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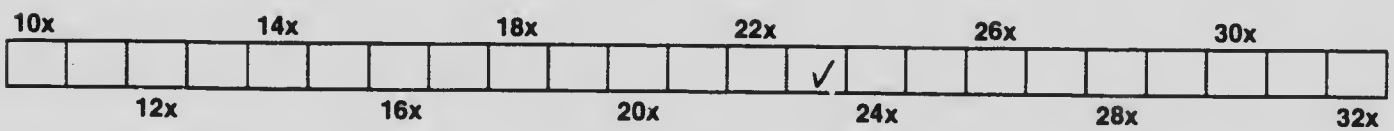

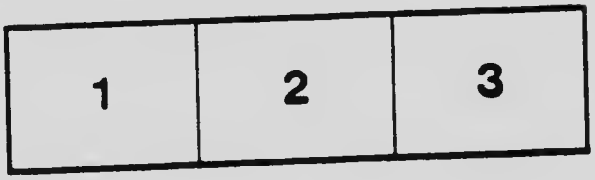

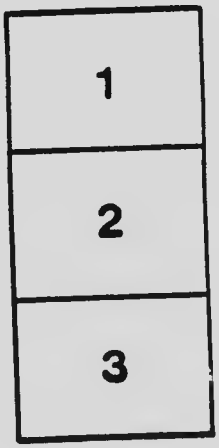

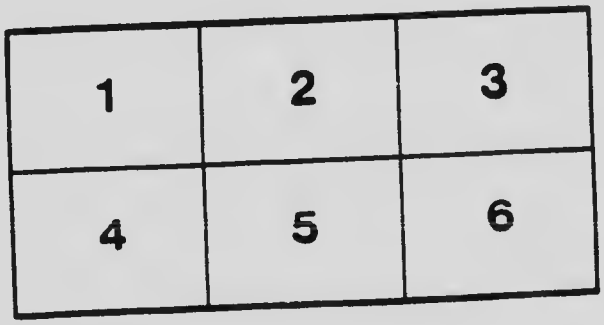

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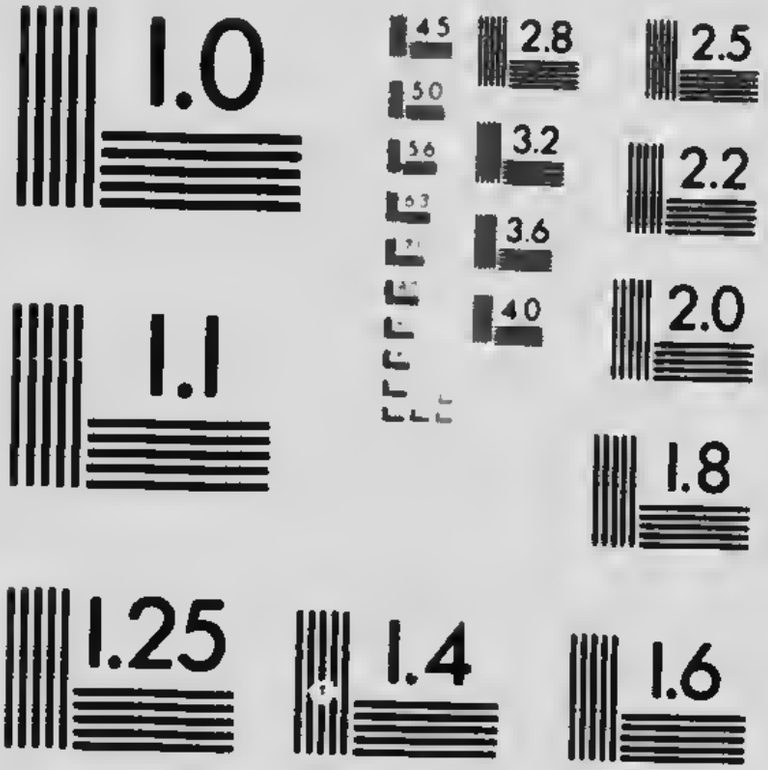

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BULLETIN NO. 6—REVISED MAY, 1911

FARM POULTRY

IN MANITOBA

By M. C. HERNER, B.S.A.
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Department of Poultry Husbandry

Manitoba Agricultural College
WINNIPEG, CANADA

Published by Authority of Hon. G. Lawrence Minister of Agriculture and Immigration

Manitoba Agricultural College

Winnipeg, Canada

May, 1914

To The Hon. George Lawrence,

Minister of Agriculture and Immigration,

Winnipeg, Manitoba.

Sir,—I have to present herewith revised edition of Bulletin No. 1 of the Manitoba Agricultural College, entitled "Farm Poultry in Manitoba," by M. C. Heimer, B. S. A., Professor of Poultry Husbandry.

This publication was first prepared in response to numerous enquiries received from farmers and others throughout the Province desirous of securing information concerning the raising of poultry. In addition to the material contained in the first and second editions, some new material on several phases of the poultry industry has been added to this edition which should aid in making poultry keeping more profitable on our farms, and help in the improvement of all poultry products.

Yours very truly,

W. J. BLACK,

President

Farm Poultry in Manitoba

THE POULTRY INDUSTRY

The Poultry Industry in the Province of Manitoba is as yet in its infancy. The demand for information on all lines of poultry culture, the rapid growth and expansion of our markets, and the steady awakening of our farmers to the need of better poultry and more of it, are indications of the unlimited possibilities for the future development of the industry. When we consider the great waste of grain on our Manitoba farms, and the opportunity the farmer has to convert the grain into poultry and eggs, and when we consider the market demand for these poultry products at his very door, we begin to realize the immense possibilities of the industry for developing into a distinct and profitable branch of Western farming. In some of the countries where the industry has reached its highest state of development the difficulties were at first far greater than those presented by the conditions in The Province of Manitoba. We need only to refer to the market here, where the demand for poultry and eggs is unlimited compared to some of the markets of other countries, which had to be developed first. Our markets are at the present time supplied with poultry and eggs a large percentage of which are produced outside of the Province. Were this production turned over to the Manitoba farmers we can readily see what effect it would have on the industry and its importance as a distinct branch of Western agriculture. In the outset we may say that we do not advocate extensive poultry farming as an independent commercial enterprise, nor yet for the farmer to go into poultry farming on a very extensive scale; but we rather advise the farmer to place what poultry he has on a better paying basis first, and once he knows it to be a profitable investment he can soon raise more. Quality first, quantity afterwards, is our platform. In order to make poultry keeping on the farm a paying proposition, there are certain problems which require attention, and among the more serious are those of housing, feeding, care and management, diseases, and that of marketing the products. All of these have a distinct bearing on the success or failure of poultry raising whether it is carried on as a branch of farming or as an independent commercial enterprise.

The majority of our farmyard flocks at the present time are made up to a mixture of all kinds of breeds, or combination of breeds. There is a lack of uniformity both in eggs and in dressed poultry produced by these flocks which can be very easily remedied. The average egg-production, per hen per year can easily be increased twenty-five per cent. by carefully weeding out and killing off all the hens over two years old, and by selecting and breeding from none but the best layers

in the flock. By providing good serviceable poultry houses not necessarily expensive the hens can be placed where they can do their best in egg production. Proper feeding and good care and management always mean an increased egg yield. Disease is annually killing off thousands of chickens and old stock, and its prevention and cure is one phase of poultry work which should engage our attention. The marketing of dressed poultry and eggs in the best possible condition will make an enormous increase in the annual returns from our farm poultry yards.

These are the lines along which improvement must come if the poultry industry is to take its proper place in West Canadian agriculture.

HOUSING

Many years ago the idea prevailed that hens must be kept in warm houses. This idea seems to be prevalent yet in a good many sections, hence the natural conclusion is that hens will not lay in the winter time on account of the cold. Warm poultry houses are now being superseded by those of the past year or two.

Fresh Air Poultry House used at the Manitoba Agricultural College
A snow bank cuts off the view at the bottom

newer types of fresh air houses are replacing them. In a comparatively new country this process of evolution, if we may term it such, is necessarily slower than in the older settled countries. All experimental work in housing has shown that the cold house gives better results than the warm house, other things being equal.

The principles underlying poultry house construction are the same in all countries. There are certain essentials absolutely necessary in a poultry house if it is to be successful. These, briefly stated, are admission of light, fresh air, dryness, good ventilation and freedom from draughts. To combine these to good advantage is probably a little more difficult here than in some of the warmer climates

However, it is of importance to construct a poultry house in such a way as to get the combination which will give us almost an ideal poultry house even in this cold climate.

The great weakness with the majority of our farm poultry houses so far as the construction is concerned is that they are too poorly lighted and too damp. A poorly lighted, poorly ventilated and damp poultry house is one of the poorest assets that can be had on a farm. In such a house, poultry keeping can never be carried on successfully. Hens will suffer from colds, roup and kindred diseases, and a good deal of the low fertility of the eggs for hatching and the mortality in the growing stock can be traced both directly and indirectly to the conditions under which the hens were kept during the winter season. It is not the cold which retards growth and egg production so much as the dampness. The idea that our poultry houses must be warm to keep the stock healthy and get winter eggs is practically abandoned, since it has been well demonstrated that the stock will remain healthy in a cold house and that eggs can also be produced under those conditions. If some of our ordinary poultry houses on the farm were remodelled, better lighted and ventilated and less attention paid to keeping them warm, the winter egg supply would be a good deal larger than it is under present conditions. Almost every farm poultry house could be improved by putting in a few extra windows and a curtain or two, thus bringing in more sunlight and getting better ventilation and consequently a drier house. A straw loft will make an additional improvement in the old house.

The accompanying illustration shows the poultry house which has been used by the Poultry Department of the Agricultural College during the past year with very good results. It will accommodate two hundred hens and cost approximately $1.75 per hen. The cost of construction might vary some, depending on the price and quality of lumber. It will cost from $1.50 to $2.50 per hen to build a poultry house.

This house is constructed [illegible] [illegible]-six feet long and seven feet high from sill to plate. The north side has one ply of siding on the outside, a four inch dead air space, one layer of building paper and one ply of tongued and grooved lumber on the inside. The ends are boarded up in a similar way. On the south side there are seven windows four feet square, and seven curtains of the same size placed alternately. These are put in two feet above the sill. The space between sill and windows is boarded up with one ply of inch boards. The one foot space above the windows and curtains is also boarded up in a similar way. The curtains are hinged at the top and swing inward but the windows are stationary. Each window has [illegible] lights. The studding is two by four inch stuff placed two feet apart, and the rafters and joists for the ceiling are of the same size. The ceiling is made of [illegible] inch boards placed six inches apart and laid on the top of the joists. In the back of the house along the north side is a platform three feet wide and

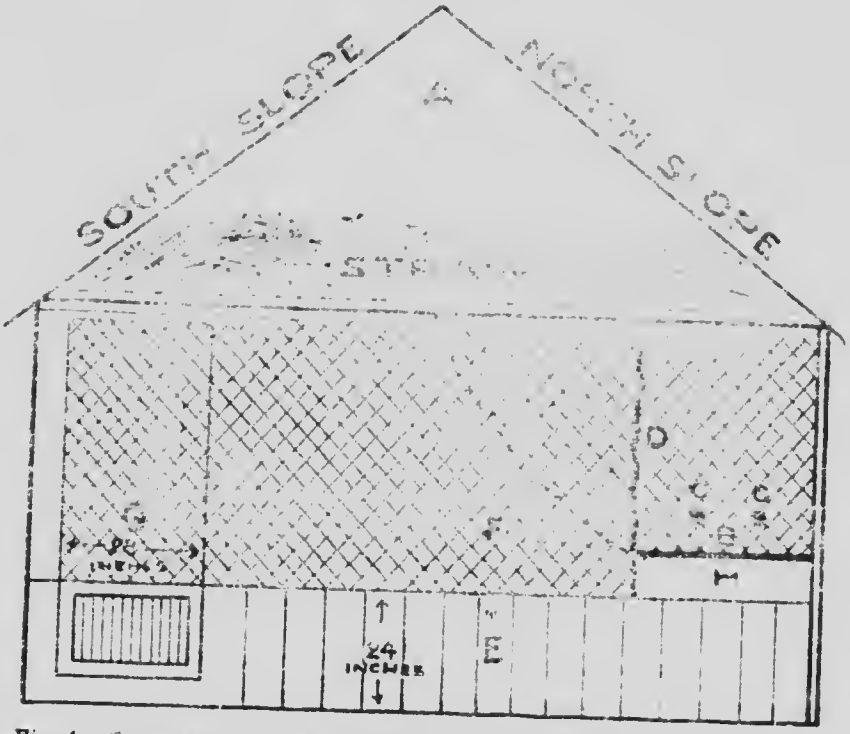


Fig. 1.—Cross section of a curtain-front, straw-loft Poultry House suitable for the farm. Can be built any length desired.

three feet from the floor. Eight inches above this platform are two roosts or perches. These are made of three by three scantlings. There are drop curtains in front of the roosts. They are hinged to the ceiling and dropped down at night when the temperature goes below zero. All the curtains are of [illegible] cloth and [illegible] inch slats. Two feet of straw is placed on the slatted scaffold. With the curtain front, as is used in this house, [illegible] with the straw loft, an excellent circulation of fresh air is obtained. The house is well ventilated and [illegible] absorbs the moisture. On account of the large volume of air above the straw in the peak of the house there is a steady interchange of warm air and cold air going on continuously. The runways for the hens are located on the south side of the house.

