spiked thereto. Fig. 4. Details of nests as arranged on bracketed platform under an inclined board to prevent fowls from roosting on top of nest boxes.

stuffings eventually decompose and such as will not decompose are dear. If roofing felt is put on outside, the outside may be plain and laid vertical.

The boarding on ends of range, and for partitions between houses is to be 1-inch rough hemlock boards vertically close together with common plasterer's laths of good quality securely nailed over intersections inside.

The studding must be of such lengths that when 2x4 or 4x4 rough hemlock rafters are spiked over them, heights will be as shown in Fig. 2. The top of each stud must be sawed to proper angle before placing. The stud or post marked F (in Fig. 1) in front of house is a sort of false one, as it does not reach the sill, but is carried on a bridge between the two posts nearest it just above the tilting trough opening.

The posts in front of house make Sections A, B, C, D (see Fig. 5). Sections C and D are to be wired over with 2-inch



Scale of feet
2 4 6 8 10 20 30 40 50 60 70 80 90 100 ft.

Yard plan of city lot poultry plant. P, plum trees in each yard.

posts must rest on large, flat stones at or below surface. The bottom ends of the posts ought to be well soaked in crude petroleum.

To make a tight closure when corridor curtains are down, bridges of 2x4-inch hemlock should be nailed between corridor posts at height of top of baseboarding. Before placing, the top surface of these bridges should be planed to an outward fall, so rain will run off outward.

The corridor floor should be 1 1/2-inch planed yellow pine, tongued and grooved. It is one foot above house floor at house front, one inch lower at corridor front, so as to shed rain outward if any reaches corridor.

The corridor floor should be supported at every corridor post by a 2-inch rough hemlock board on edge—previously soaked in crude petroleum—as well as rest on foundation posts.

The back wall, end walls of the range and roof are to be covered with 2-ply tarred roofing felt given two coats of roofing compound, or coal tar or gas tar.

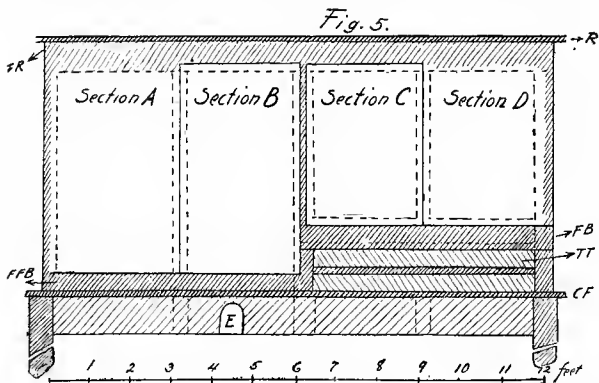
The house is not floored. I consider flooring is neither necessary nor desirable unless location is on low ground, or soil is inclined to remain damp long. Both such situations should be avoided if possible for poultry keeping.

All exposed lumber is to be painted with two coats of honest lead and oil paint. All interior lumber whitewashed with lime at least twice per year.

I think this description is ample of the house itself if drawings can be well studied.

HOSPITAL AND SHED.

The hospital and shed at far end of each yard do not need elevation drawings, nor much description. They are to be very simple structures. The whole length may first be built



Details of house front, with corridor off. E, fowl exit. Front of house up to corridor floor is boarded. CF, corridor floor. TT, tilting trough. FB, front base board of sections A and B. R, roof. FR, front rafter serving as plate. Section A, double sheeting tacked to posts. Section B, double sheeting on door frame down to bottom board. Section C, double sheeting on door frame down to above trough. Section D, double sheeting to posts down to board above trough.

mesh galvanized webbing from the top down to just above the trough opening, attached to inside of posts. Section B has a wired door frame, swinging inward, hinged to inside of posts. Section A is wired all over inside of posts.

Then outside. Section A is to be covered with two thicknesses of heavy, unbleached white cotton sheeting, stretched tight and tacked on outside of posts, and further secured by nailing plasterer's laths over edges. Section B has a door frame, covered with double sheeting, swinging outward,

as a shed, 7 feet height in front (facing yard), 4½ feet height at back, 8 feet width, roof overhanging about 6 inches at front and back, single slope downwards from front to rear. Place studs and posts to suit necessary partitioning. Then partition to separate different yards. Then partition to enclose hospitals each 5x8 feet on floor. Wire entire front, having wired doors to each hospital and shed opening inward, wiring inside of front posts. Put a 12-inch baseboard along entire front. Close up hospitals with door frames covered with two thicknesses of heavy, unbleached white cloth, keeping doors opening outward.

Back, ends and roof are to be covered with 2-ply tarred roofing felt, coated with two coats of roofing compound or coal or gas tar.

The hospitals and sheds should have several coops in each. Slatted coops with slatted bottoms, borne on legs. The hospitals are, of course, primarily intended for sick fowls. If fowls are healthy at start, maintained so as to promote health, ground kept sweet and wholesome, they will rarely be needed for use as hospitals. Then they may be used for breaking up broody females, hens with chicks, surplus males, sifers, fowls for fattening and many other uses.

TREES IN YARDS.

I suggest plum trees in poultry yards. They need little attention—the fowls will do that. Without other than fowls' attention plum trees will mature sound fruit in poultry yards when impossible elsewhere. Plum trees improve appearance and provide hot weather shade. Fowls' excrement fertilizes them. If grain be buried about the roots occasionally fowls will keep soil at foot of trees in fine state of tilth during growing season. If all plums are too many, dwarf apples or dwarf pears may be used. If you don't like the fruit you can sell it easily. Sixteen feet apart for plums, twenty feet apart for dwarf apples or dwarf pears.

For yard fences, Page No. 23 wire, 58-inch poultry fence is suggested. If properly erected it always remains tight. It needs few posts. Though I show five posts in drawing, three are ample for the Page fence if the ground is level or on one even slope. It does not need a bottom board, but for all town lots or wherever several small yards adjoin each other I prefer two 12-inch boards edgewise, one on top of the other, and fence erected over that. Then you have a fence 6 feet 10 inches in height. This is ample to hold almost any breed. Extra wires may surmount it if it is not high enough. Fowls rarely jump if there is not something very plainly in sight at top to light on. Fowls cannot fight with two feet of boards between them. They will rarely see other fowls in adjacent yards. Only one gate is necessary, not even that if the rear end of front corridor has a door. If gate is needed it may be put wherever most handy. I have not thought it well to place one in drawing. If fences are ordinary galvanized poultry netting many more than five posts will be necessary in 76½ feet.

SUMMER WATERING.

At all times, except freezing weather, fowls may be watered in yards. I suggest water vessels at front of corridor outside, fed by a pipe connected with residence, the pipe to have a regular continuous fall from one end to the other, so as to be certainly clearable of water when frost is imminent. If the vessels are wired over with bent wire frames, curved as drawn in Fig. 2, and the vessels are galvanized iron, with overflow waste pipe leading deep into ground, little attention will be necessary if water just drops continuously into them, scarcely any flow at all. An occasional strong flushing will wash down the waste pipe all sediment. The pipe arrangement will have to suit conditions of each place. No suggestions are necessary except that all depressions in pipe must be provided with a faucet for clearing.

ROOSTS AND DROPPINGS BOARD.

The roost is simply a 2x4 rough hemlock resting on one

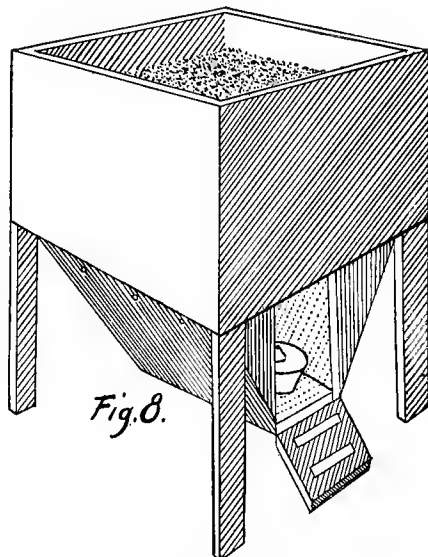
2-inch side on droppings board—top edges rounded—and attached to two iron arms which have a hole on free end that engages with a deep hook, as shown in Fig. 2. By this arrangement the roost can be lifted while cleansing droppings board and hooked up to ceiling, or it may be removed altogether for special cleansing outdoors.

The droppings board is in two sections of equal length, about 6 feet, each having raised edges like a tray. The front edge should be about 2 inches above surface, end and back edges 4 inches above surface of board. It is made in two sections only for convenience in handling and removal. The outer ends of each section are carried on cleats screwed to side walls, as shown in Fig. 2. The inner ends are carried by a bracket, of which one end is secured to a lug screwed to back wall boards, the other end supported by an angular strip, such as supports nestbox platform in Fig. 4.

Because roost rests on droppings board most effective use of lice paints is possible.

THE NESTS.

Nests are carried on a bracketed platform, as shown in Fig. 4. Six are shown in Fig. 1, but the space available for them depends on arrangement of roost curtain. If roost curtain is in a frame, hinged as shown in Fig. 2, only five nests of size proposed can be put in. That is enough for 15



Improved dust-box for poultry house in winter. Height over all is two feet. Leg one foot in length. Box is two feet six inches square. Bottom is dished and eight inches deep.

fowls. For nests we use Pillsbury's Vitos or H. O. oat boxes, which are, with great ease, made into "Ideal" trap nests. Over nest boxes an inclined board is hinged to wall, as in Fig. 4, so fowls cannot roost on top of nests.

THE ROOST CURTAIN.

This is a splendid thing for winter use. It may be of single, heavy, unbleached, white cotton sheeting or two thicknesses of burlap. It may be a simple falling sheet attached at B (Fig. 2), or it may be a frame (as in Fig. 2) hinged as in drawing. The frame, when down at night, may be hooked to hook shown depending from cleat at H (Fig. 2). Hinged as in Fig. 2, it may be hooked up close to ceiling all of every day, so as not to impede entrance of sunlight appreciably.

DRINKING VESSEL

is carried on platform in a hole cut in partition between two houses. It ought to be a circular vessel, 10 or 12-inch galvanized dish pan is good. Over it a metal cone, with bottom wide, end same size as top of vessel; should be fixed two inches from top to prevent fowls from jumping on vessel's edge and thus fouling the water. Vessel should be equal in each house. Platforms should be but slightly larger than such part of drinking vessel's bottom as hangs outside par-

tion. Then fowls cannot perch on platforms. Wooden lugs, $1\frac{1}{2}$ inches in height, should be nailed on platforms to hold vessel in place; no higher, so vessel can be lifted out. The hole in partition should be located so water vessel will not impede movement of roost curtain.

