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UP-TO-DATE POULTRY HOUSES AND APPLIANCES

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UP-TO-DATE POULTRY HOUSES and APPLIANCES

EDITED AND COMPILED BY HENRY TRAFFORD
EDITOR POULTRY SUCCESS

DRAWINGS BY C. F. TRAFFORD

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POULTRY SUCCESS LIBRARY

- 1—Poultry Keeping in a NutshellBy Henry Trafford
- 2—Profits in Poultry Keeping Solved.....By Edgar Briggs
- 3—The Smith Method of Poultry Keeping
- 4—Up-to-date Poultry Houses and AppliancesBy Henry Trafford

Introductory

The contents of this book is a compilation of illustrations with word descriptions by the Author and Editor of Poultry Success, such as are in actual and practical every day use by leading and successful poultry raisers, not only those who raise a few hundred birds each, but those whose annual output reaches into the thousands, the utility poultry raiser as well as the fancier.

The data and illustrations for this book are the result of coming into personal touch or contact with the poultry raisers who are successfully using the houses and devices described and illustrated herein, therefore, may be depended upon to be entirely practicable and reliable.

The writer has undoubtedly visited more poultry breeders at their homes during the past ten years than any other poultry editor up to date, and has thus been able to ascertain at close range what kinds or styles of poultry houses are the best and have proved by actual practice and use to be most reliable and efficient for a given purpose.

The same is true with reference to the various appliances or devices illustrated and described in this book.

The drawings herein were executed largely by C. F. Trafford, for the past five years traveling representative of "Poultry Success," and who in this time has annually visited hundreds of the leading poultry breeders of "all sizes" so to speak. We mean by this that he has visited the poultry yards of the small city or village fancier by the hundreds also the large plants having a capacity of several thousand layers, and whose annual hatching operations amount to several hundred thousand chicks.

Many of the illustrations to be found in this book were contributed by him as a result of his observations and the data he was able to gather in visiting poultry breeders and fanciers as above stated. We speak of this so as to impress upon our readers the idea that "Up-to-date Poultry Houses and Appliances" is a book as the title suggests, up-to-date and practical and a reliable source of information on poultry house construction.

The poultry houses of various types described and illustrated in this book may be modified to suit local or special

conditions or may be built of any size or dimensions desired. Foundations may be constructed of stone, brick, concrete blocks or solid concrete.

It is not our purpose to go into minute detail in every instance in the description of the various poultry houses illustrated and described in this book but more particularly to call attention to special or prominent features embodied, such features as makes the particular house or device being described different from another. Neither is it our purpose to give specifications and estimates in all cases on the cost of building as any house described and illustrated in this book may be built of lumber costing anywhere from \$25.00 to \$75.00, per thousand feet, likewise each may be varied in frame and somewhat in general construction to meet the judgment of the carpenter or the person doing the building, so that it would not seem to be necessary for us to more than give the general principles and special features not plainly shown in illustrations, of each house and device.

In conclusion we wish in this manner to again thank those who have so kindly favored us with half tone illustrations for publication in "Up-to-date Poultry Houses and Appliances."

HENRY TRAFFORD.

January 1st, 1911.

CHAPTER I.

BREEDING AND LAYING HOUSES

There are a great number of good servicable breeding and laying houses in common use, in fact about as many different styles as there are different poultry raisers and yet the general principles of these houses are all about the same, the only marked difference being in the architectural design or construction.

Almost any design or style of poultry house may be modified or changed to conform to local conditions or some particular situation without materially changing the principle of it as to general construction, ventilation, etc.

So far as possible all poultry houses, especially breeding and laying houses, should face in a south or southeasterly direction and never towards the north unless absolutely unavoidable. The site upon which it is to be located should be well drained, of gravelly soil which will quickly absorb all moisture.

Of course every one who embarks in the poultry business does not have at their disposal gravelly, well drained soil upon which to locate their breeding and laying houses and, therefore, must resort to mechanical means of drainage like ditching and by laying tile drains. However, it is the general principle that we want to impress, namely, proper drainage.

CHAPTER II.

POULTRY HOUSE CONSTRUCTION PRACTICED AT
CORNELL UNIVERSITY

Poultry House construction at New York State Agricultural College
at Cornell University, Ithaca, N. Y. The complete structure.

Showing natural slope of the land which provides for perfect drainage.
Students beginning the superstructure.

The following article on poultry house construction appeared in the June, 1907, number of "Poultry Success," and, being of special value involving principles which may be applied generally, we decided to reproduce same in this book verbatim as it appeared in "Poultry Success." The article follows:

"The natural slope of the land selected for building the

house, which provides for perfect water drainage without the use of tile, is shown in illustration. The location is naturally dry and sheltered. The illustration shows the natural shelter for the house, provided by trees and buildings in the background. This insures the building being several degrees warmer than it otherwise would be because the shelter breaks the force of the prevailing wind. It faces the south, which gives the greatest benefit from the sun's rays.

Putting up the frame work.

"Where long houses are used it will be necessary to provide double yards or to remove the fowls from the single yards during the early fall while the land is being fitted and reseeded. The same objection applies to the colony house system unless the houses are removed each year to new ground. The house described is twelve feet wide and twenty-four feet long, divided into two pens, each twelve feet square. The nearer square each pen can be built, the less will be the cost for building material. On a large commercial poultry plant it would be economy to build the house at least fifteen feet wide, making the pens fifteen feet square. The house here described is used for instructing students in the care of fowls, where it is necessary to keep smaller flocks in order to accommodate a large number of students. This house is but two sections of a long continuous house to be built which will contain thirty pens, making a house three hundred and sixty feet long with an over-head trolley through the center of the house. By making the house continuous rather than making separate colony houses, the cost is greatly reduced because it is less expensive to build the partitions that divide the pens than it is to build the end of each house where the

houses are separate. The colony houses are also much colder because they are more exposed.

Fac-simile reproduction of student's drawing of laying house designed and used by the Department of Poultry Husbandry, N. Y. State College of Agriculture, Ithaca, N. Y.

HOW HIGH SHOULD A HEN HOUSE BE BUILT?

"The house is four feet eleven inches in the rear and eight feet seven inches in front which is as low as it is possible to build without danger of bumping the head while doing the

work. On a house fifteen feet wide the front and back could remain the same height as in the house twelve feet square, the pitch of the roof simply being a little less steep. The purpose in view has been to make the roof as low as possible to restrict the air space. A common fault in many hen houses is that they contain too much air space to be warmed up by the bodies of the hens. If the same rule should be followed in building hen houses as is recommended for the building of cow stables, i. e., one cubic foot of air space for each pound of live weight and if hens are allowed five square feet of floor space per hen, with hens weighing five pounds each the house would be but one foot high. It will be readily seen that if a house is built as low as it is possible to build it and enable one to do the work conveniently, it will still contain more than five times as many cubic feet of air space per pound of live weight as if provided in the average cow stable.

Fac-simile reproduction of student's drawing of laying house designed and used by the Department of Poultry Husbandry, N. Y. State College of Agriculture, Ithaca, N. Y.

BEST STYLE OF ROOF TO BUILD

"A shed roof is used because it is easiest to build, provides the largest volume of sunlight and, therefore, provides

the best possible conditions of sanitation, warmth, brightness, and dryness, but requires a trifle more building material than is necessary to build a house of the same size with a "combination roof" or a "gable roof." Observe the absence of projection on the north side.

"This construction enables the paper to be run continuously without break at the eaves, thus making an air-tight joint and preventing rain water from washing the soil and doing away with eave troughs.

NUMBER SQUARE FEET OF FLOOR SPACE TO BE ALLOWED PER HEN

"Each pen is intended to accommodate from thirty to forty fowls each, which allows from four to five square feet of floor space per hen. Where fowls ~~are~~ more crowded than this, they get the benefit of greater ~~warmth~~ because they heat ~~up~~ the air space more effectively, but ~~suffer~~ because they have less freedom of action, and where proper ventilation is not provided, are likely to suffer the ill effects of a contaminated, stagnant air. The more fowls that are kept in a given space, the more often the pens must be cleaned. The smaller and more active breeds appear to require a little less floor space per hen than do the larger fowls, even though the heavier fowls are less active, and theoretically would require less freedom of action.

NUMBER OF HENS THAT SHOULD BE KEPT IN ONE FLOCK

"It seems to be pretty well established that where flocks are given the same number of square feet of floor space per hen, the smaller flocks will give the largest maximum yield of eggs. This is because each hen has more independence of action and feels more contented. She is usually given more individual attention by the attendant, also. Small flocks however, require too much labor. Therefore, the tendency of the times on large commercial plants is to keep fowls in larger and larger flocks. The larger flocks seem to result in the largest net profit. Just how large flocks can be kept to the best advantage is yet to be determined. From fifty to sixty seem to be the best sized flock, all things considered. Nevertheless, men are succeeding well with flocks of from one to two hundred. With these very large flocks, especial care must be taken to carefully grade the flocks, according to size and vigor and greater care must be exercised in regular and liberal feeding, in order that the weaker shall not suffer

in a struggle with the stronger individuals. There is always an advantage that comes to each fowl in a large flock which does not come to the fowls in smaller flocks provided all have the same number of square feet or floor space, which is that in large flocks, each hen has a larger actual floor space in which to live, giving her more freedom.

THE BEST FOUNDATION FOR A HEN HOUSE

"It will be observed that the foundation is built of concrete, which is less expensive than stone, more effective in keeping out water, less liable to heave and less likely to be penetrated by rats and more easily made than is a stone foundation, which is laid in mortar and pointed up. For a hen house, the walls need not be more than eight to ten inches thick. It should stand at least six inches above the natural level of the land, and need not go more than six or eight inches below the surface. To make a grout wall, stakes should be driven where each corner of the building is to be located. A cord is then strung two feet beyond each post in all directions and stakes driven. Other lines may be strung from stakes eight inches inside the corner posts which mark the width of the wall. The cords may then be temporarily removed and the trench dug enough wider than the actual wall is to be, to permit retaining stakes to be driven and boards nailed on the inside to hold the grout. This wooden frame should be made perfectly level on all sides.

"Purchase the best Portland cement. Use only clean, sharp sand. Mix dry one part cement to four parts sand. Add to this five parts fine, clean gravel or fine cracked or small stone. Mix with water many times until every particle of cement has been distributed uniformly through the mass. The secret of good cement work is first in the quality of cement and sand used and second in the thorough mixing. When in a puddling condition it can be scooped into wheel barrows and thrown into the wooden frame and thoroughly tamped. After the wall has set which requires only a day or two, the frame work may be removed.

THE BEST FLOOR FOR A HEN HOUSE

"The floor is made of cement because it is more easily cleaned, more nearly rat proof, more durable and dryer when made properly than is any other floor. A good cement floor should have a well drained foundation. This is most easily provided by filling in with fine stone to within an inch or two of the level of the foundation wall. Over this can be spread the same grout mixture as was used in the foundation, and on top of this should be placed about half an inch of

the cement mixture made one part cement to four parts of sand and troweled to a perfect level. The 2x4 sills should be placed before the cement floor is laid. **The cement can then** be flushed against the sill to prevent air and water entering between the sill and the foundation. In some cases it may be advisable to make the cement floor level with the top of the sill. A few inches of fine gravel and dirt should be placed on the cement floor. This can be cleaned out as desired.

THE NECESSITY OF HAVING DOUBLE WALLS AND DEAD AIR SPACES IN A POULTRY HOUSE IN THIS STATE

"The walls on all sides, except the south, are made of one thickness of matched pine lumber, with the plain side of the inside of the house, in order to improve the appearance and to make it more easily whitewashed. The outside, except the south side, is covered with one thickness of "red rope roofing." Half of the roof is covered with "red rope roofing," the other half with "paroid" to determine their relative efficiency. The side, ends and front are painted a light straw color, which is more attractive than the red, which is the color of the paper. It serves the double purpose of attractiveness and durability, both of which count for much in a poultry establishment. The only part of the house that is double-boarded is the portion directly back of and above the roost platform. An air space is formed between the studding and the inner boarding, which is opened above and below. Holes were bored through the plate, which permit the air to circulate freely up between the studding, through the plate between the rafters and out into the room again. This makes the inner wall warmer than it would be with a dead airspace, owing to the fact that the air is continually changing, and therefore, must be nearer the temperature of the room than it would possibly be with a dead air space, which in time becomes as cold as the outside boarding. For this reason a "dead air space" is objectionable. A cold, dead air space would in turn cool the inner boarding, in which case it would become as cold as the dead air space, thus causing condensation of moisture from the warm air, making the wall wet. This moisture in case of extreme cold would freeze causing the walls to be covered with frost.

"The front of the house is made of one thickness of ship lap without paper either inside or out, which is a loose construction. This type of wall more readily warms up the air on the inside when the sun shines than would a double wall, and owing to the fact that all other sides of the house are

made tight, this warmed air does not really pass out because the house is free from draft. The principle of this construction is best expressed by the comparison that "you cannot blow into an open bottle." In a house that is tight on all sides, or with an open bottle, the air will change gradually and surely.

"It will be observed that the frame work is made wholly of two by fours, with the exception of the rafters which are two by five, the studding being placed four feet apart and the rafters two feet apart between centers. The boards are laid horizontally.

"Most of the front of the house is filled with door and window openings, which is easy of construction, and requires a small amount of material.

CAUSE OF DAMPNESS IN A HEN HOUSE

"The intent has been to construct a house that first of all should provide fresh, pure air; second, that would insure reasonable dryness; third, that would be as warm as is consistent with fresh air and dryness without the use of artificial heat, or overcrowding the fowls.

"Dampness in a hen house is caused primarily by warm air taking up moisture by evaporation and having the moisture condensed (squeezed out) by becoming cold. Moisture occurs in a hen house from the breath of fowls, from the droppings and the water pans. If the house is open, this air laden with moisture can pass out readily so that the air within is as dry as the air without. If the air is closely confined in a tight house, condensation takes place inside the house.

"If the house were as tight on the front as it is on the other sides, top and ends, and without ventilation, the air would become warmer, thereby absorbing more moisture which, when the outside walls become cold, would condense the moisture by coming in contact with the cold walls. The moisture when condensed out of the air makes the litter and walls damp, and we say that the house "sweats." Whenever this moisture is again taken into the air, the house is made cold by the process of evaporation. That is one reason why a damp house is a cold house. This principle may be easily tested by observing how much colder a hand becomes that is wet than the one that is dry, the temperature conditions being the same, and how sprinkling the floor of a room during hot weather cools the air.