An equal slope of roof on both sides of the house is always better than only one slope or a shed roof, as the [illegible] slope is on the south side the house will always be inclined to be damp. Then too, having an even roof slope will not permit of having sufficient space in the loft to get a good circulation of air. In some houses where the straw

loft is used we have [illegible] the outlet is [illegible] practically [illegible] at the [illegible] the [illegible] part of the real value of the [illegible] these different types of scratching [illegible] and it [illegible] the straw loft, but it will pay well to [illegible] as it does the gable roof house have [illegible] the [illegible] of air required [illegible]

[illegible] used [illegible]

Figure A shows a type of [illegible] which has not enough space to permit using a straw loft to best advantage, as it has not sufficient air space overhead. The long slope on south side is also objectionable. The sun's rays striking it during the day will heat up the house; at night it cools off again causing dampness on ceiling and walls.

Figure B has not enough space for a straw loft to [illegible] to good advantage, also too large an area exposed to the north wind.

Figure C has too large an area [illegible] used to sun and weather, taking in heat during the day and a large radiating surface at night causing rapid cooling, dampness and a cold house.

Fig. D also has too large an area exposed to the sunshine during day and again a large radiating surface at night. Dampness is the worst feature in a house having this kind of a roof.

Considerable opposition seems to prevail against the curtain front idea but, nevertheless, its superiority over glass has been sufficiently demonstrated both in a practical and in a scientific way to commend its use in any modern poultry house. One square foot of glass to every ten square feet of floor space in an ordinary poultry house and a similar area of curtain for the same floor space will give very good results. The sunshine is admitted through the windows and also through the raised curtains. If the area of glass is too large in proportion to the floor space, the air in the house will be heated up during the day time and its moisture holding capacity will be increased. Warm air always has power to hold more water or aqueous vapor than cold air. Hence it follows that the

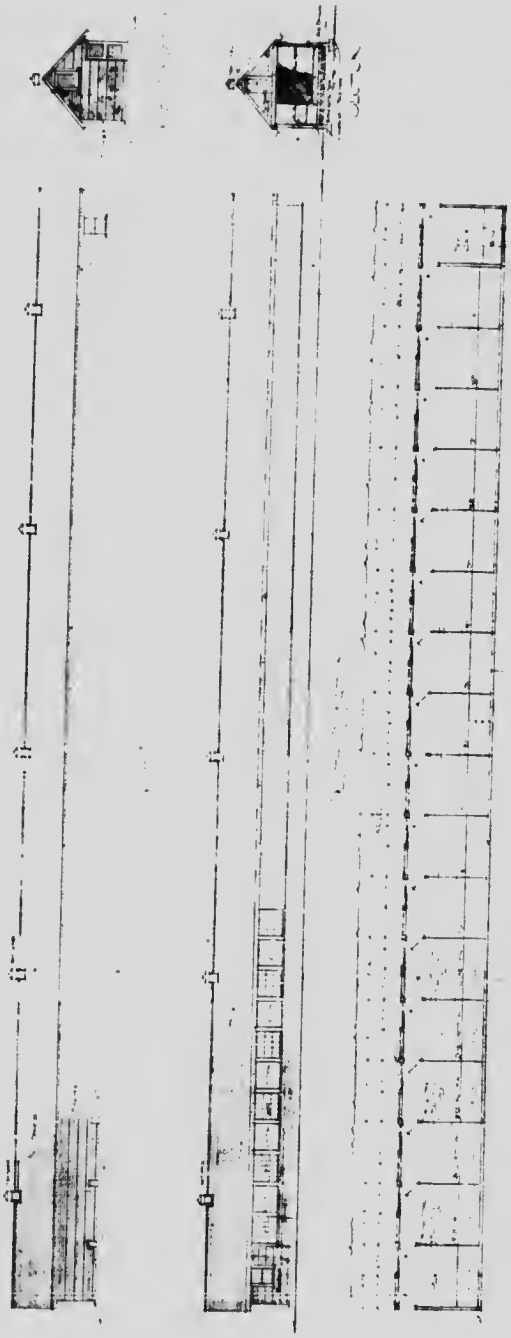


Fig. 2.—Plan of Laying House No. 3 at the Poultry Plant at the Manitoba Agricultural College.

moisture holding powers of the air will be decreased when it cools off again. The glass will let out the heat more rapidly at night than during the day time. Since the water holding powers decrease, the vapor must necessarily condense and congeal on the sides of the buildings, with the result that the house becomes damp. This difficulty is overcome by having one-half of the area used for glass changed over and used for cotton. On brig t sunny days the curtains are opened and sunshine floods the house, but at the same time there is a constant interchange of fresh air and warm inside air going on, thus keeping the house at a uniform temperature. While we advocate fresh air, it must be borne in mind that the hens must be fairly comfortable at night. During the day the hens move about and scratch, whereas at night they sit still. Hence some means must be adopted to have the roosting quarters comfortable. By using the curtain front and the drop curtain, we can maintain a fairly uniform temperature throughout the twenty-four hour day, and the bad effects which would result from extreme variations in temperature are avoided.

In building a fresh air poultry house, a solid partition should be placed every twenty or twenty-five feet to break any draughts that might occur, when curtains are open at both ends of the building. The house shown in the photograph has seven pens each eight feet wide and also has two solid partitions made of high grade factory cotton, sufficiently strong to break draughts.

The nests are placed immediately below the platform and are only twelve inches high. The hens gain entrance to the nests from the rear thus giving the desired dark nests, which prevent hens from eating their eggs. There is a door opening into the nests from the front, which permits of gathering the eggs quite easily. The drinking pans, feed hoppers and grit and oyster shell boxes are all placed along the wall so as to allow all the floor space to be used for scratching purposes. The dust boxes are the only appliances placed on the floor, and if an earth floor is used there will be no need for a dust box. The real value of an alley way in a poultry house is questionable unless for experimental purposes and exhibition stock. On the farm it is simply an expensive item in poultry house construction from which no actual returns will be derived. The roosts should always be placed at the back of the building, where the space is of the least value for scratching purposes. If they are placed towards the south side or crosswise in the building, they will obstruct the sunshine and also be more or less inconvenient.

These few suggestions on poultry house construction, along with the description of what we call our fresh air poultry house, should enable some of our Western farmers to improve their poultry houses. In addition we hope it will also give some idea of how to build a poultry house that will answer practically all requirements of a good serviceable house specially adapted for Western farm conditions.

There are three different kinds of floors for poultry houses, two of which are giving excellent satisfaction. A board floor forms an excellent

breeding place for rats and other vermin, and also harbors mites, lice and disease germs. The one we recommend is of concrete. Such a floor can be cleaned at any time, and should disease break out in a flock, the floor, the same as the rest of the building can be easily scrubbed, disinfected and whitewashed. It may be more expensive in the beginning, but once it is put in it will last a lifetime. There is nothing in the belief that the floor is too cold. The sand, earth or gravel floors are probably best for the hens, but when it comes to cleaning out the poultry house about three inches of sand and dirt have to be removed in order to get out all the litter. From the standpoint of cleanliness, therefore, the cement floor is the best. The work of feeding hens can be lessened to quite an extent by having a barrel or box that will hold grain enough to last the flock a week or two, and placing it in the center of the house. This will save a lot of unnecessary steps, going to and from the granary for grain twice a day.

At the back of this book there are drawings of three poultry houses suitable for the farm. All three have certain points. The Strawbott house is the best. The three are very similar to the one already described except that it is sixteen feet wide instead of only fourteen. The advantage or disadvantage of these types of houses have been fully discussed so as to make further comment unnecessary.

BREEDS

In taking up the question of the breeds most suitable for the farmer, we have to be governed more or less by the characteristics of certain breeds which adapt themselves to the adverse climatic conditions that may exist from time to time. Owing to the severe winters and extreme cold, the small-combed breeds are naturally better adapted for withstanding the effects of these conditions than the larger combed breeds. Again, the lighter breeds as a rule do not give such heavy egg production during cold weather as some of our heavier or utility breeds do.

As far as laying qualities are concerned, there is more in strain than in breed; that is to say, there may be poor layers in all breeds, but certain strains or families of each breed have been bred along egg-producing lines with the result that a heavy laying strain has been produced. The farmer therefore, needs a breed having both egg and meat producing qualities combined and developed to the highest degree. Such a combination can usually be found in what are known as our utility breeds, viz.: Plymouth Rocks, Wyandottes, Rhode Island Reds and Orpingtons. These breeds are specially adapted for withstanding the effects of our Western climate during the winter time.

Of the advantages or disadvantages of any of these breeds, nothing need be mentioned here. As far as winter egg production is concerned they stand about equal, and, when killed as roasters, they all dress out

neat, plump and desirable carcasses. The egg producing qualities can only be determined by the [illegible] qualities can be readily [illegible] their [illegible] appearance. [illegible] presented. No specific value is given to any one point. It is only [illegible] ed as a general outline.

REQUIREMENTS OF UTILITY BIRDS

Comb—Low, wide and stout.

Head—Short and broad, with a short stout beak, a full [illegible] and clear bright eyes.

Neck—Short.

Back—Short, wide and [illegible].

Body—Deep and wide.

Breast—Wide and full.

Breast Bone—[illegible] and well [illegible] with meat.

Thigh—[illegible] strong and [illegible].

Shanks—Smooth, [illegible] scales.

Toes—Smooth and straight.

Utility Type—A [illegible] head with [illegible], stout, broad [illegible], low set, deep and wide body.

Condition—[illegible] smooth [illegible].

Quality—[illegible] smooth [illegible].

A few of the [illegible] of some of the utility breeds might be [illegible] brown [illegible] Barred [illegible].

The Plymouth [illegible] wide with fair length of [illegible].

The Wyandotte [illegible] has a short back, [illegible] low set body.

The Rhode Island Red has [illegible] back, [illegible] body [illegible] is fairly upstanding.

The Orpington [illegible] low set [illegible] body.

The Dorking is a low set [illegible] bird, having the longest breast bone of any of [illegible] breeds of fowls.

Th[illegible] as they are [illegible] for [illegible] eggs and [illegible] of value, but the utility breeds are better adapted for winter eggs and roasters.

PURE-BREDS VS. MONGRELS

The conditions as I have found them in a good many farm flocks is that too much crossing and inbreeding has been followed. Probably one year a Leghorn cross has been made, followed another season by crossing with Rocks and so on, indiscriminate crossing and breeding year after year, until the flock resembles neither Leghorns, Rocks, Wyandottes nor any other breed but simply a motley lot of mongrels. Select the breed that meets your requirements, and then follow out systematic breeding year after year. As a rule nothing is gained by cross breeding, so do not attempt getting better layers in Rocks by crossing with Leghorns or more meat on the Leghorns by crossing with Rocks. Each breed has its own special adaptations and should be bred for these.

The advantages of pure-bred stock over the ordinary mongrel stock are apparent to all, and need but little mention. The chief things in which pure-bred birds are superior are a more uniform flock in color, quality and appearance, generally better egg production, and they always make better use of the grain consumed, and dress out a more uniform, neater and plumper carcass.

There are various ways of improving the ordinary flock. The one most common is the introduction of pure bred blood on the male side, and grading up the flock in this way. By following up this plan, for a few years, a flock of what used to be mongrels can be brought up to a high state of productivity, and, although only grade birds, they may be just as profitable as pure-breds. For establishing a pure-bred flock the cheapest way is to buy eggs for hatching and raise the chickens from these eggs; and then kill off the mongrel stock. Another method is to buy ten or a dozen pure-bred birds and hatch their eggs. In this way a large flock of pure-bred birds can be established that season. Usually ten females are mated to one male in the heavier breeds, and from fifteen to twenty-five females to one male in the lighter breeds. It does not folow however, that infertile eggs from a breeding yard are infertile on account of having too many or too few males in it. The kind of food will also influence fertility. Where the ration is made up of an abundance of soft feed, meat, green bone, or beef scraps, the fertility of the eggs will always be quite low. While such foods stimulate egg production they decrease the fertility.

FEEDS AND FEEDING

All the grain required for feeding poultry is found on almost every farm. Wheat is probably the best grain we have for poultry—either laying stock or growing stock. It is one of the most palatable grains we can feed, and is readily consumed by fowls of all ages. As an egg-producing food it remains unexcelled. Its by-products are also very valuable; bran as a mash for growing and laying stock, and shorts and low grade flour as part of growing and fattening rations.

Corn is also an excellent grain, but it must be fed judiciously, as it has a fattening tendency, and there is, therefore more danger of over-

feeding than with any other grains. It is a heat producing food, and is especially adapted for laying stock in the winter time, to keep up the body temperature. In the summer time it should be dropped out of a laying ration altogether. In a finely cracked state it forms an indispensable part of a ration for chicks, and in the coarser cracked state is especially adapted for growing stock. It is also very valuable in the finely ground state as a part of a dry mash ration for young stock and a fattening feed for roasters.

Oats are the most easily procured of any of the grains, and but very little is known of their feeding value for all kinds of poultry. As they are usually fed they are not very palatable, but when fed in the crushed state they stand equal to wheat, possibly a little higher, as an egg-producing food. Oats are generally fed whole, thrown in the litter the same as other grains, and fowls, as a rule, waste a good deal in this way. They should be rolled or crushed just enough to break the hull and expose the broken or crushed kernel with the hull still adhering to it. Feed them as a dry mash in a hopper, and have them in front of the hens all the time. By feeding oats this way only a small percentage of the hull is wasted, and better results are obtained than in any other way.

Oats in the finely ground state, oat feed, oat dust, or oat middlings should always form the largest part of any fattening ration. Ordinary hulled oats or pin-head oatmeal is usually fed to young chicks and growing stock

Barley is fed on many farms with fairly good results, but it lacks palatability, is somewhat heating, is not so easily digested, and generally does not give very satisfactory results in the way of egg production, unless fed in combination with some other grain. When very finely ground it can be safely used as a part of a fattening ration.