DUST BOX.

The dust box, shown in Fig. 8, is designed to obviate difficulties which every poultry keeper finds in keeping dust

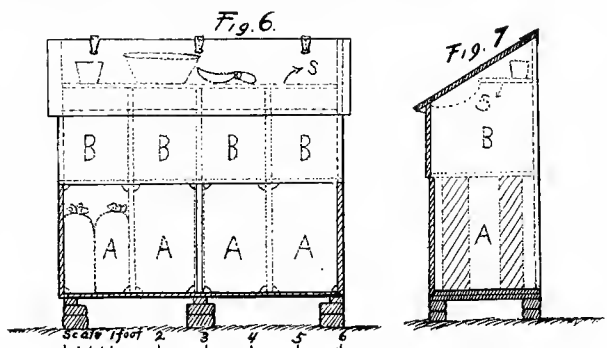


Fig. 6. Front elevation of outdoor feed-box designed for poultry-keepers with limited space. Interior arrangement shown by dotted lines. Fig. 7. End elevation same. boxes effective throughout winter. The dust box proper is one foot in depth, just four pieces of 1-inch, thick, rough hemlock, 12 inches wide, $2\frac{1}{2}$ feet long, securely nailed together. The bottom is simply a sheet of galvanized iron, which ought to be larger than the bottom, so it can be turned up $1\frac{1}{2}$ inches on each side outside and securely nailed by many nails to sides of box, as well as bottom edges. The box stands on four legs, one foot in length. The bottom section is dished and does not reach the floor. A brooder stove is to be placed in a bottom section. About 8 inches depth will be enough for most brooder stoves. An ordinary oil lamp, with glass chimney, should never be used for such a purpose. The door in bottom section is ventilated, and so are two sides of dished part, with blinds over ventilating holes to prevent direct draughts. A very small flame for half an hour every two or three days will keep dust dry in most places throughout winter if dust is not too absorbent of moisture. Cost of heating is slight, less than nothing when increased egg yield is considered. Best dusts are road dust from macadamized roads, gravelly dust from dirt roads, sifted dust of coal ashes and wood ashes. Any one or a mixture of these, with frequent small sprinklings of tobacco dust (not tobacco ashes). This last is a wonderfully good addition to dust boxes. Fowls will soon find out that dust is warm and dry and loose—just what they like. With only fifteen fowls the dust box may be smaller. Size stated is enough for twenty-five fowls. Where such a box is used in a roosting room not intended for scratching, or in a large scratching shed, construction may be simple. No legs, just a box-like upper box for lower section, with a door for entrance of stove and ventilation.

THE TILTING TROUGH

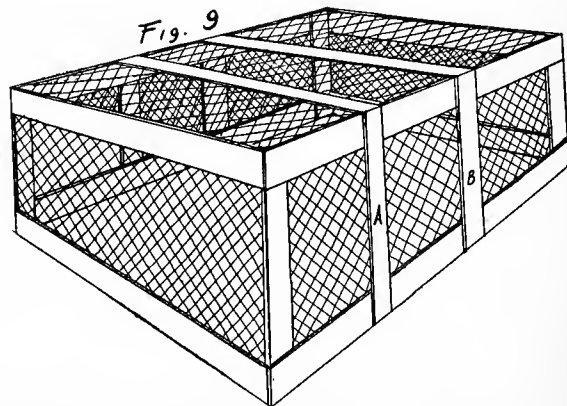
is a fine innovation. Simple construction, very cheap, easily made and placed. By its use feeding of mash foods is greatly expedited. Trough is pivoted at its angle close to floor of corridor. It is heavier on the inside than on the outside, or has a sheet of lead tacked to underside inside to weight it. In Fig. 2 it is not fully tilted outward, so as to make drawing plainer. The outside piece, when tilted inward, ought to fully fill the opening made for it. The strip tacked on outer side of back is to prevent draughts through any space left. The inner side should be wider than the outer side, so trough cannot tilt too far outward. The angle between the two sides should not exceed 70 degrees, so that when tilted inward it is not level inside, but a wide V-shape. The outer edge of inner side should be slightly raised, say one inch.

MOVABLE CROP PROTECTOR.

This is very handy. One or more of these should be in every poultry yard. Exclusive of labor, each costs less than \$1 anywhere in the United States. The whole thing needs only spruce or firring strips, wire netting and nails. Fig. 9 is nearly self-explanatory. By accommodating space between A and B (Fig. 9) to hen coop with chicks, and having removable wired frame over that section, the crop protectors make fine chick runs. If not to be used for chick runs, 14 inches high is enough. Size on ground may be much larger if desired, as they are very light in weight. Size stated can be used in almost any yard. We use protectors like this to grow radishes, lettuce and other vegetables for family use in fowls' yard. The main use for the crop protector is for protecting early growth of crops for fowls' feeding. By having three of these protectors, starting at end of yard and going gradually all over, something may be grown on every inch of yard surface during a season, which will keep the ground sweet and wholesome beyond question. This is the paramount defect of town yards or any other small yards. Fowls cannot be maintained year after year on same piece of land without trouble unless crops are raised on it regularly. In some yards none is ever raised. They have been absolutely bare for years, are sour and disease breeding. The procedure to be suggested with three protectors is to dig as much soil as the protectors will cover. Leave it one day for fowls to scratch in and get all the worms they can find. Then level, seed and put protector over one-third. Dig enough for one protector close by. Next day level and seed another third of original digging, and so on. Uncover a section and proceed as soon as any crop is high enough to be good for fowls' forage. Such action will greatly reduce amount of food served in summer. Fowls will lay well and remain in good health. Soil will be sweet, wholesome, cause no disease among fowls. The labor involved is less than most city people need of exercise they don't often get. They will be healthy, too. This is no "pipe" dream. These protectors should be in every poultry yard everywhere, city or rural, and used, used, used.

OUTDOOR FEED BOX.

City fanciers have rarely space for a feed room. Many other people have feed rooms that do not protect feed from vermin. The feed box shown in Figs. 6 and 7 is intended



Movable crop protector and chick run for use where fowls are closely yarded. The entire frame, top, sides and ends to be covered with one-inch wire netting. Estimated cost, exclusive of labor, \$1 for frame 5x7 feet 18 inches high.

to stand outdoors in all weathers and seasons, to keep feed free from depredations of rats and mice, and from rain and snow. It will hold at least eight bags of feed in bottom section. To have four bins, each holding about 100 pounds of mash mixture. Upper and lower sections can be built apart, if desired, just as beehive sections now are. Drawings are nearly self-explanatory. Shelf above bins is for

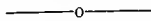
utensils, height to suit utensils used. Bottom section has doors hung vertically, from sides, opening at middle, locked or buttoned shut. All lumber used is 1-inch pine, preferably planed. Under side of bottom and one foot up outside on sides and back are to be covered with galvanized iron. In front the galvanized iron is lapped over on inside below doors. Bottom of doors wrapped in galvanized iron. Lid of upper section, all front side and back are to be covered with 2-ply tarred roofing felt. The lid should have a piece of pliable waterproof cloth tacked over hinged side so as to make a water tight closure. Lid to be hooked shut or locked.

ADVANTAGES OF THE HOUSE.

It is cheap. When built as directed will last without much repair for fifteen years in most sections. More sunlight and fresh air are admitted than in any other house known to me. The sunlight reaches fully to roof, fully to floor. All house contents are removable. House is quickly cleansed. Spraying with limewash twice a year, changing of scratching material twice a year will be all that is commonly necessary besides daily removal of droppings and occasional paintings of drop beard with lice paint.

The front corridor, with curtains well attended to, will keep house free from driven rain or snow. In winter, if a path be dug just to entrance of corridor end, fowls can be quite comfortable, healthy, productive, easily fed, have plenty of exercise through any spell of bad weather. How different from the usual state of things!

In my opinion, the maintenance of fowls in houses with muslin fronts is desirable in almost every section of this country, except at high altitudes in northern latitudes. They are better, cleaner, sweeter, healthier than houses with glass windows. They can be warmer in winter and cooler in summer than houses with glass windows. The only real use of glass windows in any building is to see through or light rooms. Fowls don't need sights, their houses ought to be wide open in daytime. There is a terrible lot of mush written about differences in houses, caused by differences in location.



A Neat, Warm and Convenient Poultry House for Winter.



THE following description is that of a thoroughly practical, neat and convenient poultry house, now in use by me and is designed for use of the small breeder who wishes to erect a neat, warm house for winter, and which combines all of the conveniences of a large and expensive poultry house, such a thing being practically beyond the reach financially of the small breeder.

The principal feature of this house is its warmth, it being so constructed that water will only freeze inside in the bitterest of cold weather, thus making it of inestimable value to the keeper of poultry, who is always concerned in so housing his fowls that they will net good returns in the season of the year when the egg market is highest.

This practical poultry house is 12x24 feet, and is placed upon a brick foundation two feet beneath the surface and one foot above. The house is equally divided into two pens with a three foot alley way running from front to rear through the center, partitions each side of alley way being of wire netting and lath. The sills are of 2x6 hemlock, and are laid in mortar flush with outside of wall. Studding are 2x4 yellow pine placed 3 feet apart, rafters are 2x4 piece notched and projecting so as to afford of a neat cornice being put on, and are placed two feet apart. Reef boards are of yellow pine, matched flooring, and roof is of two-ply "rubberoid" roofing. The house is first sheeted with cheap lumber and sided with German siding with building paper between, and on the in-

side is ceiled with yellow pine matched flooring, which makes about as warm a building as it is possible for one to build, the hollow space between walls throughout the building being a great protector from frost.

The building is eight feet high from top to wall in front, and six feet from top of wall in rear, and has a six-inch projecting cornice giving the house a finished and very neat appearance.

Each pen is provided with a large window, the openings for same being five feet wide by six feet high, and placed in the center of each pen, the opening is one foot from roof and one foot from the sill, the house is calculated to be built facing the south so as to afford plenty of sunlight and warmth. Each window is divided into four sash, being provided with a six-inch parting strip giving it a double window effect. The size of glass used is 12x16 inches. The house has a six-inch ventilator in the center extending above the roof two feet, the main outside door of house is 2½x6½ feet, and is constructed of two thicknesses of matched white pine, and has a lining of building paper between.