"It will readily be seen, therefore, that houses are damp, first because they are tight, which prevents the moist air from

passing out, and second that the walls either solid or with a dead air space become cold, which causes the moisture to be "squeezed out" from the air. Dampness then can be prevented by avoiding extremes of temperature and by providing an easy exchange of air.

THE BEST WAY TO VENTILATE A HEN HOUSE.

"The most economical and effective method of ventilating the house appears to be by window openings in the south side of the house, which during the larger part of the time, both summer and winter, are covered simply by wire, and which during stormy or excessively cold weather are covered by a cloth window. This, if the house is tight on all other sides, allows for a quiet diffusion of air with the least possible draft. The reason why the modern ventilators, which work quite satisfactorily in dwelling houses and barns, fail to work in a hen house is that there is so small an amount of heat generated by the bodies of the fowls in proportion to the amount of air space; and second, from the fact that the house is subject to so many changes through the opening and closing of doors and windows, or the loose construction which sets up counter-currents, causing the system to fail to always "draw" in the right direction. Pure air is even more important for poultry than for other domestic animals. This is because their body temperature is 103 to 105 degrees which is several degrees higher than it is with most animals. The body temperature is maintained by combustion of food nutrients with the oxygen of the air. If oxygen is lacking, the body fires smoulder and impure blood results.

THE AMOUNT OF WINDOW SURFACE THAT SHOULD BE PLACED IN A HOUSE

"The modern hen house must provide healthfulness and good cheer by admitting an abundance of sunlight, which shall have direct access to every part of the house. This is obtained most effectively by placing the top of the window high and the bottom low. This makes a comparatively long, narrow window, and provides for a wide sweep of sunlight as the sun passes from east to west. By placing the windows near together, and making that part of the partition next the front of the house of wire, the sunlight can pass through so that each pen gets the benefit of the sunlight from its window and that of the other pen also. (For experimental purposes the partition as shown is of wood.)

"The windows are hung on the side and swing against the partition in which position they are readily opened and

closed. When opened, as they should be during the entire summer season, they are in the most secure place possible to avoid breakage.

"This house is provided with 31 square feet of glass surface which is .51 square feet per fowl.

"The glass windows are two feet four inches by two feet eight inches, and contain eight by ten inches glass.

THE USE OF CLOTH WINDOWS

"Each pen of the house is provided with a cloth frame hung at the top, covering a window opening six feet four inches by three feet four inches. The two cloth windows furnish 84.3 square feet of cloth surface, which is nearly one square foot per fowl, about two and one-half times as much cloth surface as glass area. The top of the window is six feet eight inches from the floor, the bottom three feet four inches from the floor.

THE BEST WAY TO MAKE A HOUSE COOL IN SUMMER

"It is as important that the house be kept cool in summer as it is that it shall be warm in winter. It is a common fault in hen house construction to overlook the importance of providing for the free circulation of air, particularly the escaping of warm air, which accumulates in the higher parts of the house. In order to overcome this defect in a measure, an opening is provided about the windows where a door hung at the top swings out, shading the opening so that the sun cannot shine in, and permitting the warm air which accumulates at the highest portion of the roof to pass out freely. This is intended primarily for hot weather use, but can be used to advantage at other times. The cloth window is hung so as to be swung outward, thus forming an awning during the hot weather.

NECESSITY OF A DUST BATH

"A dust bath is a necessary evil. It is necessary to provide the hens with their most natural, most effective, means of destroying lice. It is an evil because necessarily the dust that is kicked up must be breathed by all of the fowls in the house. This dust also causes the house to be dirty.

"An attempt has been made in the house described to construct an inexpensive, warm, dry, sunny dust-wallow that will leave the least possible dust in the house. It is provided by constructing a well six or eight inches deep in the floor

of the house directly under the glass window. This was planned for when the floor was made. A two light cellar sash two feet four inches by two feet is placed under the glass window, and is hung at the top so as to swing outward. A wire screen covers the opening on the inside. The dust wallow can be emptied or filled readily from the outside. An incline on the inside from the window sill to the floor covers the dust wallow. The hens enter from a narrow opening at the end. This arrangement furnishes a splendid dust wallow, with very little dust escaping into the room except when fowls come out to shake themselves, which they frequently do. This is a decided improvement over the dust box ordinarily provided. Use sifted coal ashes or road dust with a little land plaster for the dusting material.

SATISFACTORY NESTING AND ROOSTING ARRANGEMENTS

"The entire inner arrangement of the house is portable. The platform, the perches, the nest boxes are all movable without drawing a nail, which facilitates fighting vermin.

"The arrangement here described provides for a trap nest for which detailed plans are furnished. If trap nests are not desired, the nests will be located in the same place, but will have one door hung at the bottom in front of the nests, which are located under the platform, the hens entering from the rear.

"Nests are provided in the proportion of one nest to about five fowls. There are about 18 linear feet perch room in each pen, which is about seven inches perch room per fowl.

"A broody coop is provided in connection with the roosting arrangement where it is most out of the way, and most convenient to place fowls as they are removed from the nests in each pen.

"The floor of the broody coop is slatted, which keeps the floor clean and dry. The false floor is easily thrown back to clean the platform. A cloth frame hinged to the rafters can be shut down in front of the roost platform.

"This will only need to be used during exceptionally cold nights. The roosting room or hooded roost provides about thirty-six square feet floor space, including broody coop, and contains fifty cubic feet of air space, which is allowing one-half cubic foot of air space per pound of live weight of fowl, estimating that thirty fowls are kept in the pen and that they weigh on an average of four pounds each.

This would be too small if it were not for the cloth curtain which permits of exchange of air.

SCRATCHING SHEDS

"It will be observed that this house is all scratching shed. The only roosting pen provided is the hooded roost. This construction requires the least possible outlay for building material, permits the fowls to enjoy a sheltered, protected life in the open air on all days except during blizzard weather without the exposure of open sheds, and thus avoiding on the other hand the close, enervating, sultry conditions of the tight poultry house.

DESIRABILITY OF AN ALLEYWAY

"This house is the first two sections of a long continuous house, the remaining sections to be built later. No alleyways are provided. The hens, therefore, get the benefit of the entire floor space. The attendant is compelled to be among the fowls when caring for them, and much expense is saved both in labor and materials in constructing the interior of the house. Nearly one-fourth the expense in house construction is avoided by not having an alleyway.

"The land slopes gradually to the west, dropping about five feet in two hundred feet. This makes it necessary for the pens which are to be constructed late to be placed on different grades, the level of the floor of each two pens being lower than the pens on the east. This is the best method of placing poultry house on sloping land.

"Where the house is built to conform with the grade of land, the lower pens are colder than the higher pens because the colder air settles. The litter also works to the lower part of the pen leaving the higher portion of the floor bare. The appearance of such a house is very unsatisfactory to the eye. The house appears to be out of joint. The windows, doors, and all openings in front must necessarily be placed plumb, and cannot conform to the shape of the house.

POSITION OF THE DOORS

"Doors are provided in front of each pen, the attendant entering each pen from the walk in front of the house. This is necessary in a house intended for instruction purposes where each student has a pen. The sill of all door openings is six inches above the floor to prevent the litter from being scratched out. On a commercial ranch there would be very little necessity for entering from the front, the work being

done through doors near the middle of each partition, the attendant passing from pen to pen through the entire house. Where a trolley is to be used, the double door swinging both ways on reversible hinges is highly desirable. Where trolleys are not used a single door swinging both ways on double hinges is preferable. A front door opening is convenient, but not necessary. Where the window swings on the side it can be used as a door if required to receive and remove litter, and also for passage on occasions where it becomes necessary, which is not often where the attendant passes through from pen to pen.

TRAP NESTS

"Trap nests serve an excellent purpose in the hands of colleges and experiment stations for instructional, investigational work. They are of practical application and value only to a limited number of persons who are engaged in commercial poultry keeping. Few poultrymen can afford to spend the time necessary to look after the traps the large number of times necessary during the day, to mark fowls and eggs and keep records of the chickens hatched therefrom. To the poultryman who will give attention to the necessary detail with a few of the choicest pullets each year, even for the first few months of production, much can be accomplished in determining approximately the best producers which can be used the second year for breeders.

"The main dependence, however, for selecting breeders should first be evidence of constitutional vigor and vitality as shown by rapid growth, healthy plumage, clear eye, heavy shank, and other indications of stamina, together with early laying qualities and general action and appearances up to and including the time they are used for breeding purposes.

BILL OF LUMBER MATERIALS FOR THE LAYING HOUSE

35 bags Portland cement.

12 pieces 2x4 inches x 12 feet.

6 pieces 2x4 inches x 14 feet.

20 pieces 2x4 inches x 10 feet.

13 pieces 2x4 inches x 14 feet.

4 pieces 2x6 inches x 12 feet; milled like sketch.

2 pieces 1x4 inches x 12 feet.

2 pieces 1x6 inches x 12 feet.

All of above stock hemlock and surfaced four sides.

15 ft. 1x6 inches basswood or poplar; no shakes or cracks.

15 ft. 1x12 in. basswood or poplar; no shakes or cracks.

- 30 sq. ft. cove siding in 12 ft. lengths.
- 50 sq. ft. cove siding in 14 ft. lengths.
- 786 sq. ft. sap pine flooring in 14 16 ft. lengths only,
surface one side.
- 400 sq. ft. sap pine flooring in 12ft. lengths only, surface
both sides.
- 2 pieces $1\frac{1}{8} \times 4$ inches x 12 feet.
- 2 pieces $1\frac{1}{8} \times 4$ inches x 14 feet.
- 3 pieces $1\frac{1}{8} \times 2$ inches x 16 feet.
- 15 pieces $1\frac{1}{8} \times 3$ inches x 12 feet.
- 4 pieces $1\frac{1}{8} \times 3$ inches x 10 feet.
- 6 inches $1\frac{1}{8} \times 1\frac{1}{8}$ inches x 12 feet.
- 6 pieces $1\frac{1}{8} \times 3$ inches x 4 feet.
- 140 lin. ft. $\frac{1}{2} \times 1$ inches window stop.
- Above to be good-grade white pine surfaced four sides.
- Cost \$91.87.

BILL OF HARDWARE MATERIAL FOR THE LAYING HOUSE

- 2-9 light 8x10 inch glass.
- 2-6 light 8x10 inch glass sash.
- 2-2 light 12x14 inch glass (cellar sash).
- 3 pairs 3 inch light loose pin butts (pressed steel).
- 11 pairs 3 inch light **T** hinges.

HINGES—

- 2 pairs $2\frac{1}{2}$ inch light loose pressed steel butts.
- 2 pairs 4 inch double action spring butts (steel).
- Screws for all of above.
- 4 rim night locks (2 keys).
- 6 $1\frac{1}{2}$ japanned iron buttons.
- 3 lbs. 5d. nails (box).
- 10 lb. 10d. nails.
- 10 lb. 3d. nails.
- 25 lb. 20d. ails
- Locks.
- $7\frac{1}{2}$ prepared roofing.
- 2 gal. paint.

Cost \$24.35.

Total material cost \$116.22."

Laying House used by a prominent breeder in Trenton, N. J. See Chapter 3.

CHAPTER III.

LAYING HOUSE

This house is 24 feet wide without dividing partitions or floor. Is of the gable roof type, 8 feet high under the eaves and may be covered with any good roofing paper, shingles or tin. See illustration page 22.

The principle feature of the house is that a large number of laying birds may be kept together during the winter months for laying. The windows are arranged 4 feet apart on south side only and are opened up every day except during stormy weather, the principle being sought for by thus ventilating the house is to give the fowls "fresh air" conditions with ample protection from the north. As complete circulation of fresh air could not be had if the house was divided off in pens in the usual manner, therefore, the principle advantage in the laying house illustrated and being described herewith and used by a prominent breeder near Trenton, N. J.

It will be noticed by referring to the illustration of the interior of the house being described herewith that nests are arranged in continuous tiers the entire length of the house and set 2 1-2 feet above the floor or ground on center posts which also act as center supports for the house.

About 350 to 400 laying hens may be kept in this house to good advantage.

CHAPTER IV.

COMBINATION GLASS AND CURTAIN FRONT LAYING HOUSE.

For several years a leading breeder near Fredonia, N. Y., has been experimenting trying to devise a poultry house com-

binning both the fresh air and closed house principle so that he might close up his poultry house at night and yet maintain

ample ventilation without getting dampness which usually follows in closing up a house furnished with glass only.

This house is a combination glass and curtain front, the muslin curtain is opened during the day and night unless the weather is too stormy or severe.

This house is built 16x24 feet, being 5 feet high in the rear and 7 feet in front with shed roof which may be covered with any good brand of roofing material.

The entire construction of this house is simplicity itself, having single walls of matched soft pine, but stone or concrete should be used for the foundation if it is desired to follow out this plan entirely in the construction of the house as the ground floor in this house is elevated from front to rear about 12

inches, the purpose of this being to decrease the amount of air space in the portion of the house occupied by the fowls during the night time, the roosts being provided with drop curtains and used during extreme cold nights only.

Combination Glass Curtain Front Laying House used by a leading breeder at Fredonia, N. Y.

A well laid out Poultry Plant.

No. 1 represents brooder house, 100x14 ft. No. 2 heater, incubator cellar 16x24 feet. No. 3 double boarded nursery 102x24. No. 4 scratching shed laying house 160x12 ft. No. 5 duck house. No. 6 scratching shed, laying house 168x12.

Large capacity Continuous Laying House with Curtain Front. This house may be continued to any length desired.

CHAPTER V.

LARGE CAPACITY CONTINUOUS LAYING HOUSE
WITH CURTAIN FRONT

The illustration on page 26 represents a continuous laying house with a curtain front to each pen, size 16x16 feet. The plan of three sections or pens and a portion of the fourth is shown in the illustration. The first section, however, is utilized for a feed room and is of the same dimensions as the pens or sections referred to.

It will be noticed by the illustration that the door leading from the feed room to the first section or pen is simply **a strong frame boarded up tight two feet from the bottom** on both sides of the frame and covered the balance of the way with muslin, the door being hung on double action hinges so as to swing in or out. The necessity of boarding both sides of the frame in forming the door is to enable the operator to touch the door with his foot without the liability of loosening the boards and likewise the canvas if covered the whole length with this material.

The same kind of a door exactly is used between each section or pen.