Buckwheat, if fed with other grain, is a very good egg-producing food. Although it has a fattening tendency, yet, if fed judiciously, good results may be obtained. Ground buckwheat is very valuable as a part of a dry mash for growing stock, and as a part of a fattening ration for roasters.

These are the grains most commonly used, and while there are others which might be included in this list, these are the ones most commonly used and should answer all practical purposes.

There are different forms or kinds of green food which should enter into a well-balanced ration, but only a few of the common ones need be mentioned.

Clover hay, well cured, and fed the same way as it is fed cattle, or finely cut, and fed dry, or steamed and mixed with bran or table scraps, is a very good egg-producing food. Alfalfa is a little better than clover, as it has finer leaves and stalks.

Other forms of green food are cabbages, mangels, turnips, and sugar beets. Any of these [illegible].

Buttermilk or sour milk, fed with a well balanced grain ration, completes an ideal ration for egg producing purposes.

Other foods such as beef scraps, green bone, table scraps, meat, and so on need no description at this time. They are all right in their place as long as the feeding of them is not overdone.

FEEDING FOR EGG PRODUCTION

The value of the different feeds for egg production has been outlined already. It only remains now to make up or combine them in such a way that best results will be obtained. All whole grain should be scattered in the litter in order to make the hens work and exercise for it. There is no fixed rule as to the amount of grain to feed per hen. A general rule to go by is to feed a handful to every two hens twice a day. Have a feed hopper full of crushed oats [illegible] at all times. An ideal ration consists of [illegible] two parts of wheat to one of corn, [illegible] crushed oats [illegible] dry mash, all they want to eat, cabbage or mangels once a day, and buttermilk to drink; also have grit and oyster shell before them all the time. Other suitable rations may be made up which may give just as good results and perhaps be less [illegible] should be avoided as [illegible] they may stimulate egg production for a while [illegible]. Powdered charcoal in the dry mash is highly beneficial, as it acts as an absorbent of gases [illegible] and [illegible]. A very small quantity [illegible] in the drinking water [illegible] also acts as a laxative.

As a general rule, eggs laid by one year old hens [illegible] better than pullets' eggs, due possibly to the pullets not being fully matured and usually they are laying heavily in the winter time.

Year old hens are naturally inclined to put on more fat than pullets, and for this reason the feeding has to be directed towards keeping the breeding stock in good condition, yet not over fat. Exercise and fresh air, above all other things, are essential to breeding stock, if they are to produce fertile eggs. Stimulants and egg foods may be used in feeding laying stock when egg production is the only object, but in the feeding of breeding stock their use is positively harmful and detrimental to the [illegible] of the birds as breeders. Not only do these lower the fertility and hatching power of the eggs, but they also affect the [illegible] and vitality of the chicks that do hatch, and also [illegible] the general health of the breeding stock itself. For these reasons these foods should be avoided as much as possible.

Very heavy winter egg production should not be encouraged in birds that are intended to be used as breeders, as their vigor and vitality will be too much reduced by the time the eggs are required for hatching purposes. If corn or other heat producing feeds are fed to breeding stock, care must be used. With this exception methods of feeding are similar to those used for laying stock.

BREEDING FOR EGG PRODUCTION

In breeding for egg production the record of performance is the only safe and sure rule to go by. There is no recognized or fixed egg type to form the standard to go by in selecting heavy laying hens. Individual records are the only sure guides. In the shorter backed breeds like the Wyandottes, it has been found that as a rule the females which are somewhat longer in the back than what the standard calls for, have proven the best layers, but even this method of selecting hens has not always held good. In order to determine the heavy layers, the trap nest must be used. Contrary to the common idea, such a nest is not made to stop hens from

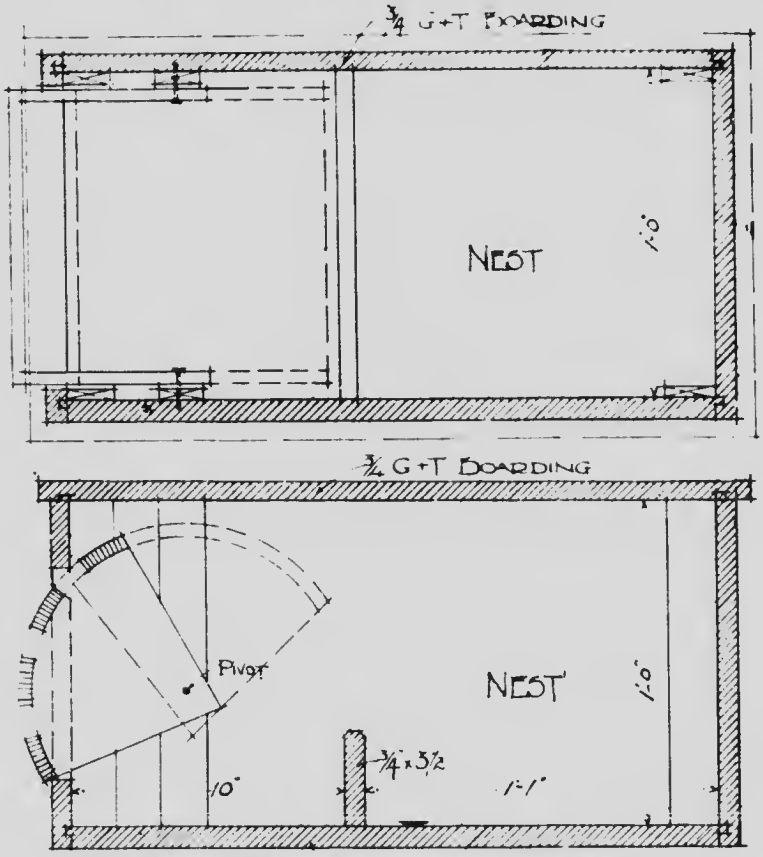


Fig. 3.—Trap nest used at the College.

eating eggs, but simply a contrivance to identify the layers. The hen may enter the nest from either the front or the rear, and by bringing her body against the trap it will close, thus locking her in until she is released by the attendant. There are various types and designs of trap nests, but the simpler it can be made, the better it will work. The one in use at the Agricultural College is shown herewith. Of the many different kinds used in the Poultry Department, this one has given the best satisfaction.

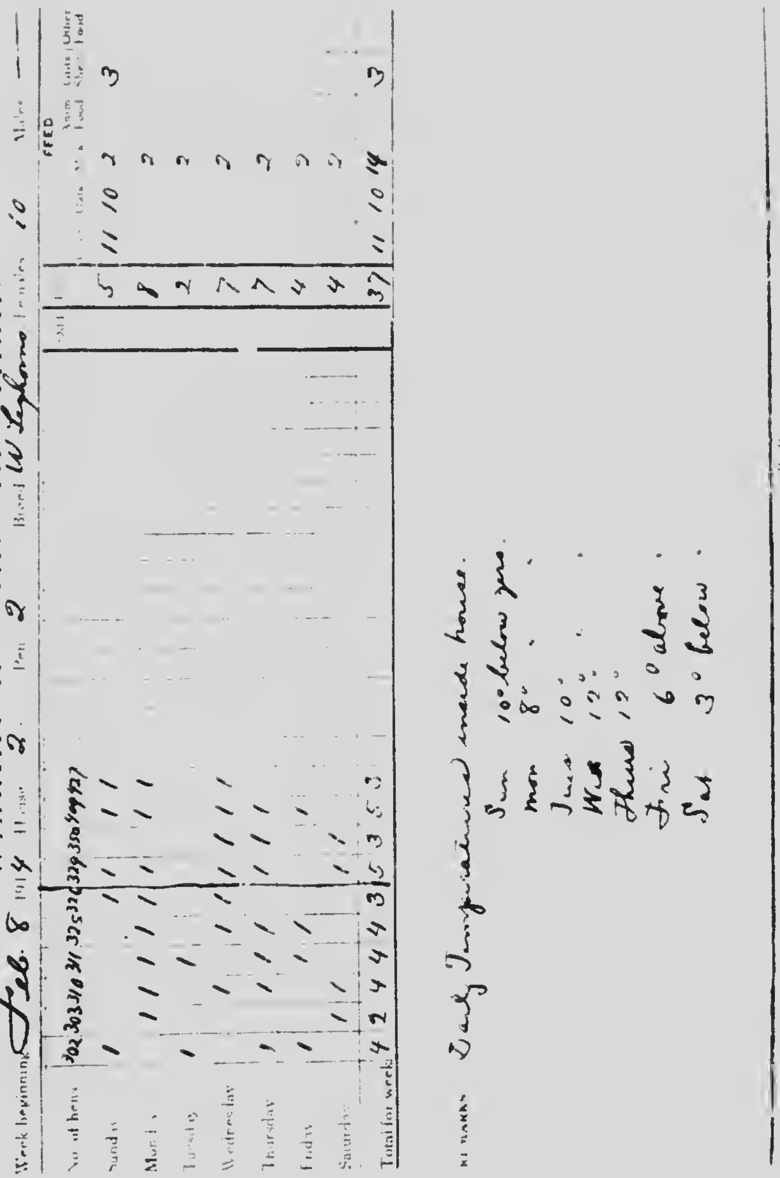
The hen having laid her egg is released and her leg band number is taken and marked on the record sheet provided for the purpose. In this way a complete record is kept of her egg production from one end of the year to the other.

It might be well to state that the question of trap nesting hens on the farm is not a practical one at all except during December, January, February and March, when there is usually plenty of time available. It takes too much time to carry it on throughout the entire year, but by doing it during the winter months, the best layers can be identified and selected and used for breeding purposes in the spring. In this way the trap nest will pay many times over on any farm in the course of a few years. A heavy laying hen will lay the majority of her eggs between the first of October and the first of April, hence the trap nest system would be quite practical on the farm to identify the heavy layers in the winter season. The work of developing heavy laying strains of hens should be left largely with Agricultural Colleges and Experimental Stations since it means too large an investment and entails too much work for the ordinary producer. The fancier, however, would find it a very profitable field for work, and could in a few years time draw the same revenue from bred-to-lay stock as from the purely fancy stock

Fig. 4.—Leg-band for identifying layers.

Under the trap nest system, the hens are released and the eggs gathered as early in the morning as possible, the second collection takes place at ten, and the third just before twelve. A little after one o'clock is the fourth, at three the fifth, and the sixth at feeding time in the afternoon or evening depending on the length of the days. One man should be able to handle four hundred hens on the trap nest system and do the work properly.

The value of the trap nest system in a College poultry plant can readily be seen by a brief review of the egg record sheets. For example in the poultry houses of the Manitoba Agricultural College there were ten Single Comb White Leghorn Pullets out of a flock of 229 that made the following records from Dec. 1st 1913 to April 1st, 1914, a period of 121 days.



MANITOBA AGRICULTURAL COLLEGE
POULTRY DEPARTMENT
WEEKLY EGG RECORD SHEET

Week beginning Feb. 8 1914 House 2 Pen 2 Breed W. Leghorns Females 10 Males —

No. of hens	302	303	310	311	325	326	329	350	409	427	Total	[illegible]	Oats	Mash	Anim. Food	Grit / Shell	Other Food
Sunday	/					/	/		/	/	5	11	10	2		3	
Monday		/	/	/	/	/	/		/	/	8			2			
Tuesday	/			/							2			2			
Wednesday			/		/	/	/	/	/	/	7			2			
Thursday	/		/	/	/		/	/	/		7			2			
Friday	/			/	/				/		4			2			
Saturday		/	/				/	/			4			2			
Total for week	4	2	4	4	4	3	5	3	5	3	37	11	10	14		3	

REMARKS Daily Temperatures inside house.
Sun 10° below zero.
Mon 8° " "
Tues 10° " "
Wed 12° " "
Thurs 12° " "
Fri 6° above.
Sat 3° below.

B–Broody M–Moulting R–Removed S–Sold D–Died

EGG RECORD SHEET, showing method of keeping the records of all laying hens on the **Poultry Plant** at the **Manitoba Agricultural College.**

No. 325, 80 eggs at 4½c each $3.60
No. 409, 80 eggs at 4½c each, $3.60
No. 311, 76 eggs at 4½c each, $3.42
No. 332, 74 eggs at 4½c each, $3.33
No. 329, 72 eggs at 4½c each, $3.24
No. 310, 70 eggs at 4½c each, $3.15
No. 326, 69 eggs at 4½c each, $3.10
No. 350, 66 eggs at 4½c each, $2.97
No. 427, 65 eggs at 4½c each, $2.92
No. 303, 64 eggs at 4½c each, $2.88

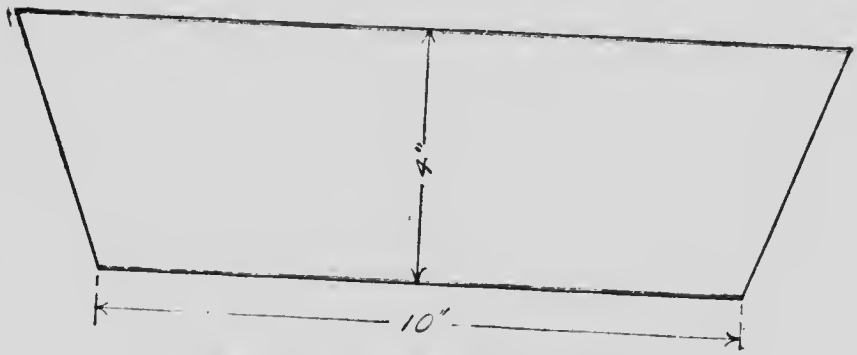


Fig. 5.—Drinking Fountain for Hens.