The interior arrangement of this house is a model of perfection, every convenience both for the care of birds in cold winter weather, as well as the fitting of show birds being carefully looked after, it being so planned that the entire floor space of each pen is utilized for scratching, thus doing away with the necessity of a separate addition as a scratching shed which has come to be considered a necessity.

The nests are built two feet above floor, running parallel with the alley way, and form a part of the partition each side of alley way, the space below nests being of lath placed two inches apart, the space above nests and extending to the ceiling being of wire netting, the size of nests being 14x14 inches, the tops sloping to prevent fowls from roosting upon them, the backs of nests are composed of two boards of 12 and six inches width respectively, the six-inch board being hinged to the 12-inch board, thus affording access to nests from alley way and doing away with the necessity of entering pens for the purpose of gathering eggs, etc.

Dropping boards are provided running full width of house in each end, being four feet wide, and built of 2x4, and 12-inch shiplap, placed two feet from the floor in front and 28 inches from floor behind, three perches are provided being placed one foot apart, and on a level about 8 inches above dropping board, perches being of 1x3 pine with the edges beveled off.

Twelve neat exhibition coops are built 3½ feet from top of wall, and 4½ feet from ground for cooping exhibition birds in the process of fitting for show room and for cooping extra birds, etc., they being 2½ feet high, by two feet deep, running full length of house and across both ends, the bottoms being of matched flooring, the frame for same being of 1x1 pine, with ¾ wood spindles placed 3 inches apart forming the fronts, the partitions between each coop being frames built of 1x2 pine covered with canvas, and hinged so that one or more or all may be opened into each other, a ¾ anger hole is bored through frame into the partitions and a 4-inch ¾ pin answers as a secure fastening to swinging partitions, the top is covered with unbleached cotton.

The doors leading into each pen of the house open to the right and left as one enters the alley way of the house, are 2½x6 feet, being constructed of 1x2 pine frames covered with wire netting, and form a part of the alley way partition.

The floor of this house is composed of a mixture of yellow sand and fine gravel, filled to the depth of one foot, making an ideal place for fowls to dust at any time.

The house is provided with one gallon crock drinking fountains placed upon low shelves, making access to them easy for the fowls confined.

This written description, together with the drawing illustrating the general plant of this practical house, conveys to the reader a plan for a modern poultry house, which can be erected at a very nominal cost.

S. D. Lapham.

SECOND PRIZE HOUSE PLANS.

Awarded Second Prize in American Poultry Journal's \$50 Prize Contest for best plans and Description of House for a Plant of Five Acres or More.



THE plans here shown and described were designed for a breeder with several acres of land to devote to poultry.

The building is 18 feet deep, front to rear, and each complete pen is 22 feet long. Any desired number of pens can be connected in one building.

A three-foot hallway in rear runs full length of building. Each complete compartment, besides the hallway, contains a roosting and laying room 14x5 feet 6 inches, a scratching room 14x8 feet, and an open shed 14x9 feet; the open shed is

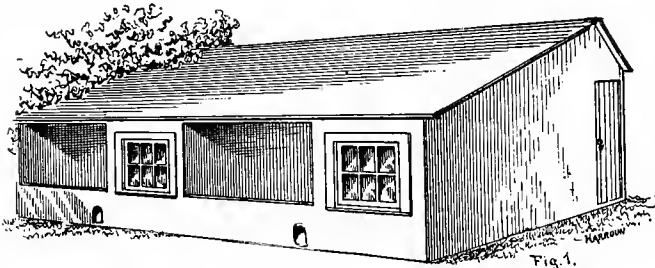


Fig. 1. Elevation in perspective.

closed up to a height of 2 feet from the ground and balance of front filled in with wire netting, and should be provided with curtains to close up at least a part of this opening during drifting storms.

Four-inch sills under whole building; 2x4 for studs and short rafters, and 2x6 for long rafters where unsupported by partitions.

The north wall and both outside ends are built double, with four-inch air space, as are also the south wall and both ends of the roosting rooms. In a very cold climate all outside walls can be doubled.

A tight partition between roosting room and hallway is provided with a hinged flap, A, for convenience in cleaning dropping boards, and hand holes for gathering eggs, B B B.

Permanent small pens, C, are built over the roosts for extra

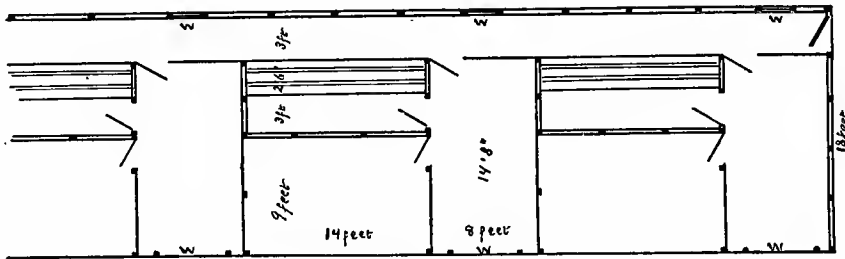


Fig. 2. Ground plan.

birds, fitting birds for show, etc., and over the top is a small loft for storing straw, feed, etc., D Fig. 3; this loft can be built only over roosting pens or may be carried over scratching pens also, D Fig. 4, as desired.

A roost platform, E, 2 feet 6 inches wide, is placed 28 inches from floor, while 14 inches from floor is the next platform.

Each roosting floor is provided with a tight fitting glazed door, for use in cold weather, while another door leads each scratching pen to open shed.

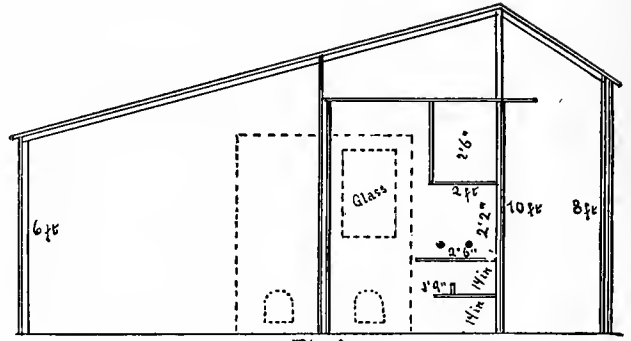


Fig. 3. Sectional view, dotted lines showing door to roost room and open shed.

Partitions between hallway and scratching pens are boarded up two feet from floor, balance finished with wire netting.

The hall partition between roost platform and small pens can be removed in summer and a light frame covered with wire netting substituted.

There is a large window in the front of each scratching pen, and a small window in the north wall opposite each scratching pen, as shown in plan. Fig. 1 is the elevation in perspective; Fig. 2, the ground plan; Fig. 3, a sectional view, dotted lines

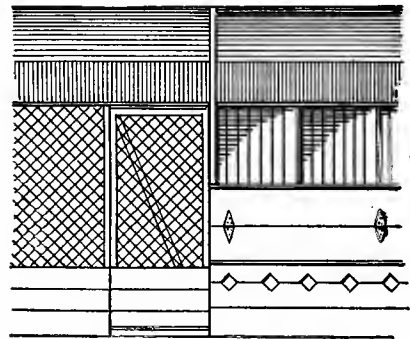


Fig. 4. Section of hall partition showing small pens, loft, etc.

showing doors to roost room and open shed. Fig. 4 is a section of hall partition showing small pens, loft, etc.

There should be a few small openings through floor between

roosting rooms and loft; then if loft is kept filled with straw in winter little trouble will be experienced from moisture.

Detroit, Mich.

Cull your flock and use the ax freely. Aim for quality rather than quantity. There are too many fairly good specimens. The money is made in raising winners. Better raise one bird worth \$10 than two worth \$5 each. The one sells for the same amount, requires less room, care and feed and will produce better specimens of his kind.

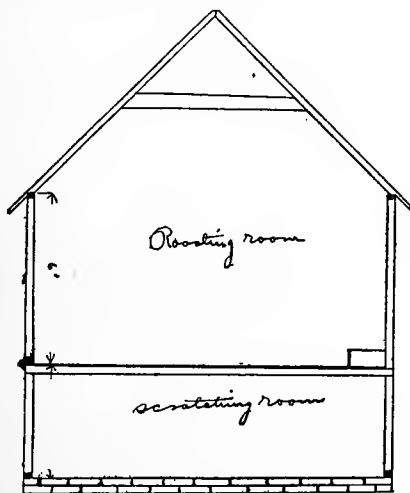
An Ideal Poultry House for a City Lot.



THE design of an up-to-date and cheap but comfortable poultry house presented herewith, will make an ideal poultry house for the city lot. This house can be built any size, large or small, to suit the builder and the number of chickens intended to be kept. If your lot is small and you should wish a house that would give you both roosting room and scratching room, you will have it in this house, and you do not decrease the size of your lot, but you



increase your floor space, and provide shelter for your chickens during the disagreeable and cold weather, and it pays well to have a place for the chickens to exercise in, instead of running outside when the weather is damp and disagreeable. If you want to make your poultry business pay, you must certainly provide comfortable quarters for your birds. Wild birds will thrive in the open air, but they generally know where to go when the cold weather sets in, and they know when there will be a change in the weather. There are



a great many people who think any old place is good enough and will do for their chickens to roost in, and expect good results from them, but, as a general thing, they get left. Chickens treated in this manner certainly will lay during the warm weather when eggs are plenty and cheap, but to get eggs the year round and especially during the season when the price of eggs is high and they are in great demand, you must provide good, comfortable quarters for your chickens. It will pay you well for your trouble.

If you do not own the property that you live on and you are compelled to rent, it will pay you to own a poultry house and one that you can take apart and move it wherever you desire.

The poultry house illustrated herewith can be built in sections, so that you can take it apart and move it just like so much lumber. By owning your own poultry house you can rent much cheaper, for you will not have to look for

a place with a barn or shed, for you have your poultry house ready to move, and another thing, you will not be compelled to live in some out-of-the-way place just to get a place with a barn or shed on it. The renter generally has got to rebuild or repair some old shed when he moves, and he pays out more money than would be required to build him a good, comfortable house that he could call a poultry house, and one that would be a pleasure to own and keep the fowls in. I beg to suggest a few important pointers in regard to keeping your poultry house, and how to keep your poultry healthy and make them lay.