The partitions between each pen or section is composed of 7-8 or one-inch boards and muslin, each partition being boarded up to a height of about three feet and provided with a suitable frame above the boarding upon which to tack the muslin the entire distance to the roof so that when the partition is complete each pen is economically divided or separated from the other and yet circulation without draughts through the means of the muslin partition amply provided for.

It will be noticed by the illustration that a trolley or tramway is provided for the transportation of feed the entire length of the building. This may be constructed of either wood or iron as may be preferred.

An illustration of a suitable feed box for attaching to the carrier or trolley outfit is shown in the **right hand corner** of the illustration. This box is made large enough to hold sufficient feed for the entire house and so it will just pass through the door leading into each pen. In passing the feed box from one pen to the other through the doors they are opened automatically and closed in a like manner, after the attendant. Consequently the advantage of having these doors hung on double action hinges.

The feed carrier is also used in gathering the eggs.

The special advantage of this house is that it has ample provisions for ventilation and with the additional advantage of a large laying house without aisles or walks yet having the advantages of such a house being a part of the make up of the interior construction.

Each 16x16 foot pen is provided with a curtain front, which is unusually large in size or about six feet square, hung on strong frames, and is opened every day regardless of the outside weather conditions.

The back or north side of this house is double boarded on 2x4's so as to provide an air space.

Each pen is provided with dropping boards about three feet from the floor with nests underneath.

A divided Scratching Shed and Roosting-room House for 25 Hens. In use by several leading poultry keepers.

The illustration page 28 represents a poultry house 8x14 feet with shed roof, 8 feet in front and 6 feet at the eaves, built of matched stuff and with single walls.

The special feature of this house is that the roosting room is divided off from the "living room" or scratching shed by a tight boarded partition, the scratching shed portion being provided with a large curtain front six feet square, while the roosting room is provided with a smaller curtain near or just under the ridge, one foot wide and four feet long tacked to a frame made of 7-8x2 inch material hung on hinges the same as the larger curtain in the scratching shed portion of the house.

The center partition is provided with a door made of 7-8 matched boards, this is kept closed except for a short time in the morning or until the fowls have all taken up their daily abode in the scratching shed portion of the house, then again at night to allow the fowls to take the roost.

The object being sought for in operating the house in this manner is so that a thorough airing may be given the roosting portion of the house every day and yet give the fowls ideal conditions in the portion of the house occupied by them at all times.

The nests are arranged in the rear end of the scratching shed.

The Briggs' Model Laying House.

The roosting portion of the house is provided with board floors while the scratching shed portion has a dirt floor.

CONSTRUCTION OF THE BRIGG'S MODEL LAYING HOUSE

"First square the ends of two planks twenty feet long, then take a third plank and make two planks ten feet long each. Now spike the twenty-foot plank on the ten-foot plank, using twenty penny nails; this makes a box twenty feet long and ten feet four inches wide, outside measure.

"Saw six pieces of 2x4, four feet long, then saw out one of these 2 by 8. These make the corner posts and also the center post. Spike these firmly on the plank box, one in each corner, and one in the center, letting the 2x8 piece come on the plank. Nail from inside and let flat side come toward ends. This will make the outside even. Then saw four pieces 3 feet 4 inches long to double the corners with. These nail from plank up on each end. This will make them all even on ends and sides. Now take a 2x4 ten feet four inches long; saw two inches out of each end, drop this in center of house on the plank, which drops bottom two inches below level of plank; spike firmly both ways. This keeps the house from spreading and is also a division. Take a 2x4 nine feet eight inches long, spike this at end of house, opposite end

The Briggs' Model Laying and Brooder House.

Diagram of end of Brigg's Model Laying and Brooder House.

Brigg's Colony House for raising Chicks, showing position of Brooder

from door, between the 2x4 even with top of plate. This piece stays and keeps the end from spreading and is also used to nail your end boards to. Now take two more 2x4s, saw ten feet three inches long, nail one in center of house to upright under plate, nail the other at end where the door goes in same way, using a twenty penny nail—just one in each end—as both of these come out after the roof is on. Now saw two sets of rafters, each rafter 6 feet 8 inches long. Heel must fit on plate and the top come together nicely.

“Make a pattern and keep it for future sawing, as you may have trouble fitting the first pair.

“Nail each set together on ground, then spike firmly on to the plates even with outside in each case. After this, put in the ridge, a 2x4 19 feet 8 inches long. Spike this in peak between the sets of rafters, letting flat side come even with south side of house and upper edge even with peak. Spike firmly through end of rafters, using three spikes in each end. Then fit a pair of rafters in center of house, raising the ridge in center a little above a level. Then put in two cross-pieces, three feet from peak on each side. Spike firmly through end rafters and center rafters as the roof boards nail on these. Now put in the door studding in center of end. Make the door about thirty inches wide, according to width of the boards, and about six feet high. Put in a 2x4 on each side, setting bottom on plank and sawing on top to fit under rafter. Now put a short piece on top and you have your frame complete, except a 2x4 from door frame to corner of house, to nail end boards to.

“Now we are ready for the siding. Take, if white pine is used, 1x8, 16 foot boards. Take 16 boards, sawing each in four feet lengths. This makes 64 boards, four feet long. Begin at a corner, nailing one inch from top of plate, as the roof boards come over these and just pass it. See that the joints are perfectly tight.

“After putting on both sides put on the ends, up and down, same as siding. For roof boards saw 14-foot boards one-half inch from center. This makes one-half of the boards just one inch longer than the other half. Plane off the grove on first board. Let this project two inches over end of house. Put on the south side first, using the shortest boards, nailing them about three-eighths of an inch from the peak, as the boards on north side nail over these, and in this case no ridge board is used.

“The roof boards should be very dry, and if put firmly together, no leaky roofs will result.

“Next saw out openings for the windows, and curtain frames. One opening for each.

"Just back of the center of the south side, cut opening for a glass window, nail a 2x4 lengthwise for window to slide on. Put the other opening in towards front from center about two boards from center of house and under plate, just the same as the window opening was placed and fit a frame covered with muslin instead of sash in this opening. (See illustration.)

"Saw an exit hole for the fowls in front part of house under the two openings and put in a slide which may be slid sideways.

"Now place the roosts. First, nail a strip up and down seven feet from back end. Put a 2x4 block on plank to keep this strip out so window will slide in between. Now nail a seven foot strip from end of house to the short strip sixteen inches below top of plate. Do this on both sides and on these boards lay your roosts 2x3, ten feet long. About five of these gives sixty hens plenty of room. Notch the boards one inch to lay them in. Do not nail them.

Put in the feed hoppers and nests, and the house is practically complete."

Portable house, wall sections erected, rafters set. (See chapter VI).

CHAPTER VI.

PORTABLE LAYING HOUSES

The following article by R. P. Ellis, on poultry houses with a description of portable houses was published in the February, 1910, number of "Poultry Success." (See illustrations number 2, 3, 32, and 72).

(2)—Portable house, showing dropping platform support and details of bolting sections together.

FEATURES OF A GOOD HOUSE

"The first principle in poultry house construction is proper ventilation. This is secured by having the front, or south side, in part open, thus allowing egress to the damp and foul air expired.

"Next in importance is the conservation of heat. Reduction of height accomplishes this (side 4 1-2 feet), as well as the muslin frames over the openings in the doors. Then comes provision for the admission of the greatest amount of sunshine—accomplished by open wire screened doors in south, and a large window in east.

"Next is the prevention of dampness, which is accom-

(3)—Portable House, floor beams, showing elevation above the ground and finished house in background.

(32)—Portable House, showing finished floor and method of beginning the erection of the wall sections. Front sections lying on the ground.

(72)—Finished portable house showing muslin frame and door constructions, also window.

plished by the open front doors, and the elevation of the floor above the ground, allowing an underneath circulation of air. This in a large measure is a preventive of roup.

"Furthermore, a house must be cheerful, commodious and clean. Open front doors, window and wooden floor well littered accomplishes these. A dirt floor raises too much dust, which is not pleasant for the hens.

"Economy of construction must be a feature. This house has the most economical shape—the square—and the sides are but four and a half feet, its ridge seven feet.

"Economy of time and labor in attending fowls is an important principle to be considered. This house accommodates sixty birds—as large a flock as is advisable in any house—which can be cared for **as readily as any small number** in one house.

"The smaller the flock, the greater the number of square feet of floor space required per bird. In this house something over three square feet per layer is sufficient because the flock is large. A house half the size would house but a third of the number.

"When the open front construction is used, the roosts must not be nearer than ten feet to the opening. The front roost in this house is twelve feet back.

"Sun is a great purifier and germ killer. The wire openings in the doors being five feet in height, the sun sweeps the two-foot high dropping platform in the rear. In a house deeper than fourteen feet this would not be the case.

"A good poultry house must conform to the principles above set forth. Besides doing this it should fit well into the general scheme of poultry keeping on the plant.

CHAPTER VII,

LONG VS. COLONY STYLE

"There are two general styles of poultry buildings—the "long" or continuous type, and the "colony," or individual style. The first was devised by those figuring out on paper how to consolidate, save labor, expense and trouble. So intent were they and are they that they lose sight of some of the essential laws of chicken hygiene. The long house forces the use of long narrow yards, which soon grow bare of vegetation, thus consuming more labor and expense in frequent plowings and reseeding than is saved by having the flocks in close proximity to one another. The saving of a wall per pen in the construction of a continuous house is more than offset by the expense in fencing the yards.

"Consequently, the one great argument in favor of the long house—economy—fall to the ground. The colony plan is as economical in the end, and is, indeed, the only safe way to house the stock when health and vigor are considered. One objection to the long house which in itself is sufficient to condemn it as a practical poultry building, is the virtual impossibility of isolating a flock in case disease breaks out in a pen.

"When we built the first of these portable houses, we made the floor and the roof portable, making a house of forty sections. Since then we have come to the conclusion, and have followed the practice, of building the four walls in sixteen sections,, laying the floor on the sleepers and nailing tightly and laying tile roof boards on uncut. The floor and the roof can be as easily pried loose and relaid as they could if made in sections and the sections nailed down.

CONSTRUCTION OF THE PORTABLE HOUSE

"Take twelve pieces of spruce, 2x4 inches, and 14 feet long. Among these you can find two that measure 14 feet 2 1-4 inches. Use these two as your east and west sills. Next cut two pieces 13 feet 8 1-2 inches for the front (south) and back (north) sills. **Nail the side sills to the front and back ones** and you will have a rectangle 14 feet 1/2 inch on the front and back, and 14 feet 2 1-4 inches on the sides. The fractional part of an inch is allowance for space between sections.

"Lay this in the position you wish the house to stand.

Have the front face south and a little towards the west, so that the rays of the late afternoon sun will enter the screen doors, which would not be the case were the house to face due south. The window in the east wall takes care of the morning sun. Now block up the four corners of your rectangle so that it is perfectly level. In doing so have the corner nearest the ground elevated at least six inches. It is very important to allow for an underneath circulation of air, thus preventing dampness.

"You are now prepared to take seven of your eight remaining two by fours and run them fore and aft, thus partitioning the square into eight rectangles. Use large spikes, two in each piece. Take a plank or two and lay across the center of these sleepers. See that the measurement across the center from side to side corresponds with the measurement of the front and back sill, namely, 14 feet 1-2 inch. Tack the planks so as to keep all sleepers straight and in place, and then run your last two by four under the center of the sleepers and firmly toe each of nine two by fours to it. Then firmly block up this center piece under each of the sleepers, and block up the center of the front and the back sill. Test all to see that the house is level. One of the illustrations shows the floor beams thus laid. Lay matched boards on these beams, running from east to west. Drive two nails, straight, into the boards at each beam. Use a 6-penny nail (two inches long). There will be no difficulty in prying the boards loose when necessary. You are now ready for the wall sections, which should previously have been made in your work room.

"The eight side sections are each 3 1-2 feet wide; one is taken up by the window on the east, leaving seven boarded solid. We use the so-called six-inch N. C. yellow pine, matched boards. Matched up they are not six inches wide. We get our height of the side sections by taking ten of these boards, driving them tight and measuring the distance. They are then nailed on the narrow side of two by three dressed spruce, with a 3 1-2 foot piece of the spruce on top. This is for three of the sections. Two by three dressed stuff usually measures 1 3-4x2 3-4.

"In making the end sections of the east and of the west walls, the uprights are not set flush with the edge of the boards, but are set 1 3-4 inch (the narrow width of the upright) in from that edge. This is to allow the juncture with the front and back wall sections. The window section consists of a frame of four pieces of the 2x3 spruce, 3 1-2 feet wide, and the same height as the other sections. The window is fitted into this.

"The sections are bolted together with three four-inch carriage bolts, five-sixteenths thick. When so fastened, the four sections of the east or west wall measure exactly 14 feet. The front and back sections are more difficult to make, as they are on a bevel.

"The 2x3 (dressed) spruce is laid on edge along the top of the front and back sections. The three-inch face is flat on the end sections where the junctures with the side walls are made. These end sections are made with four-foot boards and the boards are allowed to project over the end upright the width of the boarding. In this way, the front and back end lap the boarding on the side wall end sections, and the projecting ends of the boards on the side wall sections lap the upright on the front and back end sections.

"The tall uprights in the four middle sections of the back and front are of 2x4 dressed spruce. The others are 2x3 dressed spruce. It will be noticed that these sections are four and three feet respectively. This is to allow proper height for the door. A 2x4 piece is put in the bottom for a sill and a 2x3 piece as high up as possible completes the door opening. **These pieces are left out of the rear sections, the whole rear being boarded up tight.** Four bolts are used to fasten the tall sections together at the center and three bolts in all other places, making fifty bolts for the house.

"It will be found that the 2x4 center uprights project beyond the 2x3 top sill nailed to them by two inches. On this ledge is laid the ridge, properly notched to set flush. It is of 2x4 dressed spruce. A 4x4 dressed spruce center post is used to support the ridge. **The ridge is fastened with an angle iron brace.** Three 2x3 dressed spruce rafters are nailed in place.

"Use 16 foot matched boards for the roof. Lay them fore and aft, allowing half the width of a board to project over the side walls as eaves. Begin by laying the first board on in this fashion, after having planed the top edge of the side wall section boards to the proper bevel so as to insure a tight fit for the roof. If your rafters are cut the same length as the front and rear sections the house will come up square and straight. In nailing the first board or two on the roof see that the side wall sections are in alignment, and also that the front and rear sections align. A little care is needed here, or the whole structure will look awry.