In the same flock there were birds that laid only half a dozen eggs during the entire four months. These latter hens were fed at a loss. These poor layers will all be weeded out this season, and only hens coming up to a certain standard will be allowed to go on to their second year. All the laying hens are being trap nested, and a regular process of weeding out in all breeds will be followed every year. In breeding for egg production the stock must of course be strong, vigorous and healthy. The male bird should be as nearly as possible of average size and standard weight. A male bird which matured quickly is always to be preferred to a bird which matured slowly. In females, quick maturity is not so important, although the whole pen should be pretty well matured before being used for breeding purposes. Slow maturing pullets if mated with a quick maturing male will give good results even though they are not fully developed. By using males of less

than average size, the size of the stock will be rapidly decreased. These methods of mating will bring about a good annual average egg production, and by following it out systematically year after year, it is possible to get a good substantial increase in the average egg production.

In special breeding for improvement in egg production, some record of performance must be available. It is generally supposed that like produces like, and therefore the heavy laying hens would in turn produce heavy laying pullets. Such birds must have sufficient substance, vigor and constitution combined with producing and reproducing powers to be able to transmit them to their offspring. Various experimental stations have shown that heavy egg production is transmitted through the male bird rather than through the female. Such being the case it is a good practice for the ordinary farmer to purchase a bred-to-lay cockerel and mate to a dozen or so of the highest and best laying hens. This is probably the quickest and best way to breed for improvement in egg production.

The length of time required to get fertile eggs after a flock has been mated will usually be from three to ten days. On the third day some eggs are liable to be fertile, after which it will gradually increase until the highest point is reached. Weather conditions will, of course, influence fertility, but generally by the tenth day the average will have been reached.

CARE AND MANAGEMENT OF POULTRY

The care and management of hens, both in laying and breeding condition, is very much the same, especially on the farm. What applies to one applies to the other. Care should be taken not to overfeed nor yet to underfeed. Absolute cleanliness must be observed in all details. Poultry houses should be cleaned out at least once a year, and also given a thorough whitewashing with hot whitewash, having a five per cent. solution of crude carbolic acid added. Apply this hot. Clean out all loose litter and other material. Put in a fresh supply of sand or gravel if you are using earth floors. At all times of the year an abundance of air-slaked lime should be sprinkled in the house, and during the summer time around the poultry house also, as it helps to keep the place sweet and clean, thus preventing disease. During the summer time the roosts and nests should be sprayed with some good liquid louse killer, or a solution of two parts of kerosene to one of carbolic acid. This will be found very effective in keeping down the lice. Provide a dust bath made of equal parts of sand, lime and ashes.

A very good whitewash can be made by slaking the lime in water, sufficient only to keep it from burning. Then add skim milk or buttermilk to make it the right thickness or so. Also add two pounds of salt to every ten gallons of whitewash. There is less trouble with the whitewash peeling off if the milk and salt are used instead of water.

Add the five per cent of carbolic acid the same as to the ordinary whitewash, and apply it the same way

INCUBATION

There are two methods of incubation the natural and the artificial. Under ordinary farm conditions we could hardly advise the purchase of an incubator, but where there are upwards of three hundred chicks hatched annually it might be a paying investment

When early hatched pullets are wanted for winter egg production, the incubator may almost be a necessity, unless a sufficient number of broody hens can be secured. However, this is a matter for the farmer to decide for himself. No detailed instructions are required regarding the care and management of setting hens, and the incubator manufacturers usually send full instructions on how to operate their machines, so information along these lines is not required. The eggs selected for hatching purposes should be of uniform size and shape, discarding any that are abnormal or dirty. They should be from healthy, vigorous stock in the best of breeding condition. Avoid setting eggs that have been laid a long time or have been chilled at any time. The sooner eggs are set after being laid the better they will hatch, other things being equal. When the eggs are saved for hatching purposes they should be kept in a cool place at a uniform temperature of 45 to 50 degrees, and turned every day or two until they are placed under the hen, or in the incubator.

Information on the method of handling the eggs and operating the machine during the incubation period must necessarily be of a general nature. All of manufacturers send a booklet of instructions with each machine, which, if followed, should give fairly good results. However, we have a good many instances where these instructions were not followed and still very good hatches obtained. Almost all incubators will give the same results when operated under the same conditions as regards temperature, moisture and ventilation; so what will apply to one machine will apply to the other in more or less of a general way.

Each manufacturer will advance the claims and emphasize the strong points of his machine, and probably all of them advocate the purchasing of a large sized machine. Under the ordinary conditions as we have them on the farm—and where there is a need for an incubator, we would advocate purchasing a one hundred and fifty egg size machine in preference to any other. This size machine costs only a fraction more than a smaller one, burns but very little more oil, is just as easy to operate, and will give as good results as the smaller machine. Larger machines generally do not give as high percentage of hatches as do the smaller ones. The heat is usually more uneven, due to the larger area exposed to the outside air and the large space which has to be heated.

An incubator should be placed in a well ventilated cellar, or a living room will do if there is no jarring or shaking of the floor. The machine should be set on the level, so there will be an equal distribution of heat.

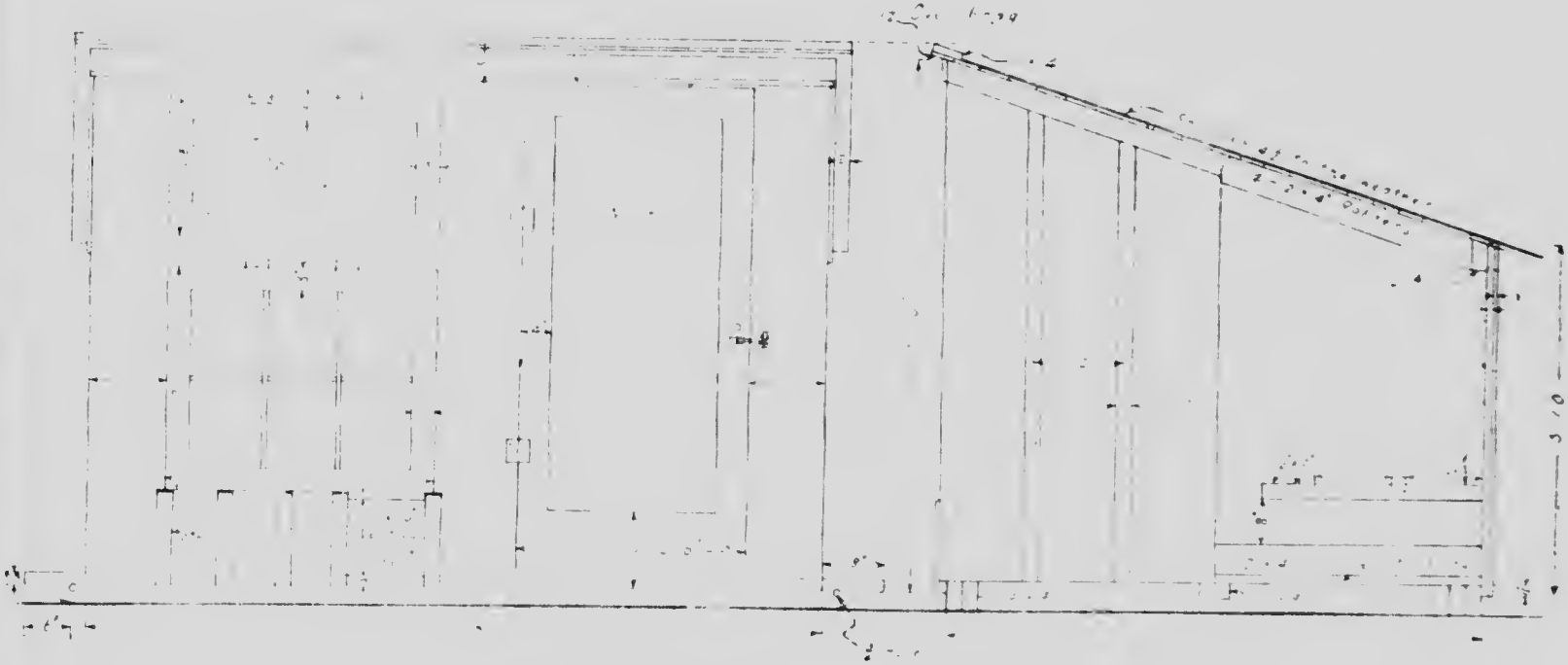


Fig. 6—COLONY HOUSE FOR RAISING CHICKENS

Fig. 7—This portable colony house for rearing chickens is made out of two piano boxes, with the backs taken out and placed back to back, on 3x6 inch runners...The illustration shows the method of yarding shicks until they are two weeks old at the College.

Fig. 8—A photograph illustrating the piano box colony house in use for raising chickens, and also the method of supplying shade for chickens. The self-feeding feed hopper as it is used in th Poultry Department, Manitoba Agricultural College.

Warm air always rises, hence if the machine is higher at one end than the other, that end will be warmer than the lower one. Care should also be taken to place the machine so that the sun's rays will never strike it. Use only high grade kerosene in the lamp. Light it and heat up the machine to 103 degrees, depending on the kind of thermometer that is used. Be sure the thermometer is correct by first testing it along side an accurate instrument. The way to test an incubator thermometer is to take an ordinary thermometer, graduated sufficiently wide to get the freezing and the boiling points, and place it in a pan of snow, being careful to have the snow packed close around the bulb. When placed in the snow in this way it should register exactly 32 degrees, or freezing. Afterwards place this thermometer and the incubator thermometer in warm water, about 98 to 110 degrees. Then compare the two and note if they register the same. If they do not record the same, make your deductions accordingly, and then place the incubater thermometer back to the machine. A good many poor hatches in incubators are due to inaccurate thermometers, which may mean overheating or else not sufficient heat.

There are three different kinds of thermometers in common use—the hang up thermometer, the contact and the egg thermometer.

The last named is enclosed in a celluloid egg and registers the tepera-ture inside the egg which should be 100½ to 101½ degrees.

The contact thermometer is placed among the eggs so that it will not touch any, and it should register 103 degrees. Considerable difficulty will be experienced if the bulb happens to touch an infertile egg because it will then register a few degrees lower than the real temperature; so be careful not to have it touching any eggs at all until after the first test.

The hang-up thermometer is generally placed an inch or so higher than the eggs, and the machine is usually run at about 103 or 105 degrees, depending on the location of the instrument.

Of the three thermometers the "Inovo" or egg thermometer is probably the best, as there is no danger whatever of having it misplaced, or influenced in any way by coming in contact with the eggs.

After the machine is brought up to the proper temperature, the heat regulator should be adjusted properly, and the eggs placed in the machine. It will take about twenty-four hours to bring the temperature back again to where it was previous to placing in the eggs. The thermostat adjustments should be so made that the regulator will rise immediately the heat goes higher than it is supposed to be. In placing the eggs on the tray, have them all lying on the side in their natural position as much as possible, and do not crowd the tray.

The eggs will require no turning for the first thirty-six or forty-eight hours, and after that they should be turned regularly twice a day until hatching time. But very little ventilation will be required the first nine days, and no cooling whatever will be necessary, except what they

get when turning them. Practically all incubators, whether the directions say so or not, will give better hatches if a moisture pan is placed below the egg tray. On the ninth day the eggs should be tested, and the infertile ones and blood ring ones removed.

From now on the eggs should be cooled once a day, but only for a sufficient length of time to have them feel slightly cool when against the face. The length of time to cool will of course, depend largely upon the temperature of the room. Avoid chilling while cooling them, as chilled eggs will hatch out a large percentage of cripples. Fill and trim the lamp regularly in the evening if possible. Use only high grade kerosene, and clean off the wire gauze on the burner every few days. The lamps should be filled and trimmed after the eggs have been turned to avoid oily hands coming in contact with the eggs. The egg tray should be reversed every time the eggs are turned. The best way to turn the eggs up to the first test is to take off a dozen eggs and with the flat of both hands resting gently on the eggs give them a rotary movement, thus changing the position and location of each egg.

After the first test the ventilators should be opened gradually to get a larger supply of oxygen. Previous to this the animal life present in the eggs is not sufficient to demand a very large supply of air.

The eggs should be tested a second time on the fifteenth day and all dead germs removed. On the nineteenth day, or as soon as the eggs begin to pip, the moisture pans should be removed and the ventilators partially closed. The eggs should remain undisturbed until all the chicks are out.

There may be a few chicks that require help to get out of the shell, but no help should be given until the hatch is practically complete. A draught of cold air rushing into the machine in the middle of a hatch is always detrimental to the chicks just hatching and should be avoided as much as possible. The chicks that require help to get out of the shell are generally more or less of a weak constitution and usually do not thrive very well. When the hatch is complete, the tray with the remaining eggs and the shells should be taken out and the incubator door left open about a quarter of an inch until the chicks are removed to the brooders. This is known as the "hardening off" process, and seems to be very beneficial to the chicks.

Nature has provided the chick with sufficient food for the first forty-eight hours of its life, so no food will be required until every chick is thoroughly dry and ready for the brooder. An uneven temperature during the period of incubation will lengthen out the hatch and also produce a higher percentage of crippled chicks. Chilling will have the same effect. Jarring or shaking the machine will mean dead germs. Rapid cooling of the eggs during the early spring months, when the incubator room is likely to be cold should be avoided as much as posible. When turning or cooling the eggs, place the tray on the top of the machine or on a table to prevent cooling from below. Placing a

cloth over the eggs while cooling them will prevent too rapid cooling.