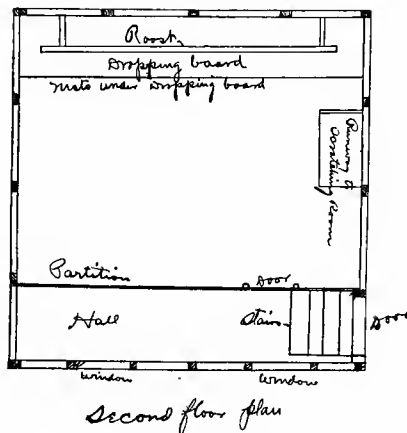
1st—Provide a well ventilated and comfortable poultry house.

2d—Do not crowd one hundred chickens in a house that will only comfortably hold twenty-five.

3d—Be sure there are no cracks, knots or holes or an opening to allow any cold or damp draught to blow on your birds while they are on the roost.

4th—Feed good, wholesome food—not slop or damaged grain.

5th—Be sure that your drinking pan or fountain is clean



and that it is emptied every night so that they will have fresh water early in the morning.

6th—Do not leave any old pans or cans laying around your yard for rain water to lodge in and get foul, for there is where so much sickness starts.

Keep your feed trough clean and sweet. When your chickens are through with their morning mash, clean it out and hang it up, instead of leaving it lay around for the chickens to roost on.

8th—Clean your dropping-board off every morning. It will only take a minute.

9th—Make it your business to keep your chicken house clean and neat. Whitewash it twice a year and keep the windows clean and you will feel proud of your house. The appearance of a neat and well-kept poultry house is very attractive. You will take considerable pleasure in having your neighbors and customers see your birds and house. No matter who calls to see you, it will be a great pleasure to you to show them your poultry house, for you will be sure that they will tell others how clean and neat Mr. So-and-So keeps his chicken house.

10th—Do not forget to look after the chicken lice, for lice and chickens do not pay, if kept in the same coop, because the lice will be sure to get the best of the chickens.

The young birds in any one coop or house should be as near the same age as possible. The advantages in having them so are many. They will all have an equal chance at the food and there will be no stunted specimens as the result of life being made miserable by older domineering birds. Many a promising chick has developed into a cull because it was forced to battle for life and food with older birds.

Combination Hen and Brooder House.



AT last decided to let old theories and practices go, after spending quite a lot of time and experiencing considerable trouble, and began to plan out some way to build or model a house to accommodate my little flock of fowls in a comfortable and pleasant manner. At the same time I was obliged to confine myself to limited expenditures. Following, I will give details of the house I finally decided on and built:

MATERIAL REQUIRED.

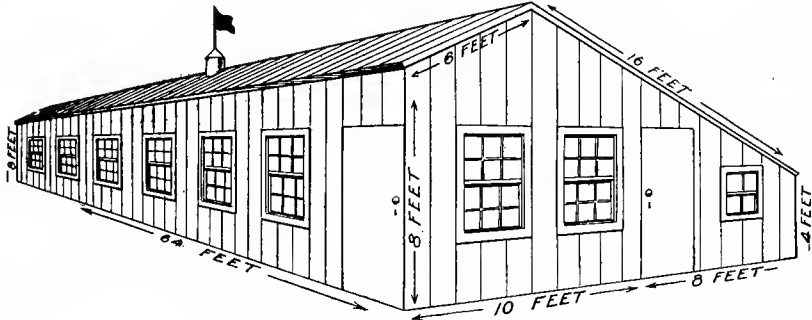
2700 feet rough boards, 1x10x16	
821 feet rough boards, 2x4x16.	
128 feet rough boards, 2x4x12	
168 feet rough batten, 1x2½x16	
3817 feet lumber at \$16.50 per M.	\$62.88
1560 square feet roof paper, 3 ply, at \$1.25.	19.50
34 second-hand, 4x4 sash, glazed.	17.00
100 No. 8 d nails.	2.65
25 No. 12 d nails.	.75
33 1-3 No. 20 d nails.	1.00
20 feet (lineal) 6-foot wire fencing.	1.50

Total\$105.28

With me this is entirely original, and if there are others

house I floored with common boards, smooth side up and tightly fitted. I then chinked up cracks and covered with a layer of coarse dry sand. The walls and partitions are papered well, then whitewashed. This room is roomy and cozy and impervious to vermin of any kind. It is divided into 6 runs of 55 square feet each, or 5½x10 (a part of the space is used for hovers). Each run is provided with a small opening to allow chicks the use of the divided outdoor runs in mild weather. The hover or brood apparatus is home-made and along lines of my own. I may, at an early date, give details of the working apparatus of this room. My idea just now is to submit the plans of my house as a probable covering for your winter flock of layers and chicks. The hen house is divided in center by wire netting to accommodate two breeds, but when only one is housed this is unnecessary. The floor is the plain, dry earth covered frequently with clean litter. I use a mixture of cut timothy hay, straw and pepper grass.

The nests, perches, etc., are all provided for and included in lumber item. By carefully observing illustration, any one can build this house. My 12-year-old son and myself built this house in five days, and it was the first one we ever built alone. I must say here that I have a good chicken house, warm and cozy in winter, extremely light and comfortable. In summer I open all the windows, adjust my screens and, in that way, make the entire house cool and airy. I do not try to save money buying cheap insect powder. I only use the



similar to, or exactly the same, I am ignorant of it.

At this time I am in the poultry business on a very moderate scale, having only one hundred White and Barred Rock hens and an incubator capacity of about 675 or 700. However, I am giving this business my entire attention and expect to grow. On the basis of my limited funds, size of my flock and capacity, I figured out the plans of this house and find that they suit admirably. The house is 64 feet long by 18 feet wide, divided by a board partition, running entire length of building from floor to floor, 10 feet from front wall. This gives me two compartments, one, the hen house, 10x64, and one, the brooder house, 8x64.

The front wall is 8 feet high. The extreme rear wall is 4 feet high and the partition is 8 feet high. The front section of the roof is 6 feet wide, including 6-inch eaves. The rear section is 16 feet and allows for 12-inch eaves. The front roof has two-foot pitch and rear section, six-foot pitch (see illustration). All uprights are eight feet apart, and rafters four feet apart. I mitred all rafters at top or gable end, and notched them at lower end to fit snug to top plates on uprights. In every way possible I braced and strengthened the frame work before nailing on a board.

In front and rear walls there are ten windows four feet square, and on each angle of the roof six of the same size, also one each in one end of both compartments. The brooder

best. Three or four times a year I whitewash inside and once a year outside. At all times I keep air-slacked lime in corners and around the walls, so am not bothered with lice.

I think I have knocked the old theory of \$1 per fowl for shelter in the head.

M. T. Brown, Jr.

IS FREE RANGE NECESSARY?



LIKE everything else in chickendom, continued writings on the necessity of free range for fowls has caused most people to believe that all the hard luck experienced with a flock of fowls arises from confinement. In this way people with small quarters handling mongrel stock continue to handle any old thing in the chicken line, for, as they believe, their quarters are insufficiently large to give pure bred fowls ample room. And getting the idea that they do from reading the many articles on free range, they figure that high-bred fowls must necessarily have plenty of free range, so that it is not in their power to handle that kind of stock except at a loss. Another idea continually harped upon, mostly by the manufacturers and dealers in all kinds of mixtures of poultry foods that they claim are absolutely necessary to have on hand for fowls in confinement, makes the keeping of fancy chicks to their mind too expensive

for consideration. This erroneous idea, as I previously said, has been written about so much that it is time to let the novice or amateur know that it is not more necessary to feed any of the different poultry foods to the fowls than it is to buy the fancy feeds for horses, cattle or hogs that are kept in confinement most of their time, and while it is true that you must take good care of any stock that you wish to make profitable, nevertheless it does not follow that you must use costly prepared foods. Nature does not require anything of this kind, if proper care is taken with home-grown foods. Now there are some, yes, many, meritorious foodstuffs for fowls on the market that in the long run are cheaper than un-mixed foods, but like everything else, good goods are imitated by quacks of all kinds, and as a result it has caused a prejudiced feeling among a certain class of beginners that should be overcome, for the poultry business of the future must be kept a-moving by these same people who at the present and in the future manifest a liking for poultry culture. Even though it be in cramped quarters at the beginning, with success they will be in the future where the small beginner of the past is today—away up towards the top. And while I know of people who use prepared foods to advantage, others get along better without them. And, of course, location, etc., enters largely into this condition. The respective crops of any locality, price, etc., should settle in any one's mind what was or is the cheapest feeds in their locality, and as for the necessity of free range, I say again that it is not necessary. Of course, if you have it, make use of it, but if you have not, don't borrow any trouble about free range, but give your fowls clean, warm quarters in winter, as shady and comfortable as possible in the heat of summer, ordinary feed and water in plenty, and you can rest assured that you will have the same degree of success that comes to the large breeding establishment, insofar as you are able to purchase commodities for your chicks at almost as good a figure as they do.

A Cheap and Serviceable Brood Coop.



It appears to be the consensus of opinion that very few breeders raise more than half the chicks hatched, and our experience is that this is vastly too few. By spending half the sum represented by the price of a setting of good eggs any one can build a brooder that will save nine-tenths of the chicks hatched, if he is hatching and brooding with hens. We are convinced by comparing results with neighbors that our plan will work anywhere and that the great mortality of young chicks is from lack of intelligent care and management.

A cut of our brooder is presented herewith and full directions for building, as well as the cost.

The first thing required is a common window sash, either



Front view of Brood Coop described by Mr. Howe.

four or six light; thirty feet of match flooring; 25 feet of strips 1 inch square.

The two sides should be made exactly alike, except they

are right and left, held together by the strips. The rear should be about a foot in height, say the width of two pieces of flooring, and should be square with the base. The sash of glass should be set on a slant of about eight to twelve inches out of plumb and the top have a slant of at least six inches from front to back, so as to readily shed rain. The coop should be at least four feet deep or the width of the sash by four feet on the ground and floored with any kind of waste lumber.

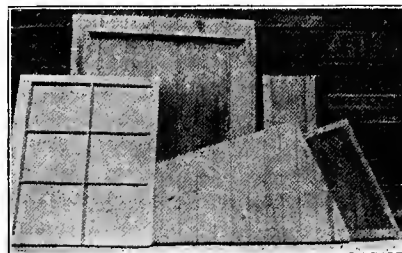
Build the sides in separate pieces, the back and top also separate and the sash makes the fifth piece, and it is ready to set up. This you do by using eight screws, two on each side of the back and front, screwing through the side into the back and sash respectively. The top is put together by nailing the flooring to two strips and is entirely separate.