"Let the roofing board project four inches in front, but be cut off flush behind. Cover the roof with a cheap two-ply tar paper, as you cannot save the roofing intact when moving. We lay the paper, beginning at the front, from one side over the ridge and down to the other side, fasten down

with lath. Ordinary tar paper lays 30 inches to the weather, and six strips will suffice. The sixth strip is wrapped over the back and nailed down on the back wall, thus assuring a tight joint over the birds' roosting place. If the roof is put on right, the tar paper need not be wrapped over the side edges of the roof onto the side walls, but can be cut off flush with the roofing board.

"A 3x4 foot window is procured and fitted into the second section from the front in the east wall. It should be hinged on top so as to swing outward.

"A three-inch board is nailed around the bottom of the walls on the floor to hold same.

"The doors are made of 2x3 dressed spruce. We cut the ends to a 45 degree angle. The wide side of the spruce is laid flat. The illustrations show the form of the door clearly. We use one-inch mesh hexagonal wire netting in the doors.

"The muslin frames are of dressed 2x2 and fit into the upper and lower panels of the door. They are hinged to swing outward and are fastened back by long eight-inch hoods attached to the house, swinging with the doors when opened.

"The dropping platform is supported on five cross beams—one each nailed to side sections and three standing on up-rights. The construction is simple and is shown in the accompanying photo. The platform should be between 36 and 40 inches wide. The roosts—two in number, are placed 18 inches apart, the rear one being at least 10 inches from the back wall. The roosts are of 2x4 on edge, the top edge being rounded to fit the hens' feet. They rest in sockets cut out of boards nailed to the side sections and supported by a center prop. Each roost is in two sections to facilitate removal, for disinfecting or other purpose.

"The nests are along the west wall and should be six to eight in number, unless trap nests are used, in which case twelve are needed, and the right wall will have to be used as well.

"On the center post the egg record sheet can be tacked and a thermometer hung if desired. Lower down the galvanized two-gallon wall fountain can be hung. In some convenient place the grit and shell hopper can be hung, unless a small four-inch deep box placed before the unused door takes the place of it. We use the box as it is easier to fill and the birds seem to like to scratch a bit and select particular pieces.

"An excellent dry mash hopper can be made from a Soap box, or other deep box. The method of cutting the side of the box is shown in the simple illustration herewith. It should be hung up high enough to allow

hens to feed but not to waste the mash. I have found the dimensions of the feeding opening well adapted to preventing a waste of the material. Have the opening about ten inches above the floor for Leghorns and more for larger birds.

HANDLING THE LAYERS

"This house will accommodate sixty to sixty-five Leghorns, or a less number of larger fowls. Cover the floor six inches deep with coarse sawdust from a mill planer machine. This acts as a non-conducting material against the cold from beneath, serves as scratching litter, answers the purpose of a dust bath, and helps to keep away disease germs (fresh sawdust contains a number of purifying elements).

"The Maine Experiment Station's feeding methods are good. We adapt them to our purpose as follows: At night, when taking in the water fountain, three quarts of cracked corn are thrown in the litter and kicked under. Next morning, when watering, feed two pounds of green bone per house. At ten o'clock, three quarts of whole wheat are given, and at twelve the green food—cabbage, alfalfa or sprouted oats.

"The hopper is kept filled with a dry mash of the ingredients enumerated below, and we find a little moistened, and fed at dusk, just about an hour before the hens go to roost, encourages them to fill up with a bit more of food, which is most desirable. The egg is produced from the food consumed in excess of the bodily needs.

"Mash ingredients: Wheat bran, two parts; corn meal, one part; wheat middlings, one part; gluten meal, one part; brewers' grains, one part; oil meal, one-fourth part; beef scraps, one part.

"**Note:**—If green bone is fed regularly at the ratio of one-half ounce per bird per day, the beef scraps can be omitted in the mash. But the birds eat more of the mash when it contains the scraps. If so, I would advise reducing the bone to one and one-half pounds per day to each house of sixty or sixty-five, as too much meat food is not good. The fellow who runs the bone cutter will appreciate this.

CONFINE HENS TO HOUSE IN WINTER

"Now as to a most important regulation. Don't let the hens out at all during the entire winter. There is nothing they can get outside but chills and cold feet, both of which put a stop to laying. Keep them in and feed them all the elements their nature requires, and if you have the right stock,

properly matured, a heavy egg yield will reward your efforts. Don't forget your charcoal, grit and oyster shells.

CLEANLINESS IMPORTANT.

"Disinfect all drinking vessels and troughs frequently. Keep sand on the dropping platform and clean without fail every morning when watering. This will keep lice away, prevent odors, and keep the sawdust clean. Have the whole floor space clear so that the hens get the benefit of every square foot of floor space.

"At night close the screens. In day time during sunny weather, always keep them open no matter how cold. On gloomy days, open the bottom screens and leave the top ones closed. During storms, of course, close all.

"In localities where the temperature drops fifteen or twenty degrees below freezing, a burlap curtain can be used in front of the roosts. Otherwise, the muslin screens on the doors are sufficient. In this connection, bear in mind that while the house is an open front house, it is not to be made with cracks between the boards. On the contrary, it must be built very substantial and made tight at all joints so as to prevent drafts.

BILL OF MATERIAL

"Floor—12 pieces 2x4 spruce, rough, 14 feet long; 32 pieces 6 inch N. C. matched boards, 14 feet long.

"Walls and doors and rafters—70 pieces 6 inch N. C. matched boards, 3 1-2 feet long; 40 pieces 6 inch N. C. matched boards, 4 feet long; 26 pieces 6 inch N. C. matched boards, 3 feet long; 4 pieces 6 inch N. C. matched boards, 14 feet long.

"For the bevel angles of front and back section—15 pieces 2x3 dressed spruce, 14 feet long; 7 pieces 2x3 dressed spruce, 16 feet long; 4 pieces 2x4 dressed spruce, 14 feet long; 4 pieces 2x2 dressed spruce, 14 feet long.

"For dropping boards—7 pieces 6 inch N. C. boards, 14 feet long; 2 pieces 2x4 spruce boards, 14 feet long.

"For roof—36 pieces of 6 inch N. C. matched boards, 16 feet long.

"For fastening walls to floor—56 running feet of 3 inch boards."

CHAPTER VIII.

COMMON TYPE OF MUSLIN FRONT LAYING AND BREEDING HOUSE

Illustration 5-B represents a common type of muslin front poultry house of sufficient capacity to accommodate 12 to 15 head of fowls and which has proved generally satisfactory.

5 B—A common type of muslin front Colony Breeding and Laying House which has usually proved satisfactory to those using them.

The special feature of the house illustrated is that when the door and muslin front is open the entire front is practically exposed to outside atmospheric conditions so that on sunshiny days every nook and corner of the house is reached by the rays of the sun, thus greatly enhancing sanitation.

The house has a double floor with tarred paper between, the whole construction set on posts, one foot from the ground level admitting of plenty of circulation underneath.

The outside walls of the house are single.

Combination muslin front Scratching Shed and Laying House. Elevated type.

CHAPTER IX.

COMBINATION MUSLIN CURTAIN SCRATCHING SHED AND LAYING HOUSE (ELEVATED TYPE)

The illustration, page 46, represents a type or principle of houses in use by the writer upon his half acre place within the city limits. The house is 10x40 feet single boarded with curtain fronts, that is each pen approximately 10x13 feet in size, is provided with a muslin curtain front. The pens are separated from each other by boards and muslin. The boarding extending about three feet from the floor while muslin extends the balance of the distance to the roof.

The communicating doors between pens are simple frames with muslin tacked on above the boarding which also extends **three feet high. Doors are hung with double action** hinges made to swing either in or out.

The foundation upon which this house sets is concrete posts to the ground level with all wood posts top of these, although the drawing shows solid walls except in front, which is an error so far as the house we have in use is concerned, however, we have no fault to find with a foundation such as is shown in the cut except the cost. Concrete posts are much cheaper and answer the purpose just as well as solid walls.

The illustration does not show elevation enough, either, as the house proper should be elevated above the ground **at least five feet** so as to admit of easy access to all parts of the opening or space under the floor by the attendant. The principal objection to scratching sheds underneath a laying or breeding house, is that sufficient head room cannot be gotten except by elevating the superstructure to quite a distance, however, where one is short of room the elevated type of poultry house is about the only type that fills the bill for this particular purpose.

CHAPTER X.

PLASTERED WALL POULTRY HOUSE

Plastered wall Poultry House. Used by a gentleman in Babylon, N. Y.

The house we are about to describe is plastered inside and out on lath, the material used was composed of 3 parts sand, 1 part Portland cement.

The illustration above shows the frame or skeleton of the building before the laths were applied, except on the right hand corner, where illustration shows how the lath are applied on both sides of the studding.

The studding is common 2x4 while the sills are 4x4.

Glass windows with 10x12 lights are used, but muslin curtains can be used in place of the glass if so desired.

There is no floor in this house. The owner experimented with several styles of houses and finally built a small house

of the type herewith described and this proved so satisfactory to him that he decided to build a large one.

The owner lives within a short distance of the ocean and he found that the penetrating salt air in winter would go through the walls of the common type of house, but in the plastered house he found one able to resist the salt air and extreme outside weather conditions such as he had to contend with. Water has never been known to freeze in this house, so we are informed, moreover it is practically vermin proof.

CHAPTER XI.

LOG CABIN POULTRY HOUSE

Log cabin Poultry House which may be built at a small cost,

The following description of a Log Cabin Poultry House was furnished by Adolph Hoescher.

"We often read of the possibilities of the piano-box as a cheaply constructed poultry house and while the writer believes that a handy man with a hatchet and saw can transform such box into a serviceable coop, yet he believes that for cheapness, durability and service nothing can equal this house which I am about to describe.

"In the first place it has the appearance of a log house, but to build a poultry house of logs would necessitate considerable labor, cutting down trees, etc., if indeed they could be found sufficiently abundant; so the writer saved this labor as well as the cost of material by using discarded railroad ties. These ties are cut from white cedar, therefore, not as heavy as oak, and as fast as they become partly decayed they are discarded by the railroad company, and new ones placed in their stead. Carefully selecting the best of these ties the writer built this cabin. It required seventy-seven ties to complete the building which is about 8x16 feet, as the ties are uniform **8 feet long and 6 inches thick, sawed smooth on top and bottom, placed together as shown in photo, so laid that each tie crosses a joint or where the ties immediately under meet.** After a manner in which a stone mason lays his stone, each tie after laid into place is spiked, using a large wire nail for the purpose, sawing out the door and the windows as you go along. The roof is a gable similar to any other roof, requiring ten pieces 2x4, 6 feet long boarded up with lumber taken from packing boxes and covered with single ply Flintoid roofing paper, the small cracks between the ties were pointed up both inside and out with mortar, using about 2 bushel of lime and 2 barrels of sand; a coat or two of white wash on the inside completed the job with the exception of the fixtures. On the left end of the building there is a small window in the gable, on the inside of that end of the building is a loft 6x8 feet used as a storage for brood coops and what nots, but could be used as a pigeon loft if so desired. Under this loft are the dropping boards and roosts, a roller curtain of muslin is attached to the under side of the loft floor, and in extreme cold weather it is pulled down to the edge of the dropping boards, at night, completely enclosing the birds and forming an additional protection against the cold.

"The cost of the building was as follows:—2x4s for the roof, \$1.00; roofing paper, 2 squares, at \$2.25 equals \$4.50; 2 window sashes, second hand, \$1.50; case lumber \$1.00; hardware, lime, etc., \$2.00. It should be said that the door is a home-made affair, made of one inch case lumber, double thickness. In this coop I have protection against frost in the winter, the sun in the summer, and the chicken fancier at night, but first he must pass my Collie.

"House is about 8x16 feet, 6 feet 6 inches high at the eaves or top of walls and the total cost \$10.00."

CHAPTER XII.

FULL CURTAIN FRONT TYPE POULTRY HOUSE

The full curtain type front of Poultry House used by a poultryman in Chenango Forks, N. Y.

The type of poultry house that we are about to describe is not in any material sense different from the modern up-to-date type except in manner of ventilation which feature we desire to call special attention to.

It will be noticed by the cut out section of the illustration that ventilation is provided for underneath the roost and backward and then up as the arrowheads point, allowing the air to make a complete circuit around the outside of the roosting room proper, top and bottom without direct draft. The roosting room is provided with a muslin drop curtain, a three inch opening at the top of the curtain the entire length being left entirely open at all times for escape of moisture which may be exhaled by the fowls during roosting hours.

The nests as shown in the illustration are of the "dark nest" pattern, the fowls entering the same from the back side next to the outside wall. These nests are built in tiers or sections and are portable to admit of removal for cleaning. Each nest section is provided with a solid drop door for convenience in gathering eggs.

CHAPTER XIII.

A PROPERLY VENTILATED POULTRY HOUSE

A properly ventilated Poultry House, designed by C. F. Trafford,

In presenting for the consideration of our readers illustration above we do so to suggest the personal ideas and deductions of one who has had much to do with the compilation of Up-to-date Poultry Houses and Appliances, particularly the illustrative portion of the same.

After having considered the salient features of all the various types of houses illustrated and described in this book with the additional advantage of having visited hundreds of successful poultry keepers during the past several years, C. F. Trafford, the illustrator of this book, would undoubtedly build for himself a type of house such as is represented by illustration above.

Mr. Trafford claims that this illustration represents a perfectly ventilated house combining the fresh air features of the other types of so called fresh air houses and all openings may be kept closed without retarding the circulation of air through the building.

This house cannot be built properly without a gable roof, as the room or garret portion of the house above the upper floor is of the utmost importance in carrying out the ventilation principle sought for or involved.

The upper floor which is really not a floor, in fact is composed of 2x4s set 3 inches apart so as to admit of plenty room for air passage between them. These 2x4s or the upper

floor is covered to a depth of one foot with fine oat straw. At either end of the gable an opening is provided in size three feet square with a close fitting frame covered with muslin or burlap and on hinges.

The principle involved is that a continuous circulation of fresh air will keep moving through the building all the time, not only when the doors and windows are open, but as decidedly so when they are closed, but at not so rapid a rate, of course, in the latter case.

The house may be constructed in any size desired so long as the principle of ventilation, being the main feature sought for, is carried out as directed above.

Some ventilating plans often used

CHAPTER XIV

SECTION OF CONTINUOUS LAYING HOUSE

(67-69) One section of a style of laying house in use on a poultry farm in Chatham, N. Y.