Operating an incubator is somewhat similar to all other poultry work, as it requires the same attention to detail. These brief suggestions are intended to convey this idea and also to help the inexperienced over some of the difficulties or problems that arise in artificial incubation.

CARE AND MANAGEMENT OF THE SETTING HEN

Instructions on the care of the setting hen and how to handle her would almost appear unnecessary, and yet many persons seem to have poor hatches on account of improper handling.

Usually the lighter breeds are very poor sitters, and also make very poor mothers, the heavier breeds like the Rocks, Wyandottes, Reds and Orpingtons generally are the best sitters and the best mothers. Brahmas, Langshans and Cochins although good sitters and mothers, are almost too heavy and clumsy to hatch and rear chickens. It is also a more difficult matter to keep them clean on account of the immense growth of feathers on the legs and also the length of the body plumage. Lice usually are more troublesome on these birds than on others.

Having secured a good broody hen, she should be removed to a darkened nest having a few inches of earth in the bottom and some straw on top of this. Put a few eggs in the nest and gently set her on these. Cover the nest and leave her alone for a few hours. A good plan is to move her at night. As soon as she takes to her new duties, remove the eggs and put in about thirteen good ones. The room should be large enough to hold about fifteen or twenty setting hens and the nests should be arranged in rows quite close to the floor. All the hens should be taken off the nests in the morning before breakfast and fed and watered. After breakfast usually they will be back on the nests. By having the the nests close together there is very little danger of having two hens going on the same nest. This is the common reason for broken eggs in the nests. Thoroughly dust each hen with insect powder before setting and repeat the application a day or so before hatching time. Generally hens having hatched chickens in previous years will prove the best sitters. Pullets are always inclined to hug the eggs at hatching time or sit down on them too tight, thus crushing the chicks when they hatch. Provide a good dust bath made out of sand, lime and ashes, and add a little insect powder.

REARING CHICKS

The system of raising chicks ordinarily followed on the farm is to put a certain number of chicks with the hen, and place the hen in a coop by herself. Where an incubator is used to hatch the chicks, a brooder is generally used to raise them. Where such is the case a portable colony house shown in Fig. 6, would be the best thing to raise them in. A lamp box can be attached to the outside of the house and a hover placed inside. It can then be hauled to any part of the farm, or along

the end or edge of a corn patch, which is the ideal place to raise chicks. As soon as the chicks are old enough to roost, the hover should be taken out and roosts put in, and then the chickens can stay there till early fall, when they are ready to go into the regular poultry house. If a sufficient number of broody hens can be secured at one time, it is a good plan to hatch with the hens and then raise them with the brooders.

The method of feeding chicks is very simple. The first feed may consist of bread, soaked in milk and pressed dry, and hard-boiled eggs mixed with it, and also finely cut onion leaves. Give them chick feed scattered in litter, or on the ground, five times a day. If milk is available give them milk to drink in a drinking fountain, similar to the one shown in Fig. 9.

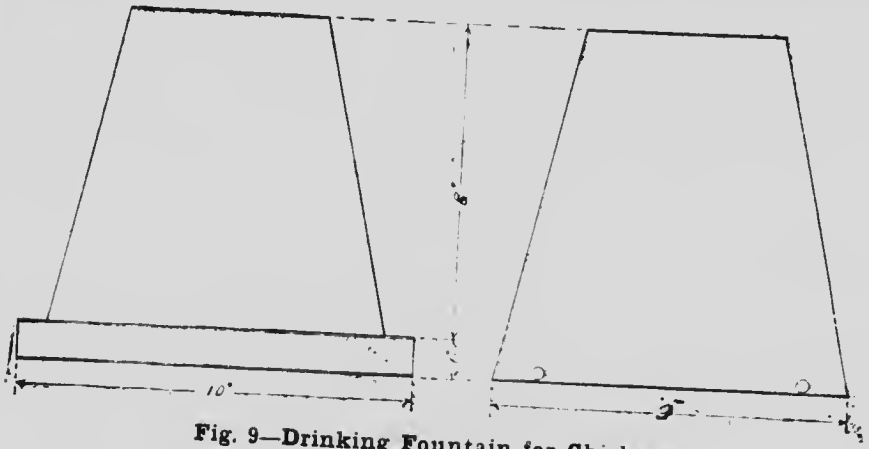
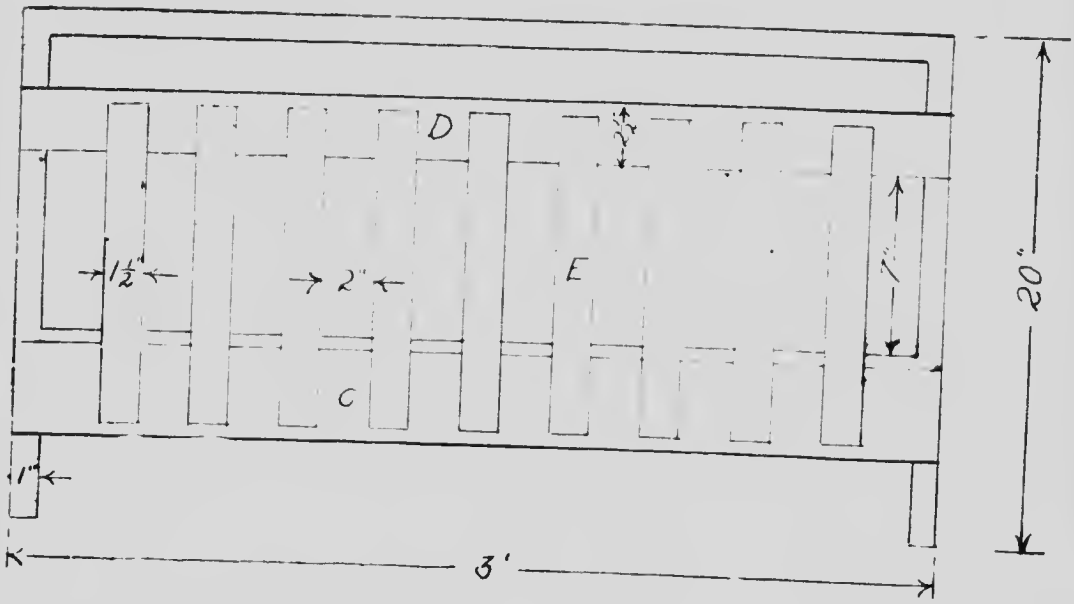
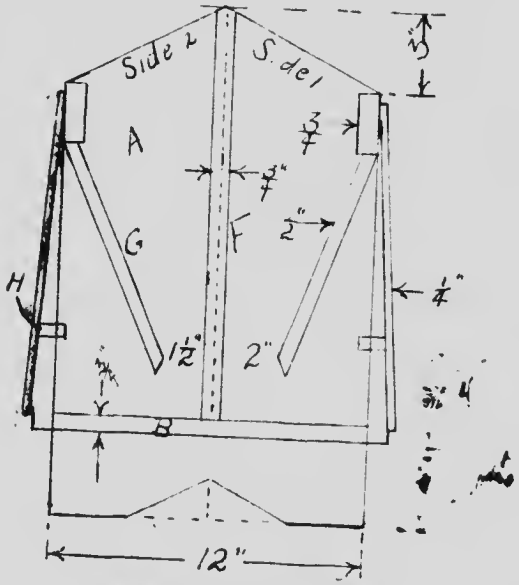


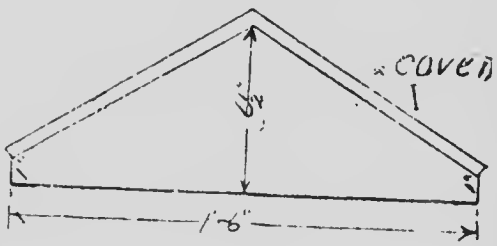
Fig. 9—Drinking Fountain for Chickens.

Wheat screenings and finely cracked corn may take the place of chick feed. Gradually change to wheat or wheat screenings and cracked corn, so that at the end of six weeks they will get very little cracked feed. Feed three times a day after the first three weeks. Provide grit of some kind.

At the end of two weeks they should be started on a dry mash made up of one part corn meal, one part low grade flour, one part bran, five per cent. beef scrap, one per cent. bone meal and a small quantity of powdered charcoal. Feed this dry in a pan or trough twice a day. This dry mash may be fed from the day the chicks are put in the hover. Stale bread soaked in any kind of milk and pressed dry is always a good feed along with these others. After six weeks of age the chicks should have the grain and dry mash put in a two compartment feeding hopper (see Fig. 10). Keep this some place outside, so they can eat all they want. By following this plan of feeding, and raising them on free range, the chickens of the utility breeds should weigh four or five pounds at five months of age. Then the pullets are ready to go into the regular poultry house, and the cockerels are ready to fatten for the market.





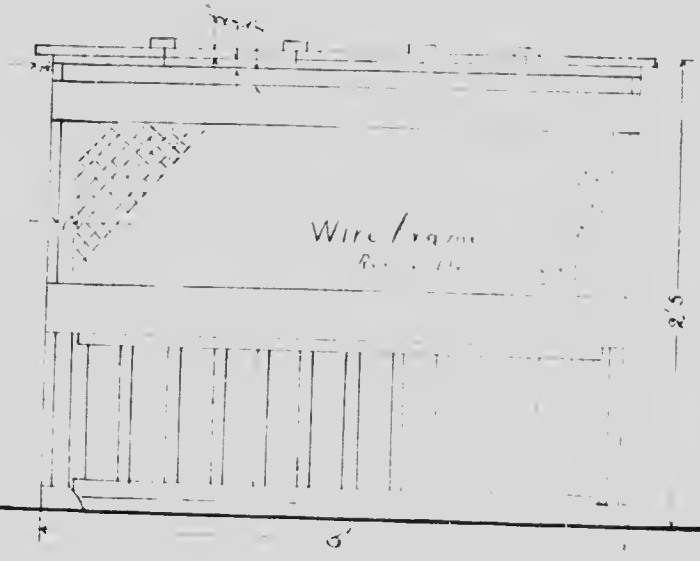


Side 1—Chopped Feed.
Side 2—Whole Grain.

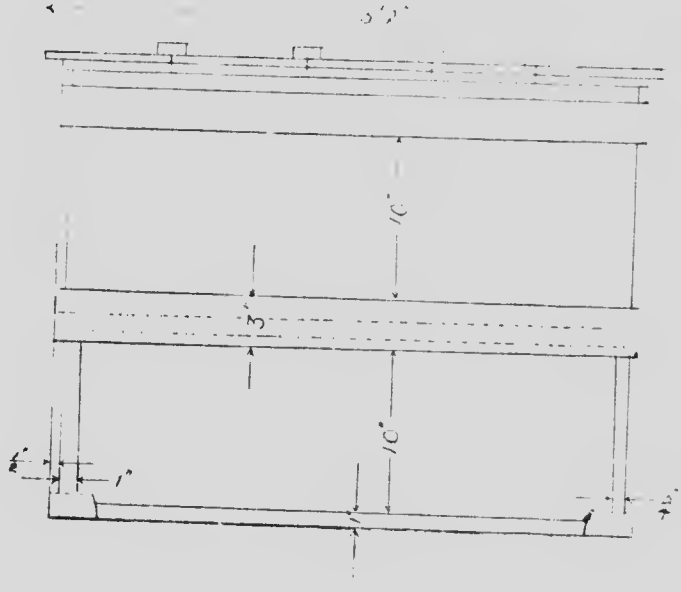
A—2 ends, 12x20.
B—1 bottom, ¾x12x2—10¼
C—2 sides, x6½x3
D—2 sides, ¾x2½x3.
E—18 pieces ¼x1½x12.
F—1 division, ¾x16x2—10¼
G—2 divisions, ½x9x2—10¼
H—2 pieces, ½x1x3.
I—2 pieces, ½x11x3.
J—2 ends, ¾x6½x1.6, (cover)