When this coop is set up facing the south, you will observe that the sun will fall on at least half or two-thirds of the floor, and that there is a space at the back for the brood hen to get in the shade when it is too warm for her in the sun, and that there is plenty of room for her and the chicks to move around and scratch to their hearts' content.

The cost of such a coop made during the poultryman's spare moments need not be more than \$1.45, made up of the following items: One six light sash, 75 cents; 27 feet flooring at 2 cents, 54 cents; nails, screws and strips, 16 cents; total, \$1.45.

We figure that our coops cost less than a dollar on account of being able to buy second-hand sash for 25 to 35 cents each.

We recently took a hen from the nest with ten chicks and placed them in one of these coops on a morning when the temperature stood at 12 degrees below zero. One of the chicks



Sections of the Brood Coop described by Mr. Howe.

had to be helped from the shell and was not right; after two or three days he died; the other nine are still alive and doing as nice as any chicks you ever saw hatched in May. We put no artificial heat in the coop; just covered the floor with short hay from the barn loft, containing of course quite a little hayseed, and left them to their fate. The water put in the coop in the morning froze solid by noon, but about one the sun came out and the little fellows crept from under the hen, stretched in the sun and slept—probably dreamed it was July and that they were catching bugs!

One thing you will be obliged to watch: When the temperature rises to 40 degrees above and the sun shines you will have to slip the cover to one side and give the coop ventilation or you will smother the brood hen.

When the brood season is over, remove the eight screws and pile up your coop in an out of the way corner and it will be ready to use next spring.

The coop is such a simple affair that it is almost impossible to find much to say about it. Just a box-like structure with slant top for shedding rain, and in front for the admission of light and sunshine.

You will not that there is in the knocked down coop just five pieces: Top, sides, back and front. The bottom is any old waste lumber.

In the brood coop can be faintly seen a hen and chicks that have been in this coop since about February 20, with a loss of but one in ten, and that one was not right when hatched and never ate a bite.

This coop should be floored, although good results have been obtained by placing it upon the bare ground. In the latter case, however, the hen will naturally remain near the light and scratch in the ground, making a hollow place, which after a heavy rain will be found very damp if not full of water.

The lumber used for the floor should be cut so as not to extend beyond the sides and ends of the coop. In case it does so extend a heavy rain will run down the side or front and follow the floor into the coop. Dampness and its accompanying chill is the beginning of most if not all chick diseases.

Milton Howe.

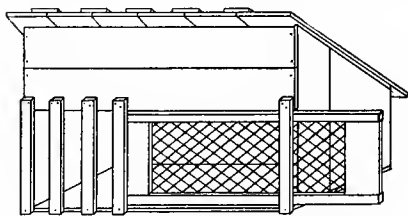
Plans for a Brood Coop.



ANY kinds of brood coops are in use among poultry raisers, from the common barrel coop with staves driven down in front of it to confine the mother hen, to the latest patented coops manufactured and sold by poultry supply dealers, but there are many poultry dealers who are constantly looking for new ideas on coops because of the inadaptability of the ordinary styles of brood coops to their peculiar conditions.

We submit this description of the style of brood coops in use on our farm, confident it will be favorably received by many poultry keepers. It has as many strong points to recommend it as any coop we know of at present. It need not be an expensive coop, as an ordinary dry goods box may be utilized for the purpose and the only cash outlay otherwise necessary is for the inch mesh wire netting and staples to fasten same to the frame used for the sliding door.

It is a very simple coop in construction and can readily be made by anyone at all handy with tools. The coop proper can be made of a dry goods box by cutting the top off on the right slant for the roof and removing two boards at the bottom or front for the opening; the board floor should project out far enough in front so the door can slide back and forth easily when the cleats are nailed on the front. The door is made of two narrow strips for top and bottom pieces nailed to two end pieces of six-inch boards. We cut the top



Victor D. Caneday's style of brood coop, described in accompanying article.

and bottom pieces about an inch and a half wide and nail them on to the edge of the end pieces with tenpenny casing nails, and when the wire netting is firmly stapled to this frame and staples clinched we have a solid door which will last indefinitely. We give our coops a good coat of paint occasionally, both to make them look neater and wear better. The roofs at least should be kept well painted to prevent the boards checking and letting the water through.

As we see it, the strong points in favor of this style coops are its adaptability to varied uses and the ease with which it can be manipulated. The illustration shows the coop with the door pushed to the left side to confine the mother hen, while allowing the chicks their freedom. When the door is

pushed out to the right side the hen and chicks can both be given their liberty, or if a lath yard or run is to be used in connection with the coop the hen is given access to the yard by pushing the door out to the right.

At night the door is pushed up so as to completely close the entrance, thus protecting the inmates from any possible depredation by rats, weasels, skunks, etc. The door being made of wire netting and extending across the entire front give an abundance of ventilation, a point where most of the storm proof and varmint-proof coops fail. By having the front boarded down half way the chickens are well protected from driving rain storms and their keeper can go to bed to rest on a stormy night confident they will be comfortable.

The coop is easily cleaned with a short handled hoe when the door is pushed out to the right side, thus leaving half or more of the front perfectly free for cleaning purposes. The door can be entirely removed for that purpose if desired.

We have several sizes of coops made with this style front ranging from two feet square up to two and a half by three and a half feet. The front should be at least two and a half feet high, with sufficient slant to the roof to carry off the water in the heaviest storms. In the larger sizes of these coops roosts may be placed and the coops used as roosting coops for the youngsters after the hens have weaned them.

We use inch mesh wire netting for all doors and open fronts to our coops. It is stronger and better than the common wire screen and gives a much better circulation of air in warm weather, while furnishing equally as good or better protection from such enemies as rats, weasels, skunks, minks, etc. The wire netting should be stapled to the inside of the sliding doors to prevent injury to the chicks in opening and closing them when they are small. The board across the front to which the top of the upright cleats are nailed should be thicker than the material of which the door is made, or a thin piece should be inserted beneath the top ends of these cleats to give plenty of room for the door to slide back and forth behind them. We never have used a coop which could be opened and closed as easily and safely as these doors, and when counting the chickens as they are let out in the morning, which most breeders do occasionally, the door can be opened just enough to allow one to come out at a time.

If desired a movable bottom can be made for this style coop by using a narrow strip on the front for the door to slide back and forth on and the coop can be placed so that this cleat on the front of the bottom meets the movable floor, giving a solid board floor under the entire coop. We prefer the floors nailed to the coop and have so made all of ours.

These coops can be easily moved about from one place to another on a common garden wheelbarrow, one of the indispensables on a poultry farm. We place them from twenty to thirty feet apart on the ground we have planted to plum trees, and when cleaning the coops the droppings are scattered about the young plum trees for fertilizer. Our soil is very sandy, but with the constant application of the poultry droppings the trees are doing very nicely and some of the first ones planted are beginning to bear. We place from fifteen to eighteen chickens with their mother hen in one of these coops, which furnishes them with ample room until the chicks are ready to go into the larger houses. There is as little danger of chicks crowding and smothering in this style of coop as any we have seen. The front being boarded down half way seems to prevent them becoming scared and crowding back to any extent, while on warm, sultry summer nights the entire lower half of the front being open for ventilation enables them to sleep quite comfortably and the advantage is noticed in the better growth of the chicks during the hot weather of summer.

The fancier on a town lot may not be able to raise as large a number of fowls as his farmer friend, but there is no discount on the quality.

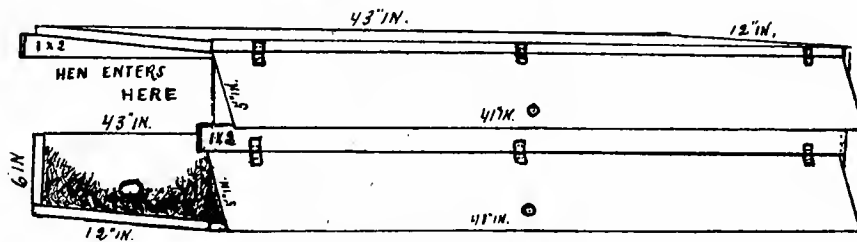
An Excellent Nesting Arrangement.



AFTER building and using several different styles of nests and nesting arrangements with little or no success, I have finally come to the conclusion that the nests are one of the most important features in the poultry house. After numerous trials, as stated above, I have at last built and adopted a device that has given me every satisfaction, and one that I think is practically beyond improvement. As will be seen by referring to the illustration there is no combination to the nest whatever, each compartment being a complete nest in itself, and no part of the nest is connected with the roost or dropping boards. Notwithstanding the fact that the roosting and nesting devices are used almost universally by both large and small breeders, I am of the opinion that such an arrangement is commendable only where one has unlimited time to look after and care for it, as it is one of the best arrangements for vermin I know of.

The proper size of the nest depends largely upon one's needs or taste. Nests that are too small cause the hens to break eggs and injure their tail feathers, etc. Four or five hens usually have a desire to lay at the same time in one nest, if it should be very large; and both males and females have mistaken large nests for a scratching pen.

In my description of construction, I aim to describe a good



Mr. Huntington's nesting arrangement.

average size nest. For show birds, for common layers, or extra large or small birds, the builder must use his own judgment. The handiest possible location for the nest is in the alleyway of the house, running the wire or partition down to the top of the nest, leaving the entire nest in the alleyway, the front serving as part of the partition. If your poultry house has no alley and very little or no floor space, nail one end of the nest to the wall and nail legs on the other; also place a perch in front of the nest, so that the hens can enter at will and without difficulty. These nests may be quickly cleaned by raising the lower door and sweeping out the straw, etc. The time required to clean each nest is not more than one-half a minute. To collect eggs, raise the upper door. After cleaning, sprinkle a good lice killer in each nest.

Usually one can find enough lumber about his place to make as many nests as he wants, but new lumber, hinges, nails, etc., will make each nest cost only about ten cents. The illustration shown herewith and the description is for a four compartment nest with straight one-inch material. Probably the handiest way to build is to first saw a board for the floor 12x43 inches, and then nailing this to a six-inch board of the same length; then we have a good foundation to work upon. The six-inch board forms part of the back of the nest. When this is finished the ends, which are 12x14, can be sawed and nailed. However, it is a little more convenient to first cut holes in them for the 1x2 inch strips that run across the front and back. The holes for the front strips should be cut in the center of the front, or just six inches from the top and bottom. Those for the back strip should be cut one inch from the top of ends, as will be noted by referring to the illustration. We can then nail the back strip to the top, the latter being the same size as floor board. Having completed the back, top, bottom and ends, we are now ready to put in

place the three partitions which are ten inches apart. We can now also nail on the front, the 1x2 inch strip, and hang the doors, which are 5x41 inches.