These houses are 100 feet long, 14 feet wide, 8 feet high, in front, and 5 feet in the back. Dimensions of scratching pens 10x10 feet; or roosting pen, 10x4 feet.

Front of scratching pens have muslin mounted on frame (6x6 feet) arranged to swing back and up on clear, warm days; outside of space occupied by frame covered with one inch wire netting, which is necessary to keep out sparrows.

Front of roosting pens. Door five feet six inches by two feet and six inches, covered with wire netting and muslin; rest of front boarded up three feet, one board one foot wide being hinged to give access to nests. Above boards wire netting and outside netting; frame covered out and up; size frame two feet and six inches by seven feet and six inches.

Pens are divided by wood partitions, three feet high, above that being two inch netting,

doors, between pens frame two feet and six inches wide by six inches high, covered with two inch netting, and also muslin two feet high to prevent cocks from fighting.

Inside roosting pens have two roosts, under which is a board floor or ground covered with peat moss to the depth of three inches. This absorbs all the ammonia in the droppings and no fumes reach the chickens on the roosts. The peat moss is raked over once every two weeks, and cleaned out but twice yearly, thus being a great labor saver. It makes a fairly good fertilizer for the garden. The Dutch peat moss is by far the best and costs about ten dollars a ton in New York.

CHAPTER XV.

COMBINATION CURTAIN FRONT SCRATCHING SHED LAYING HOUSE—LOW DOWN TYPE

(29)—Combination curtain front and scratching shed. Low down type.

The house shown in illustration number 29 is 12x16 feet, divided exactly in the center, so that each department is 8x12 feet. The upright section is double boarded of matched material but can be built with single walls and undoubtedly prove fully satisfactory. The low or scratching shed section has single walls, this is provided with glass as shown in illustration.

Above the roof of the scratching shed section is shown a muslin or curtain front in the upright portion of the house. This should be 2x12 feet tacked on all four sides as this is never opened.

The partition between the two sections is solid except that a door hung on hinges or made to slide is provided for the fowls to pass to and fro from one section to the other.

CHAPTER XVI.

UP-TO-DATE COLONY HOUSES AND COLONY HOUSE BROODERS

The term colony house refers particularly to a type of house built of convenient size so it may be easily moved from one place to another. Colony or portable houses are used by poultry keepers more particularly for young stock on the ranges, these small or colony houses being scattered or separated at some distance from each other.

A common practice among poultry raisers who use colony houses is to set an indoor brooder in these of some reliable make, placing from 75 to 100 chicks in each house and brooder and as soon as the chicks outgrow the brooder it is taken out and chicks given the entire house, where the pullets are allowed to remain until ready to be changed to winter laying quarters. At the time of taking the brooders out, the cockerels are usually separated from the pullets, being given quarters by themselves in bunches removed a sufficient distance from the pullets so they will not worry the pullets while they are maturing, or else placed into yards.

The use of colony houses is not confined entirely to those who have farms or a large area upon which to operate, in fact the city or village fancier always finds the colony or portable type of poultry house just as convenient and useful as those who have plenty of room and who conduct the poultry business on a large scale. Many city or village, in fact farm poultry raisers follow the plan of using colony or movable houses exclusively with good results. Another plan of poultry housing which is in popular favor is the colony system where colony houses built too large for portability are used, these houses being set from 10 to 50 rods apart, and each flock being given absolute freedom. This plan, however, could not be used by fanciers where a given number of birds must be kept separate from each other for record or pedigree breeding.

The smaller types of colony houses are used more especially for convenience in raising young stock as these can be moved easily from one place to another; for instance, from the corn field to the oat field, to the orchard, or other loca-

tions where the most healthful conditions abound at all times.

Most types of colony houses are built of single walls of matched stuff and vary in size from 3x4 feet to 8x10 feet.

LEADING AUTHORITIES ON THE ADVANTAGES OF COLONY HOUSES AND ACCESSORIES

J. Dryden and A. G. Lunn, in a circular of the Oregon Station, state that—

“Ventilation can best be furnished by leaving one end of the house open or covered with burlap or canvas, using no glass windows unless necessary for light. The idea of building a warm house should be abandoned. It is shelter that is needed. The house should be built in such a way that the fowls will not roost near the open front where they would be exposed to winds; not should it face the prevailing winds. A long house is more expensive to build, for a given capacity, than one more nearly square. A long, narrow house is also a cold house, having more exposed surface for a given capacity than a square house.

“The size of house necessary for a certain flock will vary in different sections. Where there is little or no snow and where the fowls can be outdoors every day in the year, two square feet of floor space per fowl will be ample. Where the climate is such that the fowls will seek shelter part of the year, rather than go outdoors on the range, considerably more space should be provided, say four to five square feet per fowl. The idea should be not to crowd them so much that their activity will be interfered with. Whether the shelter is provided by enlarging the house or providing cheap scratching sheds is immaterial. Two square feet per fowl, or even less, is ample for roosting quarters.”

W. S. Jacobs, of the Arkansas Station, says—

“Roosts should be made low or near the ground—not higher than two feet. There are several reasons for this. Fowls of the heavier breed can not fly high, and those of the lighter breeds frequently injure the soles of their feet in jumping from high perches. Roosts should be made all the same heights; for if they are made some higher than others the birds will all flock to the highest ones and crowd, which is undesirable.

“When dropping boards are used they should be low

down, to permit of easy cleaning. They should be made of matched lumber and be 20 inches wide for one perch and 3 feet wide for two perches, the first perch placed at least 10 inches from the wall. A good roost may be made from material 2 by 2 inches, then slightly rounded on the edges."

According to Dryden and Lunn—

"Poultry keeping is most successful where the colony system prevails. The colony system means the housing of fowls in small houses, preferably portable, where the fowls **have free range**. The chief advantage is that the fowls are more active or busier than when confined in yards; second, there is less danger from outbreaks of disease, as it is possible to keep the houses on clean ground by moving them occasionally; and third, the fowls require less feeding and care, as they pick up considerable food on the range. Another advantage of this system is that the fowls will rid the farm of many injurious insects, such as grasshoppers. Then, the colony system will fit in with crop rotations and for part of the year the fowls will live on the stubble fields."

Figure 2 represents a successful colony house with a cloth front, which was used at the Utah Experiment Station. The

FIG. 2.—Utah Station colony house with cloth windows.

trap nests in the rear of the building can be opened from the outside (fig 3). Fig. 4 is an illustration of a Rhode Island closed-front house. A good size to build a colony house is 7x12, which is large enough to accommodate 30 to 40 fowls, yet is not too heavy to be drawn by a pair of horses when it is desired to move it to a new location. Be-

low are given the details for constructing a colony house (fig. 5) of this size, as recommended by the Oregon Experiment Station.

"Construction of the Colony House.—The runners are

FIG. 3.—Utah Station colony house showing trap nest openings at the rear.

made of 3 inch by 6 inch by 14 foot rough material and act as side sills for the house. They should be beveled at ends, in order to slide easily. The cross sills are 3 inches by 7 feet. They are set 2 inches into the runners and 12 inches from the ends, and fastened with 1-2 inch bolts. When the siding is put on vertically there is no stud- ding used. The plates

are 2 inches by 3 inches by 12 feet, halved at each end. To the plates are nailed the 1-inch by 12- inch by 5-foot side boards, and these are battened with 1- inch by 3-inch. The siding is nailed flush with the top of plate and laps 3 inches on runners. The roof is one-third pitch, or 2 feet 4 inches at peak from top line of plates. There are five pairs of rafters, cut with a 1-inch plumb cut at plate. The roof boards are 1-inch by 3-inch material, set 3 inches apart. The roof is shingled and laid 5 inches to the weather. The front is cov-

FIG. 4.—A Rhode Island closed-front colony house.

ered with 1-inch mesh wire. The cornice is made of 1-inch by 8-inch boards and projects 5 inches outside of walls. The

frieze board, 1 inch by 4 inches, is nailed up tight against the cornice. The door is 2 feet by 6 feet and made from 1-inch by 3-inch material. The nest platform is 2 feet from the ground. It is nailed to a cleat on the side of the house and braced from top of runner.

FIG. 5.—Oregon Station colony house.

The platform is 22 inches by 5 feet. The nests are made of 5-gallon oil cans, the top and part of front being cut out; 2 inches is left of front to hold in nest material, and a small strip at top, which acts as a brace. Over the nests is fitted a sloping top, which keeps the chickens from standing on nests, and helps to darken the nests. The dropping platform is made of 1-inch by 8-inch ship-lap, is 2 feet 6 inches from floor and 2 feet 9 inches in rear. The slope permits the board to be cleaned more readily. For the same reason the boards should be put on from front to rear. The perches are made of 2-inch by 3-inch material, set flat. They should also be level and about 12 inches from dropping board in front. The roosts are set 18 inches apart.

"Lumber Bill.—Sills (runners), 2 pieces 3 inches by 6 inches by 14 feet, rough.

Cross pieces, 1 piece 3 inches by 4 inches by 14 feet, rough.

Plates, rafters, roosts, 134 lineal feet, 2 inches by 3 inches, sized.

Siding, 13 pieces 1 inch by 12 inches by 10 feet; 4 pieces 1 inch by 12 inches by 14 feet, finish No. 2.

Cornice, 54 lineal feet 1 inch by 8 inches, finish No. 2.

Base, 52 lineal feet 1 inch by 6 inches, finish No. 2.

Ridge and nest platform, 20 lineal feet, 1 inch by 5 inches finish No. 2.

Frieze and corner boards, 80 lineal feet, 1 inch by 4 inches, finish No. 2.

Battens and trimmings, 330 lineal feet 1 inch by 3 inches, finish No. 2.

Dropping board, nest cover, 80 lineal feet 1 inch by 8 inches, ship-lap No. 2.

Shingles, 1,000.

Cost of lumber, \$14.51.

"Hardware.—5 pounds 8d. cut nails.

1 pound 8d. wire finish.

2 pounds 6d. wire finish

3 pounds 2d. shingle nails.

1 pound 1 1-4-inch brads.

18 feet poultry netting, 1-inch mesh, 2 feet wide.

1 pair 4-inch T hinges.

1 lock.

Cost of hardware, \$1.60.

Paint.—1 gallon creosote, shingle stain.

1 gallon paint.

Cost of paint, \$2.

Cost of all material at Corvallis, \$18.11."

COLONY HOUSE FOR YOUNG STOCK.

(51)—Style of Colony House used for young stock on a large poultry farm at Aurora, N. Y.

Style of colony house used for young stock on a large poultry farm, Aurora, N. Y. These houses are 4 by 8 feet in size, 4 feet high in rear and 6 feet in the front. Shields are provided for lower doors as are sometimes necessary on chilly nights. These houses are always closed against danger from skunks or other animals. This view also shows arrangement of perches, four in number. These houses are made and designed by Mr. Wyckoff.

CHAPTER XVII.

CITY LOT BREEDING HOUSE.

One of the most practical city lot breeding houses we have ever seen we found in Binghamton, N. Y., in use by an enterprising breeder. He thus describes this house:

"The house is for a city lot and is made of matched and planed lumber the size is 4x8 feet, 3 feet rear and 6 feet front. It is made in panels; the back and ends are made in one panel, and the front is in two panels. The lower panel reaches to bottom of doors.

City Lot Breeding House.

"The doors are frames covered with paroid and swing out. Back of these doors are sliding frames covered with inch wire netting.

The ends each have a small door for the fowls to go out and in when yards are used. One end is open from top of back and is a triangle opening covered with inch wire for warm weather. In winter a frame fits this opening covered with coarse muslin and fastened in place by two buttons. The front also has a light of glass 12x18 inches under the door in the scratching floor part. This can be taken out in warm weather and a frame covered with inch wire used instead. The roof is a frame made of 7-8x4 inch lumber made separate and sets down over on all sides. This is covered with paroid which makes the roof very light and is easily handled. The interior of this coop is divided into two rooms 4x4 feet.

"The scratching floor part is matched and planed lumber covered with paroid. The other room is on the ground and

is filled to the top of the foundation frame with sifted soil, sand and sifted coal ashes. In front corner over the ground part and 2 feet from the floor are placed two nests. In the other front corner is placed the dry feed hopper raised above platform which is 12 inches from the floor, giving all the floor space for scratching room.

"The floor part should be in the end that has the opening, the fowls roosting in the earth floor end. The partition between the rooms is a two foot high frame with an 8 inch board at bottom and 2 inch pieces for sides and top and the space between covered with fine mesh wire which keeps the litter from being scratched over into the ground part.

"The roost is in the ground part and runs lengthwise of the house and is raised about 8 inches from the floor. The droppings go directly on the ground and are cleaned up every morning with the scoop and rake shown in the illustration.

"The frame for the foundation is made of 2x8 inch hemlock and is 1-2 inch shorter and narrower than the house. This will keep floors dry. The floor is laid on this frame and the ground part is filled even with top of foundation. This raises your house 8 inches above the ground level. This coop can be put up or taken down in 20 minutes and can be easily handled by one person.

CHAPTER XVIII.

COMBINED COLONY HOUSE AND BROODER

11 B—Colony House and Brooder as used by a breeder in Binghamton, N. Y.

Illustration 11-B represents a convenient type of combined colony house and brooder.

This particular house is equipped with a "Universal Hover" which hover is calculated to brood 50 to 70 chicks until old enough to get along without artificial heat. A larger number than this, however, can be brooded until they are about 3 weeks old.

This house is provided with a low partition or division between the brooder section and the "litter" or open section of the house. This division is about 6 inches high or just high enough so as to keep the litter from the open section back from the brooder section.

A liberal supply of grains is kept scattered in the litter section, so that on rainy, stormy days the chicks will get plenty of exercise and enough to eat, in dry, well ventilated and otherwise healthful quarters.

Chicks from the outside must enter this house by way of the open or litter section, the object of this being to induce sufficient exercise in the litter before entering the brooder, especially in muddy, rainy wather, to divest the chicks from mud or filth, which has stuck to their feet from the outside.

The designer of this coop claims that this is an important feature in bringing up strong, healthy chicks, as numerous disease germs are transported on the chicks' feet from the yards to the brooders in rainy, muddy weather into the brooders and in the brooders is where the infection really takes place.

The roof or cover of this house is what is termed double, although the under cover is composed of a frame and one inch mesh wire hung on hinges and this kept closed night and day except at feeding time. The upper roof or covering is composed of matched boards and covered with paroid roofing. This roof projects six inches outside the body of the house on all four sides.