Fig. 10—Feed Hopper for Chickens

Chicken Coop

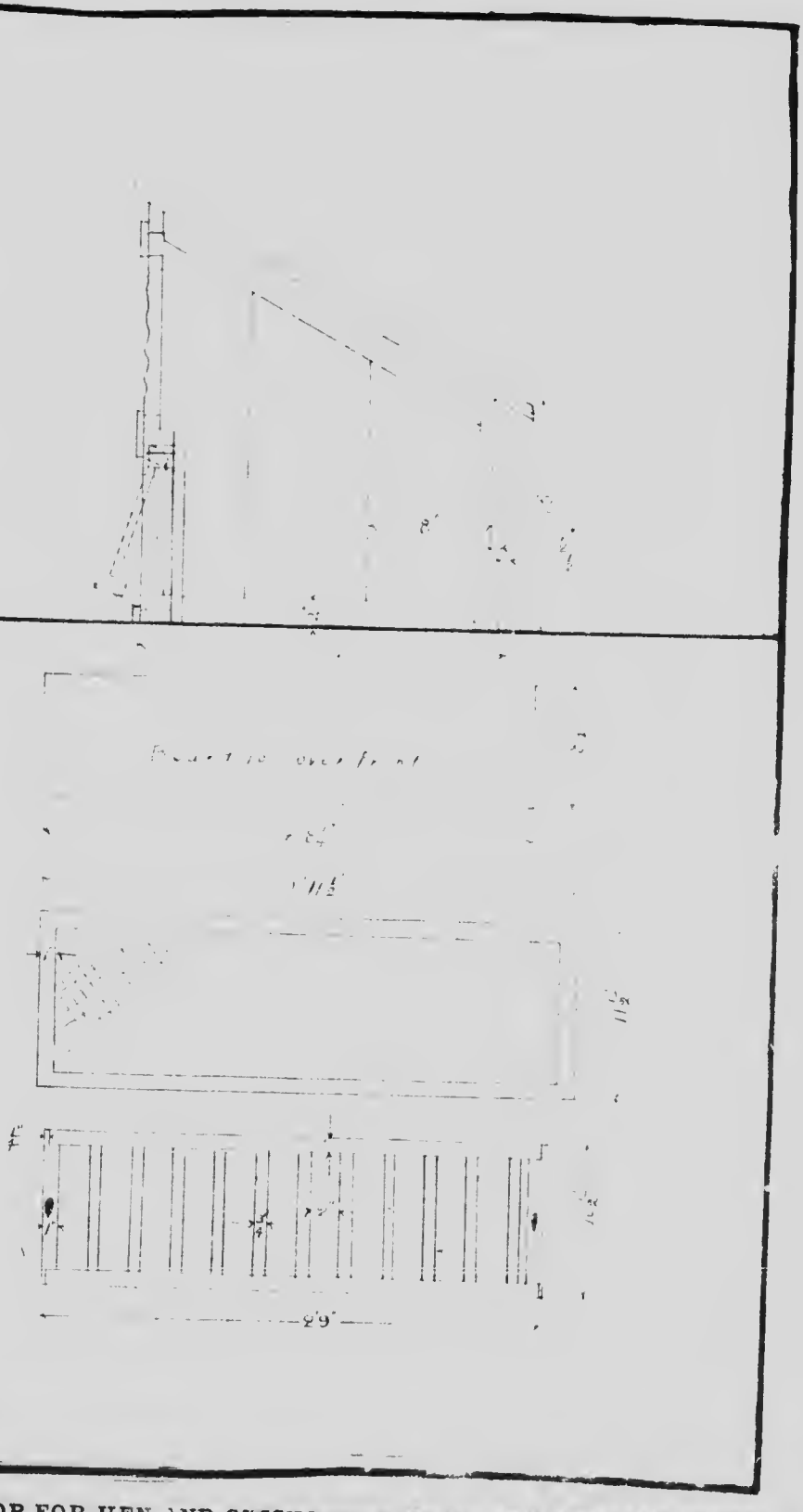


Front View Closed



Front View Open

COOP FOR HEN AND CHICKENS—Front View



COOP FOR HEN AND CHICKENS—End View and Removable Sections

Cleanliness must be followed in raising chicks. Clean out the brooder or colony house at least once a week. Chaff, cut straw, fine sand or fine earth, any one of them will make good material to use on the floor of the brooder or colony house. Use plenty of air-slaked lime in them. Keep close watch for lice. Spray well with any liquid louse-killer or kerosene and crude carbolic acid. Wash out drinking pans once a week. When raising chicks with hens dust the hens with a louse powder just before hatching time, and every two weeks after the chicks are hatched. Move the coop containing the old hen every few days to a new and clean spot. Feed the chicks the same way as those raised with a brooder. Close up all coops and brooders at night to keep out skunks, weasels or other enemies.

BROILER PRODUCTION

Whether broiler production or the production of roasters is most profitable on the ordinary farm will depend largely whether or not a large market is close at hand. Broilers, of course, have to be hatched fairly early if they are to be in marketable condition at the right time. However, this branch of poultry keeping is not so difficult in our Prairie Province as in the Eastern Provinces on account of the broiler season being later. There is not a very strong demand for broilers early in the season on account of the frozen poultry coming in from the south. Just as soon as this class of poultry is off the market, Canadian broilers will sell readily at a very good price. Our own experience has been, that broilers hatched March 18th, sold at nine weeks of age at 35c to 40c per pound weighing at that time 2½ pounds per pair. At the end of June, broilers from this same flock sold at 55c to 60c per pound, weighing 2½ pounds each.

Assuming that these are average Western conditions, it would appear that to get the best results the chicks should be hatched about the first to the fifteenth of April. Broilers should go on the market at not over 2½ pounds each, and half a pound less would mean even more economical production. The White Leghorns excel all other breeds as broilers. In the first place this breed shows the highest fertility of any, at the time when the eggs are required for broiler hatching. Secondly, they also hatch out better and show a larger mortality rate, and they are also raised more easily than any other breed of chickens. The price of eggs when they go in the incubator is of course quite an item, and therefore the fewer eggs required to produce one market broiler, the larger the profits. Then, too, the White Leghorn is practically full feathered at the broiler age of eight to twelve weeks, and also dresses out a neat plump carcass. Pin feathers are one of the worst objections to the heavier breeds for broilers. The White Leghorn has very few at broiler age, and what few there are will be white and therefore do not detract from the appearance of the carcass. A small carcass covered with dark pin feathers is very unattractive and will not sell at as good a price as the neat carcass. Leghorns will also as a rule hatch better with incubators than the heavier breeds.

For broiler production an incubator and a brooder become almost a necessity on account of the broiler market season being so short. Some seasons when spring opens early there might be plenty of broody hens, while other years there would be a scarcity.

Having hatched the broilers, the aim should be to get them on to the market as quickly as possible. The methods of feeding are essentially the same as those outlined in a previous paragraph for feeding chicks. Have conditions as near natural as possible, even if they are reared by artificial means. Dry mash, buttermilk, and free range are three important factors in the early life of broilers. Later, when finishing off they will stand confinement all right, but early in life they are inclined to go off their feed. Induce them to eat soft mash once a day. By using the dry mash and adding buttermilk, a very suitable forcing ration can be made. Chickens can always be induced to eat an extra feed by changing it over to a wet mash. At about eight weeks of age, the cockerels intended for broilers should be separated from the pullets in a small yard or pen and placed on a fattening ration, made of equal parts of corn meal, Victor Oatfeed, flour and bran, adding about five to ten

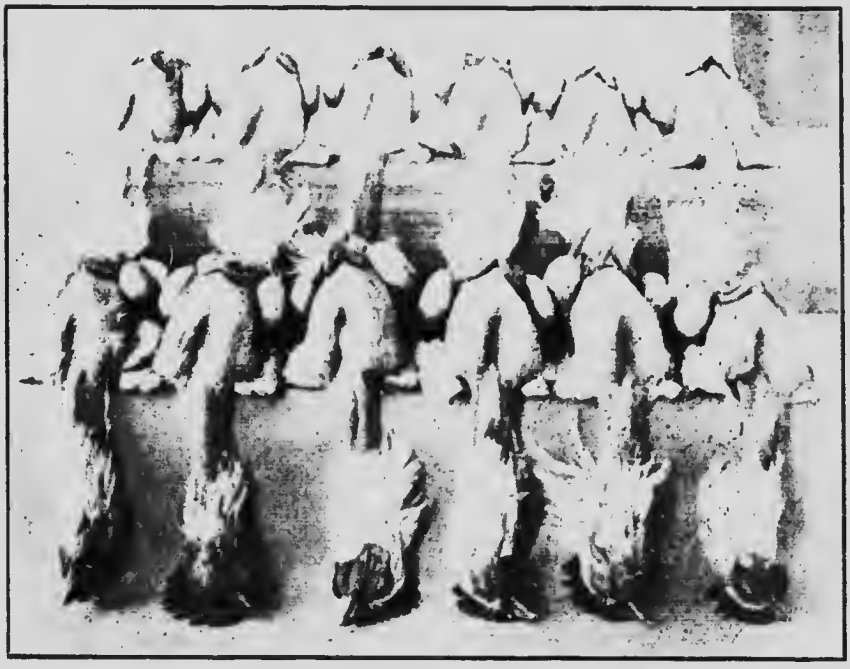


Fig. 12

One dozen Broilers, White Leghorns, Hatched March 20th, killed at nine weeks of age, weighing 2½ pounds per pair, and sold on the Winnipeg Market at 45c per pound. These chickens were reared by the Poultry Department, Manitoba Agricultural College.

per cent. of beef scrap and mixing this mash with milk to make it fine and crumbly, but not too wet. Feed this once a day and hopper-feed the dry mash and grain as previously directed. Also give milk to drink. This method of feeding gives very good results. Should the wing feathers grow too long at any time, they can be clipped off with a pair of scissors.

FATTENING COCKERELS FOR MARKET

The breeds which are most suitable for market poultry are Rocks, Wyandottes, Orpingtons or Reds, or any of these crosses. The lighter breeds will never make as economic gains as these breeds. The best time to fatten the cockerels is in the late summer and early fall months, just when they come in from the range. The best age at which to fatten them is from four to five months old. Crate fattening should be followed exclusively. One of these crates is shown in Fig. 13. It is six feet long, fifteen inches wide, and eighteen inches high. If desired it can be made larger. The slats are put on lengthwise on the bottom, and two inches apart on the back and top. The front slats are put on upright and placed two inches apart, so that the birds can put their heads through to eat out of the trough placed in front on iron bars. All the slats are seven eighths inches wide and five eighths inches thick. The crate is divided into three equal compartments by solid partitions. The ends are also solid seven eighths inch boards. Each compartment opens seperately on the top by having the slats fastened together and hinged on in the form of a lid. The trough is made of three eighths inch material and is two and one half inches deep inside measurements. These crates should be placed about three feet off the ground and four birds placed in each compartment. Dust the cockerels thoroughly with insect powder before putting them in the crates, starve them for twenty four hours and then begin feeding lightly of a ration made of two parts oat middlings, one part of corn meal and one part of low grade flour. Another suitable mash can be made of two parts of finely ground oats with the hulls sifted out, one part finely ground barley and one part finely ground wheat. This is one of the cheapest rations to feed, as all the ingredients are grown on the farm.

An ideal ration can be made by taking two parts of Victor oat feed, one part of corn meal, one part of ground buckwheat, and one part of low grade flour. Take one ounce of any of these mashes for the first meal and add sufficient buttermilk or sour milk to make it the consistency of a pancake batter. Milk in some form or other is always preferable to water, and buttermilk and sour milk will give better results than sweet milk.

Feed this quantity to each bird the first two meals, and then increase the mash at the rate of one ounce for every four birds at each meal until they are on full rations, which will be about twenty to thirty ounces of mash a meal for every twelve birds. Feed at morning and at night as nearly at regular intervals as possible. Give them grit in the trough once a week. Be careful not to overfeed, but just keep them so that they will eat all they get. Never leave any feed in front of them more than

thirty minutes. No drinking water will be required unless the birds are fattened during the hot weather. Have the crates in a cool room, free from draft and at an even temperature. The birds should be fattened about three weeks according largely on the condition they were in when they went into the crates. Usually the largest gains are made during the second week of the fattening period. Starve them twenty-four hours before killing in order that the crops may be empty and also the greater part of the food digested.

There are two favorite ways of killing birds, viz.: by simply dislocating the neck, or bleeding and sticking.

Each system has its strong points. Where dislocating the neck is practised the blood remains in the dislocated portion of the neck and is sold at the same price as the meat. It also takes less time to kill a chicken this way than the other way. The portion of the neck from the broken joint to the shoulders is easily discolored to quite an extent and the head of the bird will not look as fresh and clean as one that is killed by bleeding and sticking. However, the best way to kill must be settled by the producer himself and his market demands. The method of killing by dislocation may be described as follows:

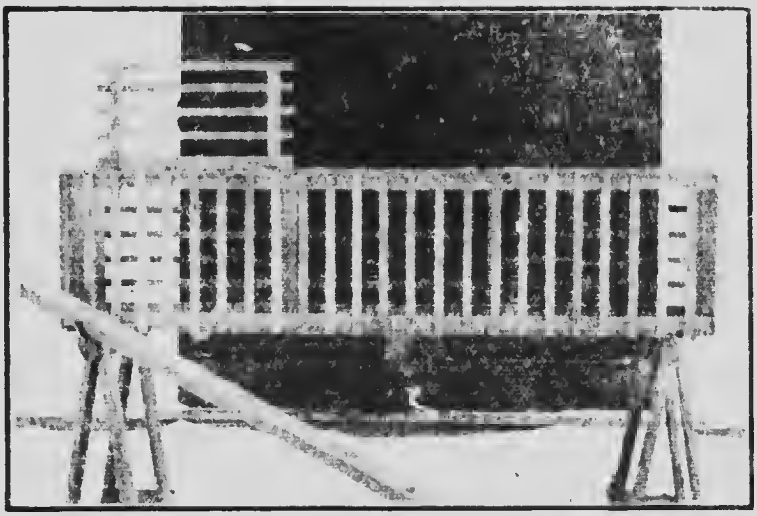


Fig. 13.

With the left hand grasp the legs of the bird, and with the right hand take hold of the head, allowing the neck to pass through between the thumb and the first finger, and have the little finger placed below the beak. By pulling with the right hand and giving the head a twist backward against the thumb the neck is quite easily dislocated.

Fig. 14.
Cut to bleed where veins join
Insensibility is Produced by Thrusting Knife in Cleft

Fig. 14a.
Showing Position of Knife When Cutting Artery

Fig. 14b.
Thrust Knife into Brain as far as Possible. Give Half Turn and Withdraw
HOW TO KILL A CHICKEN BY BLEEDING AND STICKING
Note—First bleed, then pierce the brain.

The way to kill by bleeding and sticking is shown in Fig. 11. After the birds have been killed they should be dry plucked at once, so that they are clean before the carcass is beginning to cool. Leave about an inch and a half to two inches of feathers on the neck and do not pluck the small feathers from the last joint in the wing to its tip, also leave about an inch around the hocks. Wash the heads and feet before placing them on the shaper. Put the birds on the shaping boards as shown in Fig. 15, and allow them to cool and come into a fine blocky shape. After they are properly cooled and shaped they can be neatly packed in suitable cases and shipped to whatever market pays the best prices.