After finishing these, we nail the strips on the ends for the doors to set against and furnish each door with a knob and latch and each nest with a nest egg and nesting material.

Colony Houses and their Great Importance.



VERY simple and inexpensive colony houses are made from footboards, placed together in the same manner as the old-fashioned coops are made, or you can often obtain large boxes from the dry goods firms at a very slight cost. For a small number of chickens these boxes do very well. Make a good door at one end and leave plenty of openings for fresh air. About eighteen inches from the ground put in your roosts, which should not be too large in diameter. A floor is not necessary, but make the house light enough so it can be easily moved onto a fresh spot. Be sure and cover the spaces left for ventilation with strong fine wire and the house is complete. If you hear a noise at night and suspect a coon is about you can turn over on your pillow, feeling happy that your chicks are safe.

We consider the transferring of the chicks to their colony

houses a most critical period in their early life. For upon the management of chickens during their chickhood depends the future build and strength of the birds. People often wonder why chicks, descendants of birds almost perfect, have ill-shaped bodies and bent and twisted combs. It is surely caused by the way they sleep after they leave the brooders or mother hens. If just when the delicate comb is beginning to appear a dozen or two dozen chicks sleep all together in a heap, some on top of others, will those chicks grow up with perfect combs and uniform bodies? Certainly not. We all know what fatal accidents result in a football game when too many players get on top of each other. Suppose they stayed in about the same position for ten or twelve hours, what would happen to the ones on the bottom?

The time to remove the chicks is as soon as they are able to sit on the roosts. Like children, the younger the chicks are the sooner they will learn. Perhaps they will not take kindly to their new quarters at first. Remove their old sleeping places and if necessary catch them and put them in the colony house for a couple of nights.

Unfortunately it is not sufficient to simply put them in the house; for, missing their mother's warm wing, they will cling together, huddling and crowding in a corner, a homesick band. The only remedy we have ever found for this is to place them on the roosts. They do not like the hard, cold sticks at first and get lonesome and jump down to join the mass. Have patience until you make a few roost and in a few nights the rest will follow. One year we did not have enough colony houses and rather than crowd our birds we let them pick out places for themselves in the trees. Their combs kept their shape splendidly, but by the nightly visits of a four-footed prowler they lost their heads.

There is nothing like a good colony house.

Windows and their Location.



HERE are two main uses for windows in poultry houses. One is the admission of sunshine and light, and the other is for ventilation. For either of these purposes the location is of the first importance. No window was ever put in that was perfectly air tight and most of those that we find in poultry houses are so loose that the wind whistles around them, carrying in rain or snow during a storm.

The first point with regard to location is, to not put them on the side of the house from which prevailing and heavy storms come principally. They should be so arranged as to allow the most sunshine into the building during the winter. If the hens can have in the winter the luxury of a sun bath when necessarily confined to the poultry house and in addition a good dust bath is provided, the acme of chicken contentment is reached. To get this, the windows must face the south, or better still, a little to the east of the south, if we can arrange our buildings in that manner. In this way, they catch the sun earlier and get more benefit from it than if its rays did not reach them until later.

If the birds are compelled to roost in this sort of a building in summer, the windows ought to be shaded. The most satisfactory shade I have found is a climbing vine, such as hops or morning glories. The green leaves permit the air to circulate through the house, but keep out the direct rays of the sun and keep the building cooler than could be done in any other way. I have seen sacks and burlap cut and arranged as an awning, also paper shades, but in my opinion nothing equals the vines. From the standpoint of ventilation, the most important point is to prevent draughts of air striking the birds. Without knowing the plan and interior arrangement of a house, it is impossible to give detail instruction for the placing of the windows. If there is no passageway, the windows to the south will be sufficient if they are large, although in summer it is convenient to have windows opposite each other, so as to have a volume of air passing through the building. With this arrangement, however, great care is necessary to prevent a direct draught on the birds which will cause colds and roup.

The most simple window is a hole cut in the wall of the house and a piece of glass fastened over it. This will do where nothing but light is wanted and cheapness is the main consideration. Next comes the sash to cover the hole. These are sometimes only in for the winter and taken off and put away for the summer. The fault with this plan is, that the windows cannot be used for ventilation in winter. Besides, many people are careless and do not take the proper care of them during the summer. Then fall comes with storms and the windows not being handy, they are neglected until sniffling birds and damp quarters are the result.

Another plan is to arrange the sash, so as to open the window by sliding it along the wall, which may be done sideways or upwards. There are two main objections to these methods. You cannot make the windows tight and you cannot properly protect the glass. To merely tack wire screen on the frame over the glass is not sufficient, for oftentimes a bird will strike so heavily against this screen as to sag it enough to break the glass, although in a scratching shed house with a passageway and windows in the passage, this is both a simple and convenient method of construction. The sash may also be hung to the frame or casing and made to swing either sideways or upwards. This has one advantage over the sliding method, in that it can be made tighter. It has the same drawback, however, in regard to protecting the glass. Then, there is the additional bother of having to fasten it when open, and the risk of neglecting this, which will cause the glass to be broken by the flapping back and forth of the sash.

There is also the method of dividing the window into two parts and arranging them so that they may slide past each

other. This is the method employed in dwelling houses, and is a very useful and convenient way when the window is so large that if made in one piece it would be unwieldy and heavy to handle. The main objection to this is, that you can only use half of the entire opening for ventilation. If there is not sufficient height in the poultry house, a window of this kind can be put in sideways, allowing one-half to slide past the other. If this is not desirable, cut them the other way and hinge them together and let one fold over the other when it is open. These windows can be protected by having the screen tacked on to a separate frame and placed in front of the glass and so arranged as to be easily moved to get at the window proper. The best way, especially for the south and Pacific coast states, is to have the sash slide into a pocket in the wall. Have the screen fastened to a frame and let it slide in the pocket also, then to get at the window all that is necessary is to shove the screen out of the way. This method protects the glass when the window is both open and shut. The only objection I have found to this plan is, that the breath of the fowls carries moisture, which is condensed and frozen to the windows in the night. Then the sun thaws it and the water runs down the sash and freezes the sash to the sill of the frame. Occasionally I have found these so solid that the windows could not be opened for ventilation. My next plan will be to hinge the windows on the outside casings and see if I cannot find a way that will be free from all the objections I have found from the various methods described. The main consideration in windows which open and shut is to have them work freely and easily. It is often necessary to shut them quickly when a storm is coming and to have a window stick and have to tug at it with the rain beating in on you is one of the disagreeable features. *James S. Nicholson.*

A Poultry House for Cold Climates.



HAVE seen many descriptions of poultry houses and have received much valuable information from them. But I have never yet seen specifications for a poultry house that was practical for the northwest, for the reason that none have considered a climate where the temperature drops to from 25 to 50 below zero, and there are few places in the northwest where the temperature does not at some time during the winter reach at least 25 below. And at this place there are times during the winter months when it remains lower than 25 below for a week at a time, even during the warmest part of the day. At such times the poultry houses constructed after the usual specifications would become practically useless, as no hen could exist in such a temperature for any length of time, to say nothing of supplying a quantity of eggs.

In such climates I have found that the poultryman must contend with conditions unknown in other sections, and to overcome these difficulties is no small task, for it is generally admitted that the temperature of the hen house must be kept pretty well up if a supply of eggs is expected in the winter.

I have found that a house built on a low foundation, with the space between the floor joists filled nearly to the floor with saw dust, dry dirt, cut straw or some other non-conducting substance, is a good start. Then make the walls of 2x6 studded, with shiplap or some other matched lumber on both sides (inside and outside), leaving a space of six inches between the beads. This space filled with sawdust, cut straw, flax straw, old paper, old rags or any other substance that resists the passage of heat. This can be packed in tight, as the beads are put on the last side. Then put on tar paper or some other good thick paper before the last coat of siding is put on. The roof should be built the same way, and carefully stuffed with a good non-conducting substance and a layer or two of good paper, put under the shingles. Add to this

a coat of lath and plaster on the inside and you have a house that will stand very severe weather.

The door should be made of two thicknesses of matched lumber, one laid horizontally, the other perpendicularly, with two or more thicknesses of paper between.

Before severe weather comes, and, better yet, before the ground freezes, bank up all around the building (except at doors) with coarse manure or straw, to the height of three or four feet, or even more. Let the banking cover the ground for several feet back from the building, deep enough to keep the earth from freezing, and thus prevent the frost from creeping under the floor. Add storm windows and storm door and you are prepared for cold weather.

To the resident of a mild climate these preparations may seem unnecessary, but let such an one try making hens lay in winter in a genuine northern Minnesota climate and he will soon see the force of extensive preparations for cold weather. This is not intended for a low price house. At another time I may describe a much cheaper house and a plan for keeping it warm.

Enos M. Ricker.

A CITY LOT POULTRY PLANT.



R. A. E. WARD, of Chicago, has given us plans of his house and yards on his city lot and we give them for the consideration of our readers, who may be similarly situated. Mr. Ward's communication was sent in for the August issue and some of his hints to amateurs are more appropriate for hot weather, but they can be read with profit at this time. He says: If you are young in the business, it may be well to ask yourself the following questions before going any further:

Am I willing to sacrifice my personal care and comfort now and then for the ease and comfort of my fowls? Do I

experiment put a glass of clear, cool water on the table and notice how long it will remain fit to drink. The same principle holds good with chickens and their drinking water. Fowls inherit the habits and tendencies of their ancestors, and one of the strongest of these is a desire for pure, cool drinking water, probably handed down from their wild progenitors who roamed the woods and prairies at will and drank the clear spring water.