12 B—Gable roof combined Colony House and Brooder.

The colony house and brooder combined shown in illustration number 12-B is exactly the same in dimension and general construction as the one shown in illustration 11-B, the only material difference being in the style of roof and location of the windows.

CHAPTER XIX.

SANITARY COLONY HOUSE AND BROODER

13 B—Sanitary Colony House—Brooder,

As will be seen by the illustration this colony house and brooder combined has movable floors, otherwise the general construction is the same as those shown in illustrations 11-B and 12-B.

However, this house is provided with canvas top under cover whereas 11-B has wire instead of canvas. 13-B also has curtain or muslin front on the brooder section of the house which may be seen by the illustration.

The upper roof or covering to be constructed in the same manner as the roof for 11-B.

This house may be fitted up or equipped with any good reliable indoor brooder of a sufficient capacity to accommodate

50 to 100 chicks until they are three to four weeks old

The "litter section" of this house is provided with a glass front back of which should be covered with one inch mesh wire as also the brooder section back of the muslin or canvas curtain.

The exit is upon the reverse or opposite side to the window referred to above.

The partition between the two sections should be built solid except for an opening just large enough for the chicks to pass from one section to the other and which may be opened or closed at will.

The purpose of this is to facilitate the cleaning process in other words so the chick may be driven from one section to the other while the floors are being removed and cleaned.

If a ground floor is desired at any time in one section or both, the floors may be removed and left out.

CHAPTER XX.

LOW COST COLONY HOUSE

Sections of a low cost Colony House designed by a Missouri poultryman.

The following description of a low cost really practicable poultry house is given by the designer:

"The cheapest constructed poultry house—in speaking of a low price house—is not always the least expensive, for a poorly constructed house of poor material may prove to be the most expensive one in the long run. A knot hole in the north side of one of the first houses I ever built cost me a cockerel worth ten dollars.

"In the plan herewith shown, I can say from actual experience that it is a low priced house, in cost of construction and best for the health of the birds housed therein.

"As shown by the elevation, you can see that it is strictly a 'fresh air house.' I could give you my reasons good and plenty, of my advance from the 'hot house,' 'open scratching pen,' with closed roosting room, up to the 'fresh air house,' during my twelve years with Barred Rocks, but it does not come within the scope of this article further than to say that God did not put feathers so thick on chickens to be housed in hothouses."

"The house as shown and built, is sixteen by

ten feet, eight feet high in front, three and one-half in back.

"It was constructed of No. 2 yellow pine dimension lumber. Dry goods cases bought at the store at about one-third the price that the same lumber in them would cost at the lumber yard. Good cypress shingles were used. (The roof is one of the most important features of a low priced house). Two inch mesh poultry wire for the open front.

"The bill of material was as follows:

5 pieces 2x4 16 feet long; 1 piece 2x4 14 feet long; 9 pieces 2x4 12 feet long; 4 pieces 2x4 10 feet long:	
162 feet No. 2 @ \$2 25	\$ 3 55
1 3-4 M. shingles @ \$2 75	4 80
1 1-2 rod wire @ 30c	45
20 pounds nails @ 2½c	50
7 dry goods cases @ 40c	2 80
4 cracker boxes (trap nests)	20
1 pair hinges	10
1 hasp and set	10
Labor (odd job man) two days	3 00
Total	\$15 50

"There will be some little work extra that any man that is handy enough to raise chickens will be handy enough to do without cost.

"A smaller house could be built at a lower price. That is, at about the same ratio per square foot, which figures in the house shown at a little less than ten cents per square foot of floor space.

"A house eight foot by ten would not cost over eight dollars built on the same plan. I selected the size shown, for in the fall when surplus stock is on hand it will accommodate about twenty-five pullets or cockerels nicely.

"During the breeding season a portable partition is used, thereby making room for two breeding pens each having a room eight by ten feet. Each flock to have use of the grass grown yard on alternate days or half of each day as preferred. I think the former plan better, as a laying hen will pick and eat more grass towards evening than during any other part of the day.

"Should it be more convenient to have the house face the north, the back or the three and one-foot may be wired and left open. The open part must always face the south.

"In conclusion I might add that the dry goods cases were selected as to size and quality, were all about two feet wide and from three and one-half to four feet long, and made from seven-eighths inch tongued and grooved white pine, free from knot holes. Use care in tearing them to pieces so as not to split the boards. Save the nails, as you will get about five pounds.

CHAPTER XXI.

A BROODER AND COLONY HOUSE

The designer of this house says:

"I will describe my own combination brooder and colony house, which I think is the best thing out; and can be made by anyone who is handy with tools.

"Fig. 1 gives a side view of the brooder, showing cover of brooder compartment raised, giving a partial view of interior with hover removed. It also shows the three inch circular ventilator with screen and tin slide cover. There is one

A Brooder and Colony House.

of these on each side directly opposite. Two large windows may also be seen. The one in the brooder proper is eight by sixteen inches, and fixed in a slide. A piece quarter round with slot cut in the square edge forms the top slide and sheds the rain. In warm weather or when used as a colony house, a wire screen may take the place of the glass or attached inside, leaving glass to be closed when it rains.

"The window in the lower part or exercise compartment, is constructed just like the other except that it is six by eighteen inches in size, with another one the same size directly opposite this and made tight without slide arrangement.

"I consider these slide windows a great feature, as they are so very convenient. First, for taking care of little chicks in cold or stormy weather, as it is not necessary to raise cover at all; secondly, they are large and admit an abundance of light; third, they are near the floor, rendering it easy to clean out and put in new litter; and, fourth, they may be opened on warm days to admit an abundance of fresh air.

"Figure 2 illustrates the partition between the compartments. The lower section, A, is a board ten inches wide and one inch thick, extending across and setting up firmly against corner blocks and fastened snugly into place by hooks, but may be removed easily when a colony house is desired. Above this is shown the heavy felt curtain which extends all the way across, and opens from one compartment to the other. At the left, C shows the door six inches wide which closes down and buttons behind the curtain on cold nights when chicks are small, or remains fastened up by a button on side walls of brooder, when a colony house is desired.

"D D are cleats extending around this compartment about nine inches from the base, on which the galvanized iron floor, Fig. 4, rests, supported near the center by face, e, with a V-shaped piece of band iron firmly attached to lamp slide, ff, which rests on cleats at each end and so arranged as to be easily removed.

"On top of the galvanized iron floor, Fig. 4, which is about thirty-four inches square, rests the wood floor, Fig. 3, on cleats two inches wide, extending all the way around so as to set down snugly onto the iron floor, making a tight joint so that no lamp fumes can get up into hover chamber, and also a two-inch space between the two floors, which is always warm, giving a warm, dry surface over the whole of this compartment.

"In Fig. 4, H represents a circular dome four inches in diameter and four inches high set into the iron floor with air-tight joints. It is twelve inches from the edge one way and in the center the other way. Around this dome sets an eight-inch cylinder with top ring perforated. Fresh air is admitted into this cylinder and under the hover by a one and one-fourth inch tube, i, which extends out through the end wall of brooder, and is protected from the weather by a

shield. This tube is not made fast, but fits snugly, and may be drawn out when removing the inner parts.

"Fig. 5 shows circular hover two feet in diameter with felt curtain six and one-half inches wide. This hover is made of inch matched stuff with two two-inch ventilator holes near the center, while at the center is a hole that fits down over pin in the support, Fig. 6, which is a cylindrical screen with wood top in which are two two-inch ventilator openings to match those in the hover. This support is six inches high and ten inches in diameter, and sets snugly down over the corrugated galvanized iron rim, J, in Fig. 3.

"K, in Fig. 2, is a slide window four by eighteen inches, also with screen, and is in upper part of the middle partition, and opens out over the roof of the exercise compartment. The glass in these slide windows may be made in two parts, one to slide each way so as to open full size of opening.

"The floor of the exercise room which is only one and one-half inches lower than the other, rests on corner blocks and may be easily lifted out.

"The main walls are of well seasoned inch pine, dressed on both sides and matched. Six-inch stuff works to best advantage. Floors are of half inch stuff well seasoned, matched and dressed on one side. The roofs are also made of inch matched pine, dressed one side, and may be covered with any kind of roofing to suit. In all, about one hundred and ten feet of lumber are required. The outside measurements are three by six feet at base, and thirty inches high at highest part, twenty-one inches at lower side of hover compartment, and eighteen inches at opposite end.

"The hardware necessary may be made by any local tin-smith or bought complete for about \$4.00 of Cyphers Incubator company, as the hardware for their 1907 brooder will fit all right.

"For an approach, I find nothing better than to throw up a little pile of dirt, first protecting the brooder by a thin piece of any old board. Using this I find that the chicks will find their way in the first day. With other rigs it takes three or four days for them to learn.

"This outfit makes a brooder as near perfection as you can find, and in five minutes may be converted into a cool, roomy and well ventilated colony house, which is altogether satisfactory to me"

CHAPTER XXII

GASOLINE HEATED COLONY HOUSE AND BROODER

Combination Poultry and Brooder House equipped with a gas heating arrangement which can be removed at leisure or when the chicks have reached the weaning age. The above drawings are self explanatory.

These illustrations represent a good type of gas heated brooder and colony house combined. The illustrations given of this house are self explanatory in a very large degree.

It will be noticed that a galvanized gasoline tank, capacity 5 to 10 gallons, is located upon a shelf built for the purpose in the rear of the house just under the roof at one end, it making no material difference which end. A feed pipe, size $\frac{1}{2}$ inch, leads from this to a gas burner situated in a tin box or drum underneath the floor as shown in illustration.

A four inch round tin or galvanized iron pipe for conducting hot air is situated lengthwise of the building about 8 inches from the floor and connected to the heat drum by means of an elbow passing down through the floor to a point within about two inches of the burner. At the reverse end of the

hot air pipe and about 6 inches from the extreme end, a pipe two inches in diameter is attached by soldering, rising to a height of about 12 inches, thence running parallel with the main heater pipe, finally ending and exhausting or emptying just outside the building on the same end which the source of heat is situated, namely the gas burner and drum.

The principal feature of this colony house and brooder is the manner of heating; in fact this heating principle may be used in almost any style of colony house brooder.

CHAPTER XXIII.

PIANO BOX COLONY HOUSES.

"An ideal poultry house made from a piano box. In use at Adams Basin, N. Y. This plan of utilizing piano boxes in poultry house construction allows of the largest amount of floor space without a large amount of additional or new material.

"Combination curtain front and scratching shed."

"Very little if any word description is necessary in order to convey to our readers a comprehensive idea of how to build piano box colony houses. Illustrations number 1, 10, 11, 12,

1—Colony House made from two piano boxes, and showing south front. Designed by the superintendent of an incubator company in Michigan.

A PIANO BOX COLONY HOUSE

Fig. No. 1. A Colony House made from a piano box.

10, 11, 12—An ideal Poultry House made from a piano box.

out chickens, and also eggs which are above reproach. As we only wished to keep enough poultry for our own use, a large house was unnecessary. A neighbor informed us that she used a piano box for her fifty hens to roost in, and that it made a good place for them. I thought that was rather subjecting hens to tenement life; however, I decided to get a piano box in Washington (11 miles by railroad) and construct a poultry house.

"Following is an itemized list of the cost of my poultry house, after which, a detailed description of its construction is given:

Piano Box	\$1 00
Piano Box, freight	25
Piano Box, hauled and delivered	50
Hinges and hasp	22
Netting and double tacks	15
Window, complete	60
Laths and window boards	32
One pound of wire nails	04
Eighteen lineal feet tar paper	55
Unslacked lime (1-4 peck)	05

Total cost\$3 68

"The accompanying drawing shows the house with front and end removed, giving the location of roosts, boards to catch dropping, box of two nests and a small dust box. The door and window arrangements may be seen in the photographs.

"The box is made of 'tongue and groove' boards, but to have it more waterproof and warm, as well as to exclude dampness, I covered the top, back and bottom with the best three-ply tarred building paper. This was first tacked on, and then laths, about eight inches apart, running with the length of the box were nailed over it to prevent the wind from tearing it.

"One inch thick pine planks were nailed along each end of the bottom, next to the building paper, to form a more durable rest for the house on (two 'old pumps in this case) the blocks which support it, about eight inches from the ground.

"As a smooth surface was necessary where the building paper was to be placed, the reinforcing strips had to be removed and all their nails being 'clinched' on the inside, a cold chisel and hammer were used to cut them off. A double supply of nails was then driven into each end of the boards from which the supports had been removed thus making it very

strong. To cut the opening for the window, several front boards were removed, after a window space had been marked on them, and they were then sawed accordingly.

"The two reinforcing vertical strips from the front were used as studding boards, and run from top to bottom, inside the box, on each side of the window. The right hand one also furnishes a strengthener for one side of the chicken's door. Its other side has a short piece of studding to which the left hand side boards are nailed.

"The long roosting pole is made easily removable, while the small one is held by tightness only. Wire netting was tacked over the window opening inside to admit of ventilation and still prevent fowls from flying out, or animals getting in at them by night, when the little door is closed.

"The exterior of the house was next painted (some I had on hand being used) and a liberal supply of whitewash was applied last to the whole interior, including its furnishings."

A good, cheap and serviceable colony house for young stock on range. These houses are usually made 4x6 or 6x8, single walls of $\frac{3}{4}$ matched boards.

CHAPTER XXIV

A LIGHT PORTABLE COLONY HOUSE

This house was designed for the purpose of providing a light yet durable house; one which could be carried easily from one place to another by two full grown men. The house complete weighs in the neighborhood of 300 pounds, the only real objection to this house may be said to be that it is so light that it has to be pinned or weighted down to withstand heavy winds.

The main features of this house outside its portability are: The walls or siding and roof is composed of Bungalow boards which preparation is very light, is fire and water proof and can be painted any color desired. This material can be purchased for \$2.00 per 100 square feet therefore, an economical cheap and serviceable material for building colony houses of the smaller type.

The material comes in strips 26x36, so the frame should be constructed in such a manner so that each strip will overlap the other on the upright strips composing the frame.

The materials used for the frame should be as follows: sills 2x4, uprights 2x2, plates 2x2, rafters 2x2, roof boards 1-2 inch thick, any width desired, same should be laid 3 inches apart.

This house can be built with or without floor as desired although the designer uses the house without floor with excellent results. The Bungalow board can be purchased of Mr. Roberts, the patentee and manufacturer of this material.