All poultry killed and dressed for table should be dry plucked, and marketed undrawn. Dry plucked poultry will always keep longer, present a neater appearance and be of better quality than scalded poultry. By leaving the carcass undrawn and leaving the legs and feet on it as well, there is no raw surface exposed on any part of it, and the chances of

Fig. 15.

outside contamination from such agents as the sun, bacteria in the dust of our city streets, and flies, is reduced to a minimum. These are the most active agents in hastening decomposition and if we market our dressed poultry product in such a manner as to exclude these, we have taken a decided step towards a better class of table poultry.

There is a larger percentage of diseased poultry coming on our markets every year, and under our present system of marketing, there is very little hope of ever improving these conditions. We must adopt some definite plan and uniform standard in preparing and marketing

our table poultry. The old-time method of cutting the heads off the chickens and removing the entrails leaves too much room for a dishonest producer to bring in diseased chickens. We want to see our dressed poultry placed on the market in such a way that the consumer has a positive guarantee that the bird purchased was in perfect health prior to being killed for the market. This we can only get by leaving the head on the carcass, and leaving it undrawn as well. All the worst diseases in poultry like roup, tuberculosis and blackhead, show in the head, and in fact, the presence of disease of any description is always first noticed by the general appearance of the head. So we strongly advocate leaving the head on the carcass. The liver in a fowl is the organ generally affected in any of the constitutional diseases, and cholera, tuberculosis and blackhead are readily detected by the state and condition of the liver In view of these facts we cannot too strongly condemn the old-time practice of marketing dressed poultry in the manner in which it has been marketed, and suggest the method of marketing as here outlined as the one most applicable under present conditions, and one which places both the producer and the consumer on the same basis.

To many people this process of fattening birds for the market may seem a useless waste of time and expense. To those who doubt the advantages of crate fattening chickens we wish to submit the following data:

In November, 1911 in the Poultry Department of the M. A. College, forty-six birds were placed in the crates and fattened for three weeks. There were twelve White Leghorns, and the remainder were Barred Rocks, White Wyandottes, Rhode Island Reds and Buff Orpingtons. At the beginning of the fattening period these birds weighed 147 lbs. 12 oz and were worth 10c a pound. Total value $11.78. At the end of the three-week fattening period their dressed weight was 165 lbs. 9 oz., worth 16c a pound. Total value $26.49. They consumed 192 lbs. 11 oz of mash worth $1.60 cwt., and 100 lbs. of buttermilk, worth 25c a cwt. The total cost of food consumed was $4.08, thus leaving a profit of $7.63, not including cost of labor.

As a general rule the utility birds gain from a pound to a pound and a half per bird in three weeks' time, and it usually takes from three and a half to four pounds of the mash to make a pound of gain. Figuring on the entire cost of producing a pound gain and the increase in value of the chickens from the time they go into the crates until they come out, I have never yet failed to make a substantial profit.

JUDGING POULTRY

For the benefit of those who may be called upon to judge dressed poultry at some of our shows, it would be well to have some definite and uniform system of judging devised. The following score card is intended to meet the requirements, though not by any means perfect it will enable a judge to lay the emphasis on the points most deserving.

SCORE CARD FOR DRESSED POULTRY

Appearance—	Properly killed, bl[illegible] shaped and dressed	....50 points
	Freedom from bruises	
	Absence of pin feathers	
	Straight [illegible]	
	Crops empty	
Quality	Fineness of skin and scale on legs	.....25 points
	Texture and grain of meat	
	Age and condition of carcass	
	Pliability of spur	
Fleshing	Covering of breast bone	....25 points
	Covering of back.	
	Absence of pat[illegible]ness	

A few notes on the score card may help to make certain points a little plainer

Improper killing can be detected easily, as the carcass presents a reddish appearance, this showing that the blood has not all been drained from the system.

The crops must be empty [illegible] any food left in their crops will start to ferment and the gases generated will influence the flavor of the meat.

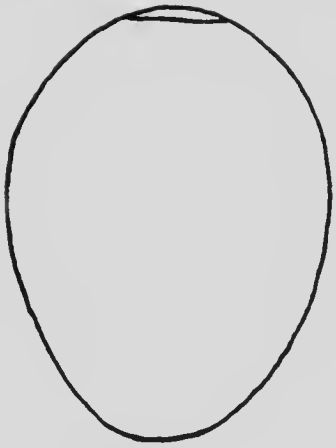
The quality is detected to a certain extent by the length of time the bird has been killed and usually by the state of preservation.

A hard [illegible] and tough carcass, a soft pliable spur on the other hand, denotes fine quality.

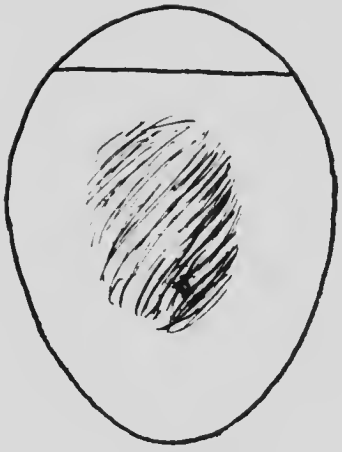
HANDLING AND MARKETING EGGS

There is an enormous waste and loss annually in stale, heated and rotten eggs, due largely to the loose methods in handling and marketing them. The fault lies both with the producer and the consumer. The former needs a better system of housing and feeding his hens and a different method of gathering and marketing the eggs, while the latter should demand the first class article and pay the first class price.

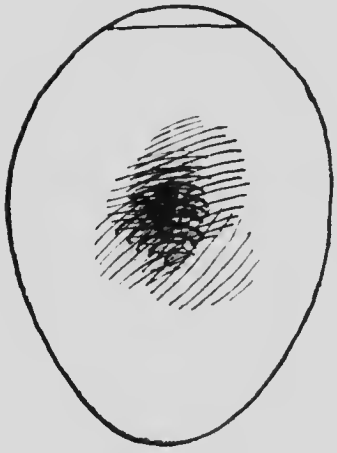
The kind of eggs marketed as "fresh eggs" at the present time run all the way from new laid to rotten. There are numerous classes of eggs besides the two mentioned: a few of the more important will be discussed here. (a) A new laid egg is supposed to be not over five days old. It has a small air space about the size of a five-cent piece, and the yolk and white are both practically clear when held up to the light. (b) The stale egg always has a large air space, and the yolk is very much darker than the white. (c) The heated egg usually has a small air space, but the germ has started to grow, presenting a darker spot than the rest of the yolk when held up to the light. (d) A mouldy egg usually has a fairly large air space, and when candled the



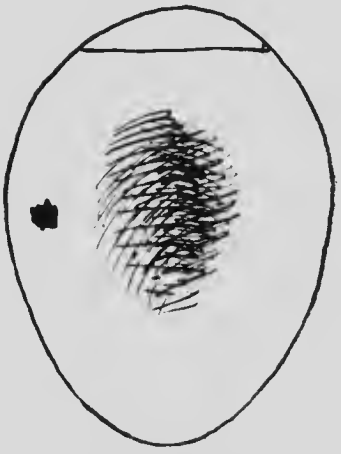
16.—New laid.



17.—Stale.



18.—Heated.



19.—Mouldy.

VARIOUS KINDS OF EGGS MARKETED AS "FRESH" EGGS.

yolk and white are quite distinct, and there is a very dark spot adhering to the inner membrane of the egg. On shaking the egg this spot remains stationary. (e) The blood spot egg may be either new laid or stale. The dark spot in this case swims round in the white and moves when the egg is shaken.

The dirty, cracked and rotten eggs need no description. The most serious loss in heated eggs occurs during the months of July and August.

when the warm weather is on. To overcome this difficulty the farmers must remove or kill off, all the male birds after the hatching season, and also gather the eggs regularly every day. Broody hens sitting on a few eggs left in the nests over night is usually the reason for this class of eggs. The germ in an egg will commence to grow when the temperature is brought up to 90 degrees for a time, thus causing heated eggs. Keep the eggs at a temperature of about 45 degrees until they are marketed An egg gets mouldy by being placed in mouldy or dirty fillers or cases, and allowed to be in these for some time. The moulds on the filler enter the pores in the shell and then grow rapidly and spoil the entire egg. A blood spot is caused by inflamation of the oviduct or some other injury to the egg-producing organs. The causes of the other kinds of eggs mentioned are various, and are also self evident to everybody.

All eggs should be candled before sending them to the market. This process requires very little skill and takes but very little time. An ordinary egg tester used in incubator work can be used to candle the eggs. Simply place it on a lamp and candle the eggs in a dark room. An egg tester may be made by taking a small box, put a lamp inside of

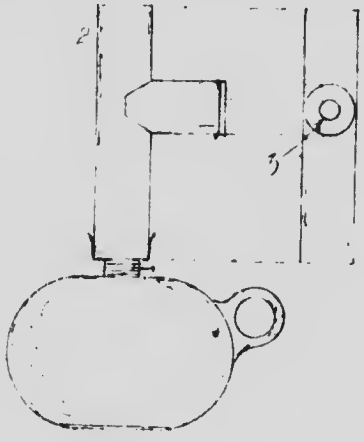
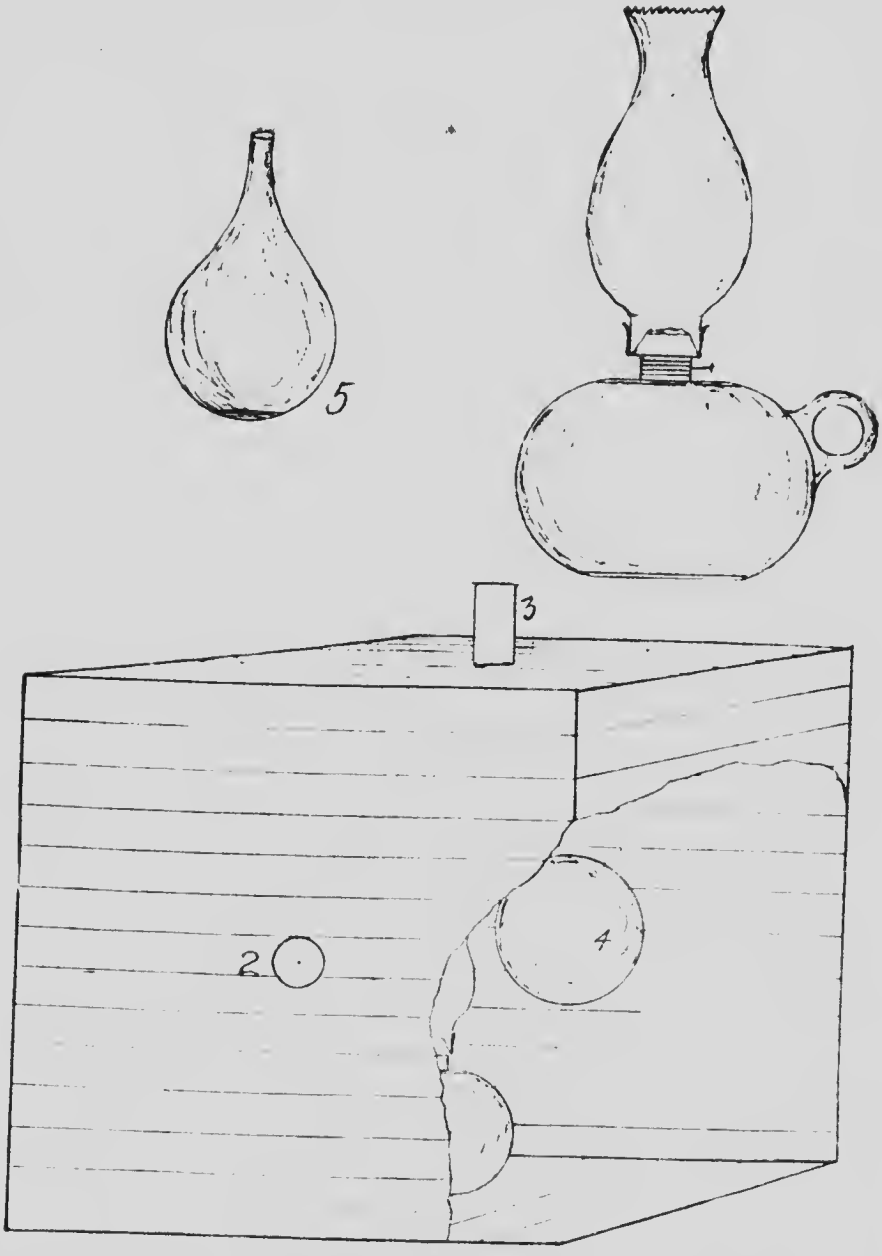


Fig. 20.—Ordinary Egg Tester.
1—Lamp. 2—Chimney. 3.—Hole in front of which egg is held.

it and cutting a hole in the top to let out the heat and fumes. Next cut a hole the size of an egg in the side of the box. Place a small bottle containing water on the inside of this hole to act as a reflector, and also to prevent the heat from striking the egg. If desired, a strong reflector can be placed back of the lamp which will make a stronger light and make candling a good deal easier.

The simplest egg tester can be made by darkening a room with tar paper placed over the window or windows. Cut a small hole in the



HOME-MADE EGG TESTER

1—Box for lamp
2—Hole before which egg is held.
3—Chimney to let fumes and heat escape.
4—Reflector to be placed in back of box.
5—Waterbottle to be placed inside of Hole.
6—Lamp.
7—Glass chimney.

paper the size of an egg and hold the eggs up to this. The suns rays will show up the egg very clearly.