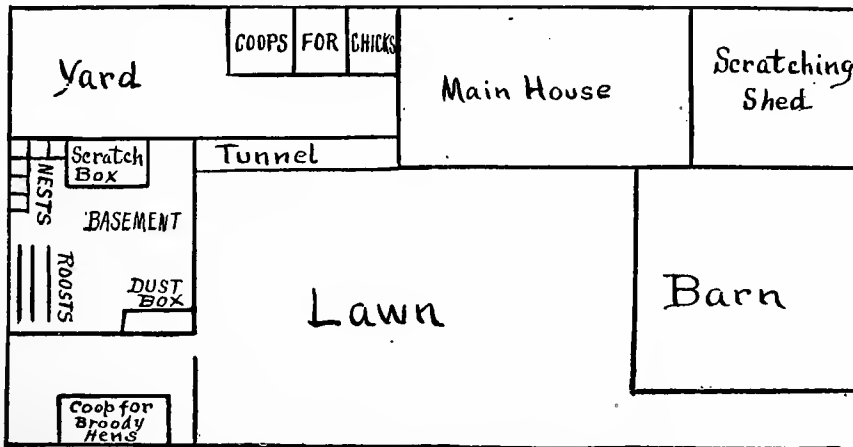
Don't overfeed. Use plenty of green food. Provide some shade from the sun. If space does not permit the cultivation of fruit trees, patches of old carpet (the more ragged the better), thrown over the roofs of the sunniest parts, will answer the purpose.

Remember that fowls are subject to fright at sudden and loud noises. As a resident of the quiet little (?) city of Chicago on July 4, I can vouch to that fact!

To the struggling fancier on a city lot, the following description with the accompanying plan of our arrangement of houses and appliances on a thirty-eight foot lot, may be helpful.

We keep about thirty matured chickens, which must be speedily disposed of to make room for our nice flock of young Plymouth Rocks we are raising. Our residence occupies twenty-five of the thirty-eight feet, leaving thirteen feet for the poultry. At the extreme end of the lot is a scratching shed, covered on the top and sides to keep out the rain. Adjoining this is the coop proper, a large, roomy place, shaded by two large oaks next door. Here they pass most of their time in summer.

Next to this, but separate from it are the coops for the four-month-old chicks, arranged according to age. Starting at the right hand corner of the coop proper, is a tunnel, extending underground about twenty feet, which leads to another coop in the basement of our residence. Here are the nests, the roosts, and the dusting boxes. The coop is lighted by two windows, which have screens and shutters. Being directly below the sleeping apartments the shutters are closed at



Yard plan of A. E. Ward's town lot poultry plant.

thoroughly enjoy my business? Do I realize the untiring care and patience required during the moulting period? Am I prepared to give them this untiring care? Am I aware that my fowls are wholly dependent on me for their proper food, drink and shelter? Am I acquainted with the agonies imposed by heat and thirst, and am I willing to spare my fowls these agonies? If you pass this test (and you know whether or not you do), you will succeed in the poultry business; so go ahead. If not, better sell out at once.

To begin with, don't keep too many chickens. If you have less than four square feet to a fowl, thin them out quick, before disease does the thinning for you.

Keep your houses, roosts and nests scrupulously clean. It's absolutely necessary to the health and vigor of your flock. Be liberal with your whitewash, lye powder and roost paint. You'll never regret it.

Don't neglect that drinking water! Just for the sake of

night to delay the inevitable "concert" which comes with the first break of dawn. Across from this coop (which is heated in winter by a stove in the laundry back of it), is the coop for broody hens. This arrangement leaves a generous amount of yard space in which to raise their green food.

Never sell your best birds unless you intend to go out of the business. They are worth more to you as breeders than you can get out of them by selling them. This applies to the cream of the flock and includes the few birds raised each season which are a little better than any we ever raised before.

A fowl should always be kept in a condition suggestive of good appetite, but should not be allowed to go actually hungry.

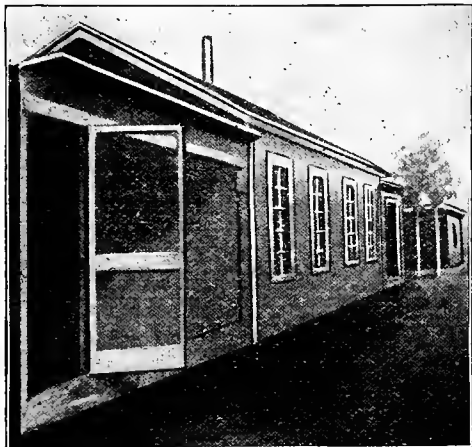
Description and Plans of a Good House.



IN READING an article in a late issue of a prominent poultry journal, the words, "What about the house? It doesn't matter much," attracted my attention. I beg to differ with the writer. One of the urgent needs of the amateur poultryman, the farmer of the present day, or the chicken fancier, is a good house for poultry.

(Provided he hasn't one already, and many of them have not.) The house that I am about to describe to you, pleased me from the first. And although others, including the low shed-roof variety of modern times and the obnoxious two-story style, have sprung up about it as time rolled on, still, the first remains the favorite.

The house proper is of drop-siding 28 feet long and 12 feet



View of the house described by Mrs. Sperbeck in accompanying article and plans of which are shown on this page.

wide and 7 feet high. The roof is a gable of one-third pitch and shingled. The inside walls lathed and plastered. The floor of cement. Two partitions of wire netting divide this house proper into two compartments, 12x12 feet, leaving an alley running through the center from north to south 4 feet wide and 12 feet long. The door of entrance opening from the north into alley; secondary doors of netting, one at the right, the other at the left as you enter. Nest-boxes run from secondary doors south, projecting into alley way. Back board to nest boxes on hinges, thus making it easy to clean nests. The roosts are placed upon platforms raised two feet from

inches high and 4 feet long and 3 feet wide for coal ashes or road dust. A small opening with sliding cover at each end of the house serves as a way of egress from house proper into scratching sheds attached.

Each scratching shed is 12 feet long by 12 feet wide, 7 feet high at the front, with slanting shed roof. These sheds are of rough boards with cracks well battened, with roof papered, tarred and graveled. The entire front or south side of wire netting, with door of same. A wooden shutter on north side completes the scratching shed and we have a building 52 feet long by 12 feet wide that we may well be proud of. Yards 103x27 feet are built on south side. With such a house kept clean and well whitewashed, with plenty of good, wholesome food, air-slacked lime and some good liquid lice killer well applied, one may defy disease and put to flight any mite or hen louse that is so presumptuous as to intrude.

M. H. Sperbeck.

A Home-Made House.

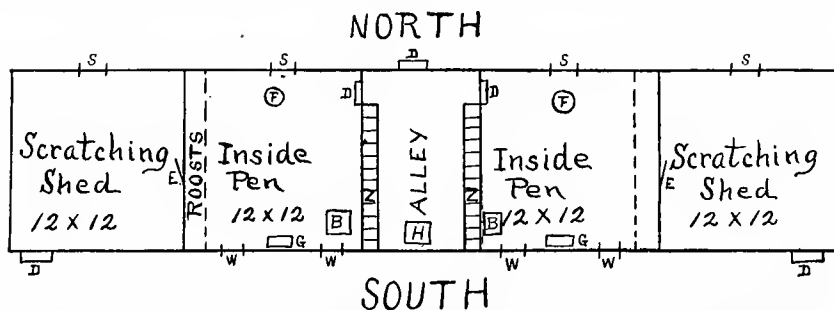


NEEDING more room for my fowls last fall, I built a house 12x80 feet with shed roof. The front is 9 feet high and the rear 4½ feet. The house faces the south. The location is in the orchard near the dwelling.

There was about 3½ feet fall in the ground in 80 feet, so I ran the wall 40 feet on a level and then dropped about 18 inches and ran the balance on a level. The roof was dropped the same distance. I obtained the stone on my own farm and hauled it with my own team with the help of one man at \$1 per day. A trench was dug from 15 inches to 18 inches deep and filled with small stones, on which the wall was built 18 inches wide at the bottom and narrowing slightly toward the top. The wall was started 6 inches high. The mason work cost \$10, besides the work of the attendant and the cost of about two barrels of lime. I dug an open ditch to allow any water that might accumulate in the trench to escape. I am using a dirt floor. The frame is of 2x4 inch beech doubled for sills and posts. Rafters are two feet apart. For sheathing I used 1x2 inch beech strips, placed three inches apart. I used the best cedar shingles I could get and paid \$3 per thousand for them. They were laid five inches to the weather. It took about 9,000 shingles.

The siding was of one-inch rough basswood, with batting over cracks, ½x3 inches of same wood.

The house is divided into four rooms, each 12x20 feet, calculated to accommodate 50 fowls in winter. I think of subdividing the rooms for breeding purposes, and so the fowls



D-DOORS. W-GLASS WINDOWS. S-WOODEN SHUTTERS. F-DRINKING FOUNTAINS.

B-DUST BOXES. Z-NESTS. G-GRIT BOXES. H-STOVE. E-FOWL'S ENTRANCE TO SHEDS.

Detailed plans of the house here described.

the floor at the extreme east and west sides of each compartment, respectively. Each compartment has two windows of glass on the south side and wooden shutter on north side. Each compartment contains drinking fountain, boxes for grit, bone, oyster shells, etc., a nice, large feeding board and a box 5

will only be required to warm one-half the space at night in winter. Each room has two 8x12 six-light sash, which cost 50 cents each, and one outside door three feet wide, with slide latch that works from either side and hooks inside; also a slat door to slip in when other door is open. In each par-

tion is a two-foot door, so I can go from one room to the other without going out of doors. The timber cost \$4 per thousand feet in the tree, and the saw bill was \$3.50 per thousand. I did the carpenter work myself with the help of one man at \$1 per day. There are four yards in the rear 100 feet deep. By letting the last flock out at the corner of the house I could take in more park room. Each park has plenty of shade, with some grass, with a gate in each partition fence wide enough to allow a horse and cultivator to pass through. For roosts I made a rough floor about 18 inches from ground with perches 9 inches above, which left all the ground space for scratching, and the floor catches the droppings, which I clean quite often. By the roost being so close to the dropping-boards the chickens do not walk on the droppings, but on the perches instead; therefore, the droppings are easily removed. Under these boards I set nest boxes. Each room is supplied with water, oyster shells, mica grit, etc. I intend making the house some warmer this fall by putting tar paper or some other material on the inside of the north side. I do not want the house so warm as to give the fowls cold when shipped to customers.

The fences should be six feet high of two-inch wire with board at bottom. This house will be filled next winter with splendid Barred Rocks. The house will be littered with such material as millet-hay, straw, chaff, wheat, etc.

It is a pleasure to watch the fowls scratch and hear them sing under these conditions. *S. P. Bryan.*

CHEAP BROODER HOUSE SYSTEM.

A SUMMER is fast passing and it will soon be cold and chilly, we naturally begin to think of how to keep newly hatched chicks warm and growing. I will give you some of the details of a hot water heater I made myself; one that is practical in construction and in reach of most any poultry raiser. It will heat a house fifty feet long or the hovers therein at a very small cost.