CHAPTER XXV

SHED ROOF COMBINATION COLONY HOUSE AND BROODER

15-B. Shed Roof Colony House and Brooder Used by a Prominent Breeder at Aurora, N. Y.

This house is the type of combination colony house and brooder in most general use, being the most economical and simple of construction. Illustration 15-B shows this style of colony house and brooder equipped with Universal hover. The illustration shows hover section composed of simple frame and muslin or burlap instead of wood.

The advantage of this is that perfect ventilation is secured about the hover section and around the brooder proper and yet ample protection is given to the chicks.

It will be noticed by the illustration that an open air space is provided on the top of the front side of the hover section and also an exit at the bottom next to the floor. This section is built 14 inches high.

Another feature of this canvas covered hover section is that if the chicks crowd some will likely be pushed from un-

der the brooder proper into the hover section where the temperature is not materially less than it is in the brooder, so chilling is impossible. The hover section is portable, therefore, easily removed for cleaning about the brooder. The brooder and hover section is removed entirely when the chicks are old enough to get along without artificial heat.

The house proper may be built of any size desired or of any material so long as the outside walls are tight.

Illustration 16-B. Fresh Air Colony Roosting House Used in Norwich, N. Y.

CHAPTER XXVI

FRESH AIR COLONY ROOSTING HOUSE

Illustration 16-B is the extreme in fresh air colony house. The construction of this house is simple, consisting of a durable frame covered with one inch mesh wire netting five feet wide on all sides including door which is also constructed of frame covered with one inch mesh wire netting.

The roof should have a one foot pitch and constructed of boards and some good roofing material.

The roosts should be built of 2x4 set flatwise set on cross sticks so as to be removable. These roosts are set about eighteen inches from the roof at the lowest point.

General construction of the house may be modified or changed in size to suit breeder.

SEMI-BOARD AND WIRE FRESH AIR ROOSTING HOUSE

17-B. Semi-board and wire Roosting House.

This is really another type of the fresh air type of colony roosting house such as was last described, therefore a lengthy description would not seem necessary in order to give our readers a clear and comprehensive idea of how it is constructed and its advantages.

CHEAP LOW DOWN COLONY HOUSE

18-B. Cheap Low Down Colony House.

This illustration probably represents about the cheapest and most easily constructed colony house in existence. In fact it may be styled a roof covered box 4x6 feet in size. The roof is simple, form covered with tarred paper of the better grades of roofing material. The house has no floor. Two three cornered doors constructed of 7-8x2 inch pieces covered with duck or canvas hung on hinges on the roof side completes the house. This house is in use by a breeder in Lockport, N. Y., who has by close economy been able to buy the materials for these houses at \$1.00 each.

CHAPTEER XXVII

INCUBATOR CELLARS

Correct Type of Incubator Cellars

19-B. Incubator Cellar of the Correct Type and Principle.

There is to our mind only one style of incubator cellar built expressly for the purpose that is correct in principle. However, almost any tight, well ventilated building or room may be utilized for the purpose with fair results.

A dry, well ventilated cellar especially if the walls and floor are composed of concrete often makes an ideal place in which to operate an incubator.

The style of incubator cellar shown in illustration 19-B is to our mind the correct type.

As will be seen by the illustration the building is half under or below the maximum grade point, producing the same general effect as though an excavation had been made of the same depth which allows an entrance to the building on a level.

The floor and walls of the building up to the top of grade point referred to should be constructed of concrete, brick or masonry.

The wing or retaining walls shown in the illustration should be one foot thick.

Incubator cellars such as is shown in the illustration can be built on level ground which would require banking up or grading on the back as well as the two sides, however, this style of cellar is usually built against a hill or steep slope, so that in excavating the length of the building to be erected the grading or banking required is provided for naturally pretty much the entire length of the building to be erected the entire length of the building.

If the building is set against a hill or slope as suggested, care must be exercised in guarding against dampness by proper drainage.

Often side hills are "springy" and wet and not desirable as a location for incubator cellars.

Where there is any tendency towards dampness we advise that the walls be constructed of solid concrete and be treated on the outside with water proofing.

HOUSE CELLAR AS AN INCUBATOR ROOM

The main features sought for in a location in which to operate an incubator is fresh pure air, uniformity of temperature and pure atmospheric conditions.

A common living room has, so far as fresh pure air is concerned, perhaps an advantage over a house or incubator cellar but at a decided disadvantage so far as uniformity of temperature and atmospheric conditions are concerned, so the fresh air conditions and corresponding advantages in setting an incubator in a living or upper room is more than counterbalanced by conditions perhaps not quite as fatal to good, uniform hatches, namely, extreme variations in outside temperature and atmospheric conditions. However, unless the house cellar can be properly ventilated thus insuring fresh pure air in abundance, then we would by far prefer a living or upper room in which to operate an incubator.

Most of the standard and modern makes of incubators are now provided with thermostat regulators that will con-

trol extremes in temperature to a remarkable degree, so that it is now possible to get quite uniform hatches from strong fertilized eggs from machines set in upper or living rooms where the temperature is liable to vary anywhere from 10 to 20 degrees in the 24 hours, especially during the early spring months.

The three cardinal principles involved in building an incubator cellar or for that matter, in selecting a place in which to operate an incubator, are: first, pure fresh air, which means of course a correct system of ventilation being provided without draughts; second, uniformity of temperature outside the room in which the machine or machines are being operated; third, sanitary conditions.

One style Colony house in use on an experimental farm

CHAPTER XXVIII

BROOD COOPS

Combination Brood Coop and Conditioning House.

20-B. Combination Brood Coop and Conditioning House as used on a large poultry plant at Freneau, N. J.

The designer of this house had in mind a "two purpose" house when he designed and built it. In other words Mr. Punderford, proprietor of the Monmouth Poultry Farm wanted a house which could be used in the spring for brooding chicks and later in the season for conditioning show birds, particularly male birds.

As will be seen by the illustration, each pen has an outside run, four feet wide and eight feet long; while the inside of the house the pens are the same dimensions as the outside yards. Each pen is provided with an individual indoor brooder capable of brooding fifty to seventy-five chicks. As soon as the chicks are old enough to get along without artificial heat the brooder is removed. Later, and when the chicks are fully feathered, they are removed to colony houses on free range and the breeding season over, the house is occupied then by breeding

males and those intended to be shown later at the winter shows.

The construction of Mr. Punderford's combination brooder coop and conditioning house is simple, being single walled of the shed roof type, covered with paroid roofing. The house may be built of any length or for that matter any dimension desired.

CHAPTER XXIX

COMBINATION SETTING AND BROODER COOP

21-B. Combination Setting and Brooder Coop.

This coop was designed for the purpose of combining a setting hen and brooder coop in one. The designer has in use a large number of these coops and has found them to be entirely satisfactory in every way as a cheap, handy coop.

The hen is set in this coop and as soon as the chicks are hatched the nest is removed and she is allowed to remain until the chicks are old enough to wean. In other words, the hen has the same quarters from the time she is placed on the eggs until her chicks are old enough to wean.

The roof is shingled so it can be raised, allowing easy access to the interior in looking after the eggs and hen during incubation and for cleaning purposes.

CHAPTER XXX

PORTABLE RUN BROOD COOP

The brood coop shown in illustration 22-B does not vary in any material sense from the usual coop of the gable roof, low down type, except that the front is set back from the ex-

treme point of the roof and floor forming a recess to admit of feeding and watering in a dry place.

The outside walls reach to the ground while the floor is set up about 12 inches which allows extra ground space, shade and extra protection for the chicks during stormy weather; not only this, but economizes space. This particular coop was designed by Henry Hankstadt, the principal object being sought was to economize space.

The run is of a portable type. Mr. Hankstadt moves this run from one side to the other, alternately sowing oats first one side and then the other, thus providing the chicks with fresh ground and sprouted oats at regular intervals.

Fig. "D" shows a solid interchangeable front to be reversed from one side to the other in the front of the coop as the run is likewise changed or reversed to admit of the sowing of oats referred to.

Fig. "C" shows back end of the coop and drop door hung on hinges to admit of access to the interior of the coop by the attendant or caretaker.

These coops are simple of construction and can be built of new materials or dry good boxes or any other cheap material. Roof should be covered with a good grade of roofing.

Two types of handy yet cheap brood coops which may be constructed by any person handy with hammer and saw.

26-27. Brood Coops.

This style of brood coop is constructed of boot boxes. The roof is hung on hinges to admit of easy access to the interior, is also provided with a drop door in front hung on hinges for closing up at night as a protection against rats, vermin and other four footed animals. Air holes three inches large are provided as shown in the cut above the drop door.

Illustration 26 shows the manner of sawing the boot box at the dotted lines so as to form basis for two brood coops.

CHAPTER XXXI

DRINKING FOUNTAINS.

To furnish fowls drinking water in sufficient quantities with economy of time and labor is an important consideration in poultry keeping.

To furnish a sufficient supply of water to a large flock of poultry entails a vast amount of labor, in fact on a large poultry plant where the water supply has to be carried, the work of watering takes more labor often than any other line of work connected with the care of the flock.

Various watering devices have been used and are now in use by poultry keepers which are intended primarily to economize labor and time and yet furnish a constant supply of pure fresh drinking water.

Undoubtedly as much or even more depends upon fowls having a fresh supply of water than depends upon good wholesome food in maintaining health. Impure water is a rock upon which many a poultry business has been wrecked. Nothing will kill off young chicks as fast and with as much certainty as impure or polluted drinking water.

Water for old or young fowls should never be exposed to the direct rays of the sun, even the shade of a tree is not sufficient to properly protect drinking water from the rapid decomposition or chemical changes which take place when exposed to the sun's rays.

Running water is best for poultry when it can be conveniently supplied so the fowls can drink at will. Frequently this can be done on free range plants where eggs is the principal product desired and where a pure stream of water is available. It becomes necessary on yarded plants such as is employed by fanciers to forego the advantages of utilizing streams of water as above suggested especially during the breeding season. Therefore, some other plan must be resorted to keep up the supply of pure fresh drinking water for their breeding stock.

CHAPTER XXXII

TWO PEN DRINKING FOUNTAINS

Illustration 23-B is to a very large degree self-explanatory. We might add, however, by way of description that the illustration shows three styles of "two pen" drinking fountains, therefore, their use decreases the amount of labor fifty per cent, or one-half in watering a given number of pens of fowls.

Figure 1. Is made of galvanized iron with an extension reaching through the partition into the opposite pen.

Figure 2. An ordinary milk pan, a pan of the same dimensions may be made of galvanized iron if so desired.

Figure 3. An abandoned house iron sink. However, the kind of receptacle is not essential so long as they are of sufficient capacity to hold water enough for two pens of birds from morning until noon and from noon until the next morning.

23 B.

AN INEXPENSIVE NON-FREEZING DRINKING FOUNTAIN

Illustration 24-B represents an inexpensive non-freezing water fountain. The top is to be a common ten-quart pail

inverted. This is supported by three strips of tin soldered on the rim for legs extending one inch below the rim and some distance above bottom of the dish, below the latter being a tin pan which should be about one inch larger in diameter than the pail above it.

On the bottom of the pan four legs are soldered which should be four inches long, iron or tin, just sufficient to hold the weight of the drinking fount already described when full of water.

The bottom of lamp section is an abandoned milk can cut in two, one foot high, set bottom up. This to have a door cut out in front as shown in illustration, of sufficient size to admit of an ordinary kerosene or brooder lamp. The door to be provided with air holes for the lamp as shown in cut.

LARGE CAPACITY SELF FEEDING WATER FOUNTAINS

Self feeding water fountains, one of simple and frequently cheap construction. For instance, a castaway five-gallon kerosene can makes an excellent reservoir. This to be set upon an inverted shallow box and a dish of any suitable size, placed under the faucet, as a drinking dish. The faucet should be so adjusted as to allow the water to drop at regular intervals but not too fast; about as fast as the fowls use it up. However, to begin with the water dish should be filled about half full.

25-B. Self-Feeding Water Fountains.

Figure "B" represents a self feeding water fountain on the same general principles as the one just described except a beer keg is used for a reservoir instead of a kerosene can.

BUTTER JAR WATER FOUNTAIN

A cheap and yet a most serviceable water fountain can be made from a common ten pound butter crock and a large size pie tin or any dish of proper dimensions and about one to one and one-half inches deep.

A notch is cut out of the upper rim of the butter crock to the depth of about 7-8 of an inch or about 1-2 inch less than the total depth of the pie tin or dish referred to. This notch is for the water to feed through from the butter crock into the pie tin or drinking dish. In operating the fountain first the crock is filled with water and then inverted in the pie tin and set in a shady place.

26-B. Butter Jar Water Fountain.

CHAPTER XXXIII

COMBINATION DRINKING PAN AND GRIT BOXES

7. Front View of Combination Drinking Pan and Grit Box.

convenient and practical. The pan is made of galvanized sheet iron, three inches deep, three inches longer and three inches wider at top than at bottom. This gives it a slope, which, when frozen, if desired to dump, is easily done with a few raps on the ground.

"The pan is made of sufficient size that when kept about half full it will hold enough water for ordinary use, and when it freezes over night if filled about three-fourths with boiling water will make the water about right in bitter weather for the flock when turned into the scratch pen. The frame should be hung so that the bottom, or grit box, is a convenient height for the chickens. The pen is placed upon

Illustrations number 7-59 represent a convenient type of combination drinking pan and grit or feed hopper or box. These illustrations, together with a description by the designer, John Garver, Hagerstown, Md., are as follows:

"I wish to call the attention of the readers of your useful paper to a combination drinking pan and grit box which I have built for my own use, and which has proved to be

59. End View of Combination Drinking Pan and Grit Box

the top or table part of the frame and will be above all possible chance of litter being scratched into the water. The chickens soon learn to fly upon the perch and drink to their delight clean fresh water whenever they have the desire.

"The grit is always in sight, for it gradually works down as the trough becomes empty. A small screen, either of wire or light wood, can be placed over the trough at an angle to keep the hens from throwing the grit with a sweep of their bills upon the ground, which is so common to them, as they seem to hunt for some particular piece to suit their fancy.

"The reservoir of the grit box can be easily filled in the top, which is open beneath the table which holds the water pan. This is also covered with a light lid to keep out the dirt from the grit.