I first purchased an old stove with a sheet steel drum, one high enough inside to allow plenty of room to put fuel in the door of the stove and under and around coil. I cut a hole in top of stove large enough for upper end of coil to pass through and one in lower part of drum just above fire box in the side next to hovers for the lower end of coil to pass through. This completes the stove.

Next I got a 2-foot coil of 1-inch pipe and had ends bent and threaded ready to receive the connection to brooder pipes. I put my coil inside of stove, made the proper connections to pipes in brooders and the thing was complete at a cost of \$3 for stove, \$3.20 for water coil, making a total cost of \$6.20.

This makes my heater far cheaper than any I could find in the market and one that will do its work well. I burn one hod of soft coal in two fires of twelve hours apart, banking it well with ashes. This prevents it from burning too fast. It will burn slow and keep an even heat. Once in a while I have had to fix fire between the hours stated. This heater gives satisfaction and the cost is small, which is quite an item in poultry raising.

My brooders I made myself. They are raised six inches from the brooder house floor, on legs; are double boarded with asbestos paper between, each hover 30x32 inches inside, with ventilators in top and side. The tops are hinged on, to admit of easy and perfect cleaning. There is a door in front of brooder, back of which is a curtain. The back of brooder is paneled with glass, making it light inside when curtains are raised.

In front of each hover I have a small run, made of flooring boards with 10-inch sides. They are hinged to brooder just under door and can be lowered or raised at will. I keep these runs raised until chicks learn to go in and out of hovers, then

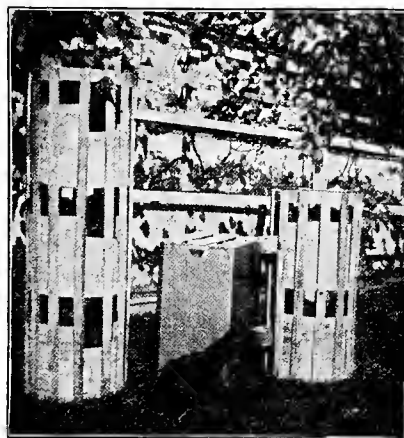
I lower them and the little fellows have the full run of a yard in building.

I take all precautions necessary to practical work, and my heater and brooders are O. K. *C. W. Mead.*

Shipping Coops.

For a coop that is cheap, light in weight and easy to make, nothing yet invented beats the good old cheese-box, though I never knew anybody but game men to use them.

Cheese-boxes may be had in various sizes, from 12 to 18 inches in diameter, the smaller kinds being just right for one



The Cheesebox Shipping Coop.

or two young birds, while the larger kind is ample for a trio. To make a coop, merely nail lath on the sides to connect top and bottom. And if it be desired to ship several birds, the coops may be made double or triple in the same manner by placing one box about the other. *H. P. Clarke.*

A Cheap Poultry House.

THE building is 10x30 feet, 9 feet front, 5 feet back. It stands on a sloping piece of ground in the orchard, where all our poultry buildings are located. The floor is made of crushed stones, coal-ashes, clay and sand. We expect on top of this to keep a liberal supply of wheat straw for litter during the winter months. We have no partitions in this house, as we have other suitable buildings to use during the breeding season. The dropping-boards are 5 feet wide, 20 feet long and 3 feet from the floor. The roosting poles are made in sections—4 poles, 9 feet long, to the section, securely nailed at the ends with two-inch strips. These roosts are just laid on four cross-pieces with notches cut out of the cross-pieces to admit each pole so as to make it solid, yet it can be lifted and taken clear out of the building if desired, or can be swung to the rafters when cleaning. We sheathed this house before weather-boarding with a good grade of two-ply roofing paper. We gave the paper about two inches of a lap, then on the inside we covered this lap with a plastering lath to try to make it wind proof. It is a shed roof sheathed solid with oak boards, and on this we put the very best three-ply roofing we could find. On top of this we placed strips 18 inches apart from the comb down to the eave. This was to keep the wind from getting under it and probably from tearing it off. As soon as the roof was completed we gave it a painting and expect to paint and sand it, also, this fall again. There are four windows or eight sash in this house, four below, 10 inches from the floor, and four above, 20

inches above the first floor. Our reason for dividing the windows was to admit sunshine on the dropping-boards and floor at the same time. The house is weather-boarded with a number one grade of oak, which was purchased at \$1 per 100 feet. A strict account was kept of material purchased for this structure, and when completed (not counting the labor, as we did that ourselves) the building cost just about \$30, or \$1 per running foot. We do not submit this as a model house, but it is good enough for us at the present—nothing handsome about it, just warm and comfortable, that's all.

Thirty feet from this house stands the old poultry quarters, a house 10x20, both facing the south. We believe it would be a good idea to shed roof from the old house to new, and weather-board the north side tight and make an open scratching shed.

Charles F. Brooks.

A Roosting Coop.



THE blood is the life," is a maxim that poultry keepers are apt to forget in actual practice, however well they may remember it as a theoretical proposition. Many diseases are considered "mysterious visitations of Providence," when they are nothing else than the result of the continual breathing of vitiated air, which has poisoned the blood. The corpuscles of the blood bear nourishment to various parts of the body, and in the circulation return as the bearers of the worn-out and wasted particles of the system. These worn-out and wasted particles are thrown out by the expiration of the breath, and fresh supplies of oxygen, the life of the air, are drawn in at each inspiration. If the supply of oxygen fails, the blood is not renovated and the corpuscles carry back to the various organs the waste which ought to have been thrown off. Fresh air, therefore, is absolutely indispensable to health.

Close, unventilated houses are an abomination. The writer remembers an experience which is in point. Some years ago, when he was accepting engagements as a poultry judge, he was compelled to be absent from home several weeks in the winter. He had, at that time, a stock of fowls which filled all of his houses and a surplus that was confined in a lean-to, consisting of a roof with laths two inches apart for the sides. Upon his return, he found his stock in the close, unventilated house sick with the roup, while those confined in the lean-to were well and were producing nearly all the eggs which were then laid. The fowls in the houses had apparently the best chances but did the worst. What made the difference? FRESH AIR, "only this and nothing more."

One prominent poultry breeder, writer and judge has said that chickens, when they reach a certain stage of growth, almost invariably have an attack of influenza, which is not roup, though it has similar symptoms. He has thought it an unavoidable complaint. But is it? Is it not rather the result of the lack of fresh air? Certainly. You never find chickens which roost in trees so afflicted. They are usually free from such troubles, so long as the trees continue to be their roosts.

For many reasons it is desirable to have the chickens roost in coops rather than in trees. They are rendered tamer by so doing, and they can be better protected from their foes, but roosting coops, for health, should furnish the fresh air that the chickens get in the tree tops, an abundance of air with freedom from draughts. A good roosting coop is, therefore, desirable.

The following plan will be found to furnish a roosting coop that will protect the chickens from enemies, secure an abundance of fresh air and be free from draughts.

Set chestnut posts in the ground, leaving them about six inches above the surface for the sills to rest upon. For a coop twelve feet long by eight feet wide, six-inch posts will

be needed, four at the corners and one midway from the corners for the long sides of the coop. Upon these posts lay sills of spruce or hemlock 3x4, and upon the sills lay a floor of hemlock boards. If laid the short way, the floor will be stiff enough without any floor joists, but if twelve-foot boards are used, a cross-piece 3x4 should support them at the middle of the house. Corner posts 3x4 should be set up and about three feet apart. Studs should be set up to support the plates. The plates may be made of 2x3 or 3x4 joists. The roof, if one slant alone is used, which is the cheapest method of building, will require no rafters, except one twelve-foot joist at the middle for the roof boards to rest upon. The roof can be made of straight-edged hemlock boards, battened, or it can be shingled or covered with some kind of roofing paper. Make a door of inch boards with three cross-pieces; then cover the sides and ends with one-inch mesh wire netting. This house, as will be noted, is open to all the airs of the heaven, affords no opportunity for draughts, because all sides are open, and securely confines the fowls, giving them a good roof over their heads and a light floor beneath their feet. The frame can be stiffened considerably by nailing a board around the bottom where the sills are and another at the top next to the plates.

The bill of materials will be as follows:

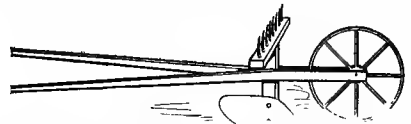
Six chestnut posts (3 will do, if cut in the center); 2, 3x4, spruce, 12 feet long, and 2, 3x4, spruce, 8 feet long, for sills; 2, 3x4, spruce, 9 feet long, for plates for lean-to; 2, 3x4, spruce, 6 feet long, posts; 2, 3x4, spruce, 8 feet long, posts; 3, 2x3, spruce, 6 feet long, studding; 3, 2x3, spruce, 8 feet long, studding; 4, 2x3 spruce, 7 feet long, studding; 1, 2x3, spruce, 12 feet long, central rafter; 96 square feet of flooring boards, 132 square feet roof boards, 132 square feet roofing paper, 24 square feet boards for door, 1 pair of strap hinges and 1 lock with hasp, etc., for door, about 300 square feet one-inch mesh wire netting, 4 boards, 12 feet long, for base and top of sides; 2 boards, 8 feet long, for base of ends; 2 boards, 8½ feet long, for top of ends; studding for roosts, nails and wire staples as needed.

This plan can be modified to suit the needs of each breeder. Posts can be set in the ground for the corners and studding; sills be done away with, floor may be omitted, size be changed, style or roof be modified. The main thing is to secure a good roof, a wire enclosure as a protection against enemies, and the free admission of air from all points of the compass. Any roosting coop which does this will be a good one for chickens until it becomes necessary to transfer them to their winter quarters.

H. S. Babcock.

Useful Appliance.

One of the best and most useful things on our plant is a combined plow and harrow. It is home made and can be made by any handy man. If the illustration is turned upside down



Home-made combination plow and harrow. It will appear as a plow. We plow our yards, say, today, harrow tomorrow, then rest a day or so, and plow again, then harrow. It keeps the soil sweet and in great shape for scratching. All grain in summer is fed on this soil and is raked in to induce scratching. It keeps them healthy. It makes them lay.

There is money in bantams of any popular variety and they require very little room. From a fancier's point of view they appeal to many people who would not be attracted to the larger fowls. They are as good layers and for home consumption their eggs are just as desirable.