"The table upon which the pan rests is made so the side pieces, upon which the cross slats are nailed, fits just on the outside of the top of the grit reservoir, making the slats lay flush upon said top. The frame can be easily hung on screw eyes on each side of frame placed over two screw hooks. The woodwork can easily be made by anyone who can use a saw and hammer, and the pan can be made by the local tinner, and will be complete for a very reasonable price and last a lifetime.

"The lumber used can be of a size to suit the taste of the maker. The dimensions given were found to answer the purposes needed for a pen of forty chickens."

CHAPTER XXXIV

COMMON TYPES OF DRINKING FOUNTAINS

28 B. Milk Bottle Water Fountain for Little Chicks Only.

Illustrations 27-B and 28-B represent two common homemade types of water fountains. A detailed description is not necessary in connection with these illustrations to show how they are constructed as the illustrations themselves tell the story.

MILK BOTTLE WATER SERVER

The designer of this type of water fountain for chicks has this to say about it:

"Probably no problem has been so difficult to the ordinary poultry raiser as the serving of water. I have tried so many founts without success that I finally stumbled upon a method that has given splendid satisfaction. One morning I took some water out to a brooderful of chicks in an ordinary pint milk bottle, such as the milkman leaves at your door. I intended putting some water in their saucer, but found that they crowded so that they would get into the saucer, feet and all. I

21. Water Server—"A," Milk Bottle; "B," Saucer or Shallow Dish.

then poured more water into the saucer and set the big end of the bottle right in the middle of the saucer. This was an immediate revelation. Here was a fount that held its own pure water and at the same time kept the chicks from getting into the saucer and spoiling the water for drinking. To be sure it is necessary to fill the saucer now and then, but no oftener than you are there to look after the chicks, and it is the trick of but a minute to pour out a little water from the bottle. You then can keep the water from becoming foul and unclean and give the chicks fresh water several times a day—water that has not been contaminated by the chicks running through it. Most any size dish or saucer can be used, and the bottle is so thick and heavy that there is no danger of their knocking it over. This has solved the problem, for me at least, in serving water or milk to the chicks."

CHAPTER XXXV

NESTS

The careless, haphazard principle that a good many adopt or ignorantly employ in the preparation of nests is a bad principle to follow and is often the rock upon which their "poultry voyage" is wrecked.

For instance, sanitation is a requisite in nest building and in the care of nests that cannot be overlooked.

Nests should either be built so they can be easily removed for cleaning or constructed so as to allow of thorough cleaning.

The principle that any old box or place is good enough for nests is a lazy man's principle and a lazy man has no business to embark in the poultry business.

Most poultry writers place too little importance on nest building. Surely he can in poultry raising get a lesson from the wild birds in nest building. Sanitation or cleanliness is an innate natural instinct and tendency of wild birds, this being true, should not this same principle be employed in the care of domesticated birds whose natural habits and instincts have not been materially changed by domestication?

In this chapter we illustrate and describe a number of nest plans which to our mind are sanitary and come as near nature as it is possible for man to provide. These designs are those which are in use by thorough poultry raisers. We mean by this, poultry raisers who conduct their business on correct and safe principles.

COMBINATION PORTABLE NEST, ROOST AND DROPPING BOARD SECTION

The plan of the nest section shown in illustration 29-B, which combines also a roosting and dropping board section, is of a two platform type, that is to say, an upper and lower platform is provided which forms the dropping board proper while the lower platform is designed to hold the nests in position. These platforms are perched on four posts, 2x2 in size upon which are attached the side strips composing the balance of the frame.

The nests are common orange boxes or may be boxes of about the same general size if orange boxes are not available, therefore, should be sufficient to admit the nest box whether an orange box or a box of other size or dimension as the case may be.

The nest platform is built in size the length of three of the nest boxes so that the inside corners of the boxes can come together on the inside without passing each other.

The entrance of the nest is had from the center, under-

29 B. Combination Portable Nest, Roost and Dropping Board. Style Used by a Poultryman in Falconer, N. Y.

neath the nest platform, nature's principle of a secreted yet reasonably light and airy nests thus provided.

Illustration B shows the plan or principal used on the pen side of nest section described above.

BUILT UP SECTIONAL NEST

A built up sectional nest may be desired and often found to be a necessity many times where house space is limited.

The illustration of a built up nest section shown in this connection 30B is purely a nest for this purpose.

The first section sets on posts one foot high and the second or even third section may be set on top of the first and second respectively in case a third section may be found necessary.

The dotted lines in the illustration shows position of the second. It will be seen that a platform in front of the opening

or entrance to the nest is provided on each section so the fowls may jump from the lower platform to the upper in reaching the upper nest section, or vice versa, in leaving it.

30 B. Built Up Sectional Nest. Style Used by a Trenton, N. J. Breeder.

The nests proper 12 x 14 in size are situated inside the enclosure which is 14 inches high, 18 inches wide, and may be made of any length desired.

HOME MADE TRAP NEST

Trap nest made by M^r Bride.

Home Made Trap Nest.

The designer of this nest describes it as follows: "The accompanying sketch of a trap nest, is one that has proven very successful with me. It is 26 inches long, 14 inches high and 14 inches wide. Twelve inches from the front a strip 3 inches wide is placed to form nest at back of box. Smooth wire is bent in shape of Fig. 2, and is placed back of strips in the nest portion. The ends of wire are put through small holes in side of box about two inches from bottom and clinched to keep trip in place. A three inch strip is placed across the front of box at the bottom and a two inch strip at the top.

The door is twelve inches square and is hinged to two inch strip and opens back in box, the edge of door rests on wire trip, which should be small enough for the hen to crowd a little in going through. This pulls trip from under door, which strikes against strip in front and hen in nest cannot get out. Half the top of box is hinged so it can be opened back to take hen out. Nest should not be made too tight, or it might smother the hens in warm weather."

NESTS FOR CONTINUOUS LAYING HOUSE

31 B. Nests for Continuous Laying House.

We illustrate in this connection a handy and convenient style of nest or draws for a continuous laying house with aisle. These nests are built directly under the roost platform or dropping board; each box, or drawer, as they perhaps should be termed are arranged as shown in illustration, so they may be drawn forward; the eggs being gathered and the work of cleaning them all done from the aisle.

The sides of these nests are built usually of 7-8 inch material, while the bottom may be constructed of thinner stuff.

Loose boxes are sometimes used instead of draws, with drop doors provided on hinges, instead, which open directly in front of each nest box. This plan answers the same purpose as draws, but not quite as convenient, perhaps.

NAIL KEG NESTS

A cheap and serviceable hens nest can be constructed of common nail kegs. We illustrate in this connection this type of nest in one section as used on a number of large poultry plants.

The openings in the kegs should be large enough to give easy entrance for the fowls and these turned towards the wall.

32 B. Nail Keg Nests.

Holes of convenient size are provided at the upper end of the keg on the reverse side from the opening or entrance intended for the purpose of gathering the eggs as shown in the illustration.

Another feature of this nest, which is an advantage, is that in case it is desired to use one or more of them for setting hens they may be turned quarter way round or facing the nest next to it, and thus the setting hen is shut in and protected from being molested by the laying hens.

CHAPTER XXXVI

FEED HOPPERS AND DEVICES

Feed hoppers are an indispensable adjunct to the poultry yard. Careless methods of feeding is the opposite to economy.

Late years poultry raisers have almost universally adopted the plan of keeping some kind of feed before their fowls and young stock all the time. In order to do this economically self feeding or plain open feed boxes are necessary, the former preferred, as they are more sanitary and economical, as feed placed in an open box gets wasted quickly and becomes soiled by the feet of the fowls.

A self feeding hopper should be so constructed so as not to clog. Hoppers of about the same style and general construction as those used for feed are also used for charcoal and grit.

STOVE PIPE SELF FEEDING HOPPER

33 B.
Stove Pipe
Self-feeding
Hopper.

This hopper is most inexpensive. A half a length of ordinary iron stove pipe is used for the till; a strip of six inch 1-4 square mesh wire being soldered or riveted on the lower edge of the stove pipe all around. This is set in any tin or wooden dish of proper size so as to leave at least one inch margin all around the stove pipe. If the feed dish is fastened to the pipe the whole may be suspended from the upper wall by means of a wire.

BUILT IN FEED HOPPER

34 B. Large Capacity Built-in Feed Hopper.

A large capacity feed hopper is necessary for large flocks. Illustration 34-B represents a type of large capacity self feeding hopper which is built in, or in other words, built between the 2x4 studding of the poultry house.

The illustration gives a quite clear idea of the construction of this hopper, however, we will briefly say that the bottom or under opening of the hopper should be put in on a slant and extended to within 1-2 inch of the wall or siding of the house. The feed box should be shallow; not more than one to two inches deep.

In forming the body or feed receptacle of the hopper, two three cornered pieces should be cut so that the upper edge next to the cover will be about 18 inches the lower side of the three-cornered piece, being of the same length.

However, the hopper may be built any size desired.

35 B.
Tin Front
Built In
Self-
Feeding
Hopper.

INVERTED PYRAMID STYLE FEED HOPPER

G. E. TRAFFORD.

This Hopper is of the usual inverted pyramid style with shallow trough attached.

OPEN FEED BOX

C. E. TRAFFORD

This Feed Box is merely a shallow trough partitioned off. The large compartment is used for beef scrap.

GROCERY BOX FEED HOPPER

Figure 1.

Figure 2.

Figure 1. Grocery box self feeding hopper designed by a woman. Figure 2. Another type of grocery box self feeding hopper she designed,

"Figure 1 represents a common grocery box about three feet long, one and one-fourth feet wide and one foot high. The cover is removed and the box turned on its side. A slat, the length of the box and two and one-half or three inches wide, is nailed on the bottom of the box about four inches from the back. This slat keeps the feed from running out and being wasted. A board about nine inches wide is nailed inside the box at an angle of about sixty degrees. A space of about a quarter of an inch should be left at the bottom and back of this board, which allows the feed to run down as the chicks eat it from the tray. When coarse grain is used, more space should be left. A board half the height of the box may be hung on hinges to the front top edge. This will keep out the rain, and may be raised to fill the feeder. With stakes driven at the front and back this feeder may be placed anywhere in the yard."

"Figure 2 represents a feeder which may be used in a brooder house or under any shelter. It is made on the same plan as the feeder in the box except that it has a lid, which

closes it all up after the feeder is filled. This feeder may be made double, then the chicks may have access to the feed from either side. Other hoppers similar to those sold by Cyphers are used for grit and shell."

36-B. Non-clogging,
Self-feeding Hopper.

This hopper is non-clogging and may be built of various sizes. The illustration gives a comprehensive idea of its construction. It may be made of wood, galvanized iron or tin.

HANDY CHICK HOPPER

"Handy Chick Hopper." Section A. for grit B. charcoal.
C. wheat. D. clover. E. beef scrap. F. holes with
slot for hanging hopper against the wall.

"Now every poultryman keeps, or should keep, before the growing chicks certain things besides the regular meals, viz: chick grit, charcoal, wheat bran, clover meal, and when chicks are two months old, beef scrap. The grit is essential where chicks are confined. The charcoal is a purifier and regulator. The wheat bran should be kept before the chicks from the first day. There will be no bowel trouble where this is done. It also broadens the frame and is an excellent growing food. The clover meal is positively essential where the chicks are hatched in the very early spring and where they do not have free range.

"Now I have tried many methods of serving these things,

and have at last found one that serves the purpose as perfectly as could possibly be devised. It is a box about 20 inches long, 4 inches wide, and 4 inches deep, inside measurements. This is divided into five compartments, each four inches square. Now along the sides and ends of this box I nail a strip of very thin wood one inch wide, and also a piece of the same between each partition. This leaves a space about 2x2 1-2 inches inside the box. The idea is that the chicks cannot possibly throw the grit and stuff out of the box, and furthermore, they can and do get all that each compartment contains, and will eat it to the last particle. The drawings marked 'hopper' will give you an idea of how it looks when completed. This hopper can have two holes made in one side near the ends and then a key hole or compass saw may be used to make slots in each bored hole so that the holes will fit over corresponding nails driven in coop and then slip down on shank of nail. This will give the keeper a chance to fill and clean hopper and yet have it off from the floor and securely fastened to the wall when in use."

FEED TROUGH GUARD ON RACK

This guard or rack is intended to set over the open feed trough so that the fowls or chicks cannot get into the trough with their feet. This rack is built of $\frac{1}{2}$ x 2 inch material as the illustration represents in general plan.

39-B

CHAPTER XXXVII

MISCELLANEOUS DEVICES

VENTILATION ATTACHMENT FOR WINDOW

39-B. Ventilation Attachment for Window.

Ventilation without draught is an important consideration in correct ventilation of poultry houses and incubator cellars.

The device or attachment illustrated by cut 39-B represents a type of window ventilation that to our minds solves the problem.

It will be noticed that the window is hung on hinges at the bottom. Muslin or duck is tacked on the sash and window frame as shown in cut, so that the window may be opened at any desired distance or closed as occasion requires.

The advantage of this ventilation attachment is that sunshine and fresh air may be had at one and the same time or the sun may be shaded off by means of a curtain hung on the sash in front of the glass.

A CHEAP SHIPPING COOP

Shipping Coop made of "Post Toasties" boxes.

This method of converting Post Toasties boxes is described as follows:

"A neat and light shipping coop can be made from the paste-board cases used in shipping breakfast foods. The writer made a coop from a Post Toasties case as follows:

"The top of the box which had been torn open was first glued with strong glue. The box was turned on its side and one side neatly cut out for the top of the coop. This made an open box 20x26 and 15 inches high. Next a frame of 1-2x2 1-2 inch pine was made to fit tightly around the sides and ends of the box at the bottom, also a similar frame for the top edge except that the end pieces were cut from 7-8 inch pine instead of 1-2 inch, thus giving a better hold for the nailing on of the top which should be of strong 1-2 inch slats. Two slats should also be nailed lengthwise on the bottom of box, as it helps to stiffen the frame and also keeps the pasteboard bottom from contact with damp ground. Before nailing on the top slats, the pasteboard box should be tacked fast to the side and end slats both top and bottom with a double row of tacks. Next bore two holes in each coop for ventilation in case anything should be piled on top of box. This coop is attractive, neat and light, and weighs only 40 pounds, and is substantial."

BANTAM HOUSES

An Ideal Bantam House Built in Johnstown, N. Y.

This brooder is a cheap make shift for a cold brooder which has proved quite satisfactory.

A Cheese Box Cold Brooder

40-B. Shipping Coop for Show Birds.