The different classes of eggs have been described, and the reasons for their appearance on the market have been given. It now remains for the producer to follow up a systematic method of handling and marketing his eggs, so that the general buying public has some guarantee as to the quality of the product they are going to buy.

EGG CIRCLES AND HOW THEY WORK

Probably no more effective method of marketing could be adopted than that followed in Denark, Ireland and during the last few years in some parts of our Dominion, with such good results both in quality and in price and also in its effects on the industry in general. The idea of co-operative egg marketing is not new by any means and should very shortly form a potent factor in our Western methods of marketing. It does away with a lot of middlemen, thus shortening the time required to reach the consumer, guarantees a better quality and gives protection to both producer and consumer. Its advantages, if brought into operation would have a decided influence in the expansion and development of the poultry industry in Western Canada.

By co-operative marketing a steady supply may be maintained throughout the entire year, and private trade may be secured and controlled which could not be catered to by the private producer. Co-operative egg circles are operated on a basis similar to this and a large trade is always secured. Wherever these circles have been in operation there has been a decided improvement in the quality of the eggs marketed and the interest in poultry raising has spread at a remarkable rate.

The formation and operation of these egg circles is very simple. Any community sufficiently interested in producing a better class of eggs may organize and operate an egg circle. The "circle" is simply a society or a number of farmers banded together, sending their eggs to one market. The circle has a name, (and also a number if there is more than one circle in the country), and each farmer has his own number. The circle may have an executive similar to any other organization, and in addition a man must be appointed to collect the eggs. Each member of the circle is furnished with a rubber stamp having name of circle, number and the farmer's number; and each egg, before it is handed over to the collector, must be stamped on the large end. Every member agrees to conform to the rules and regulations of the circle as regards the production and handling of his eggs; and if he at any time is guilty of violating these laws he will forthwith be expelled from the circle. If the country grocer can be induced to take part in operating the circle, it will be a decided advantage to the members as they can still deal with their own merchant in the village. He may buy the eggs from the farmers or he may buy on the commission basis for some wholesale house and ship the eggs direct to them. No matter which plan is followed the principal works out the same. Usually these eggs will command two or three

cents a dozen higher price than the ordinary run of market eggs. The collector should collect and market them at least twice a week during the summer season. Another plan is for the farmers to bring their eggs to some central point in the town once or twice a week and in this way do away with the collecting of eggs. At the receiving point the eggs should be properly packed and then shipped to the market. The payments are made on the basis of quality and any bad or inferior eggs in a case are traced directly to the producer as designated by his own and his circle number. A second offence is usually followed by expulsion from the circle.

The members usually receive their checks once a month along with a statement of the number of eggs shipped, the price and also a note regarding any inferior eggs that may have been in the case, along with a warning or reprimand and any other instructions that may be required.

An improvement on these methods might be made by instructing each producer how to candle his own eggs and letting him put all the eggs through the process before they leave his farm. This would do away with transporting so many bad eggs; besides each producer would know exactly whether the monthly statement received was correct.

These co-operative egg circles can be operated to advantage in Western Canada providing our farmers are ready to produce a better class of eggs and willing to unite and work together for their own good and the good of the industry.

We are in hopes of seeing a few circles started this year and we are willing to co-operate with our farmers in organizing and putting into operation circles in districts where the industry is sufficiently far advanced and where the farmers will co-operate in sufficient numbers to insure successful inauguration.

Co-operation on a more advanced scale would, we believe, work out to better advantage than simply having a few egg circles scattered over the Province. What we would advocate is the formation of a provincial co-operative society in the producing, handling and marketing of all poultry products, especially eggs and dressed poultry.

One large society centrally located in our largest city should handle all the products sent in from the branch circles or societies scattered over the entire province. In this way our farmers would practically control their entire egg and dressed poultry output. In the production of table poultry there should be fattening stations located in various parts of the country and all birds shipped to the nearest one where they should be fattened, killed and dressed and then sent on to the central selling point, there to be placed on the market.

We hope to see our farmers combine and co-operate in the production, handling and marketing of eggs, and that as the industry grows, we may gradually develop co-operative ideas along other lines and in this way promote a more rapid growth in this important branch of farm operations.

EGG PRESERVATIVES

There are various egg preservatives in common use, but only a few are entirely satisfactory. The old-time method of preserving eggs in bran, oats or salt is pretty well extinct. The eggs preserved in this manner usually show considerable evaporation, and in the case of bran or oats they usually have a musty flavor. Those packed in salt generally taste salty. The best method of preserving eggs seems to be some material which excludes the air by filling up the pore space in the egg shell, thus preventing evaporation; at the same time excluding moulds which injure the quality of the egg

The best preservative in use at the present time is the saturated lime solution. This is easily made by slaking some new lime in water and after it is thoroughly slaked and has settled it should be stirred repeatedly, allowed to settle the second or third time, then pour off the clear liquid over the eggs placed in crocks or tubs.

Two pounds of lime will give enough solution to preserve 30 dozen eggs. Of the many different preservatives used at the College this one has given the best satisfaction. The eggs were almost as good as new laid, in quality and flavor.

A good preservative is the water glass solution made of eight parts of water (previously boiled) to one part of water glass. Eggs placed in this solution will keep indefinitely. Take an ordinary five-gallon crock or wooden pail, put in the eggs, and pour on enough of the cool solution to cover all the eggs. Melt some parrafin and pour it on top, thus forming a thin covering or blanket which excludes all air.

Another good preservative can be made by taking two pounds of fresh lime, one pound of salt, and four gallons of water. After the lime is well slaked, stir the solution and let it settle. After it has settled stir again and let it settle once more. Then pour off the clear liquid and use it as a preservative. Place the eggs in a crock as in the water glass solution and also use the paraffin.

Eggs preserved in these last two solutions are almost as good as new-laid eggs, but of course they should not be sold as such. In some instances those in the bottom of the crock have had a lime-like or a water-glass taste, owing to the accumulation of those materials in the bottom of the solution.

Another method of preserving eggs which is followed almost exclusively by commercial men, is placing them in cold storage. Eggs preserved in this way are generally sold as fresh eggs or storage eggs. They usually show some evaporation, and are also inclined to go watery, and have a bitter taste, which necessarily makes them inferior to new-laid eggs.

The only way of solving the difficulty the produce men have of supplying eggs to their customers in the winter time, when new-laid eggs

are extremely scarce, seems to be in preserving eggs. While preserved eggs are not equal in quality or flavor to new laid eggs, properly handled, still the consuming public have to be satisfied with these eggs until the poultry industry has reached that stage of development when the farmers know how to produce winter eggs.

DUCK CULTURE

With a good many people the idea of raising ducks is associated with an enormous consumption of food and small returns for it. This idea is probably correct in so far as the common method of raising ducks is concerned, but when duck culture is carried on as a straight commercial enterprise, with economic production as its foundation, then it will be one of the most profitable branches of poultry farming.

The one thing absolutely necessary to make raising market ducks profitable is to get them off your hands at the right time. A duck will make very economic gains in weight up to about ten or twelve weeks of age, and after that the rate of gain per pound of feed consumed decreases week after week at such a rapid rate that the profit made up to this age will be consumed in the course of three or four weeks. A duck is practically full feathered at about ten weeks of age, and will then go into its first moult which means that the food consumed after this age will have to go to produce feathers and repair waste tissue instead of producing meat. Ducks should weigh from eight to twelve pounds per pair at ten to twelve weeks of age.

The cost of producing a pound of duck is comparatively low, since three to four pounds of grain, is all that is required. Chickens require about the same amount of grain, but it takes almost double the time for a chicken to grow to the same weight as a duck. From the standpoint of economic production ducks are far more profitable than chickens. All successful duck plants had to develop a market for their product first, before they could go into large scale production. The tastes of the buying public need more or less cultivation because people do not take to

Photograph of a Duck Shed on a Duck Farm

eating duck as readily as chicken, and hence, if a duck plant is to be successful, the market has to be developed by starting in on a small scale first, and then gradually increasing the annual output at such a rate as to keep abreast of the market demands. Some of our most successful American duck farms of the present day started in 25 years ago with a setting or two of eggs and gradually increased their output until it amounts to thousands of dollars annually. Some idea of the magnitude of the enterprise can be formed when we note that one farm alone, is marketing forty thousand ducks annually besides selling thousands of day old ducklings to people all over the country. This farm is situated in close proximity to Buffalo markets. A good many duck farms, both large and small, are situated around Boston, New York and on Long Island, where there is a large demand for market ducks.

Photograph showing breeding ducks in an orchard

The equipment required to raise ducks on the farm is smaller than that required to raise chickens. Expensive elaborate buildings are unnecessary, and very little is required in the way of wire fencing. Ordinary poultry netting two feet high will yard ducks of any age. The houses need not be expensive, the main thing being to keep them dry and clean. No water is needed, except as a drink, as ducks will grow quicker if they have no access to water to swim in. Very few diseases affect ducks and it is very seldom that they are troubled with vermin of any kind.

In raising ducks on a small scale the same principles must be observed as in large scale production. Although the ducks are somewhat filthy in their habits, yet they require clean conditions if they are to do well. Shade of some kind is absolutely necessary. Some idea of the value of shade, for growing ducks, can be formed when we note that the cost of erecting a shed five hundred feet long and forty feet wide, as shown in the photo above paid for itself in increased returns in one single season.

Under farm conditions the method of hatching and raising ducks is governed more or less by the conditions under which chickens are raised. That is to say, if the natural method of incubation and brooding is followed in handling chickens, the same is followed in raising ducks.

Twenty-five to one hundred ducks could easily be raised on the average farm without going to any great expense. Hatching with hens and raising them the same way would be the most profitable. Their first feed should consist of a soft mash made out of equal parts of corn meal, low grade flour, and shorts or middlings, with five per cent of beef scrap in it and a little grit. Moisten it sufficiently to make it a crumbly mass, and add some green lettuce leaves cut up fine. Provide clean water to drink and arrange pans so that the ducklings cannot get into the water. Feed five times a day for the first few weeks; after that three times a day will be often enough. Change the mash a little at the end of three weeks and use a little more corn meal and beef scrap, and make half the bulk of green food, say green clover, alfalfa, oats, wheat, rye or even finely cut green corn will answer the purpose. This bulky food is given to fill up and all the grain should be finely ground in order that it may be digested readily. The green food gives succulence also. At nine or ten weeks of age, or about two weeks before they are marketed, the amount of corn meal and beef scrap should again be increased in order to finish them off properly. Always furnish plenty of grit, as it aids digestion. Keep the pens or yards clean and also as dry as possible. A small patch of alfalfa or clover forms an ideal place to raise ducks, and then enclose them in a wire run or pen, large enough to give room for some exercise. Be sure to provide shade of some kind.

chickens do.

There are three popular breeds the Pekin, Rouen and the Indian Runner. The Pekin is probably best adapted for Western conditions. It is a hardy breed, vigorous and quick maturing, and a good layer. They have white feathers and dress out a neat, plump, and well finished carcass at ten to twelve weeks of age. The Rouen duck has black feathers; it is a fair layer, vigorous and fairly quick maturing, but usually does best crossed with some other breed. The Indian Runner is the heaviest layer of the three breeds, but does not make quite as heavy and economic gains as the other breeds. This breed is the heaviest layer in the duck family.

GEESE

There are two popular breeds of geese, viz., the Embden and the Toulouse, with a third breed the Africans gradually coming into prominence. Raising geese is followed to a more limited extent than duck raising. As in the case of ducks, but very little is required in the way of houses, but geese on the other hand require more range. For this and their grazing habits they are not very well liked on most farms. A goose lays fewer eggs as a rule than a duck, and the goslings are a little harder to raise than ducks. There is always more or less difficulty in getting fertile eggs. In raising them for market about the same feeds are required, and about the same care and attention is necessary as in the case of raising ducks.

TURKEYS.

Probably nowhere in Canada has turkey raising been developed to such large proportions as in the Province of Manitoba. Owing to their peculiar habits they are especially adapted to Western farm conditions. After they have reached the age of four weeks, turkeys practically find their own living. They are excellent foragers and will live and thrive on the waste grain products of the farms. The Mammoth Bronze is the breed most commonly raised, although the White Holland and the Black Turkey are also raised in some sections.

One of the most serious drawbacks to successful turkey raising is disease, to which they seem to be more susceptible than other kinds of poultry. Blackhead and roup have caused more ravages in turkey flocks than any other single disease or combination of diseases. These will however, be treated later on in connection with diseases of poultry.

In raising turkeys there are no hard and fast rules laid down as to the proper feed or the correct method of feeding. A few suggestions and a brief outline of the methods which have been found practical, may be of value to the beginner. The eggs are usually hatched by an ordinary hen or the turkey hen herself. Whichever plan is followed the bird should be dusted thoroughly with some insect powder two days before hatching time. The young poults are very delicate the first few weeks of their lives, and must be guarded specially against lice and dampness. Twenty-four hours after they are hatched, the hen with her

brood should be placed in a coop having a slatted front. It should be placed on a grassy spot and moved every day. At about four weeks of age the hen can be let out of the coop and allowed to go with her brood where she likes. They should be fed five times a day for the first few weeks. For the first day give them stale bread soaked in milk. Gradually add shorts on the second day so that at the end of the third day it will be all shorts mixed with skim milk. One of the forenoon feeds should have one fifth of the bulk of shorts made of finely cut onion leaves, and the same bulk of dandelion leaves, similarly treated, are mixed with one of the afternoon feeds. Skim milk, either sweet or sour, is given to them for a drink, occasionally changed to water. After four weeks they get one feed a day (preferably in the morning) of the shorts, and a small quantity of wheat is offered them in the evening. The great majority of turkeys need nothing in the way of extra food after they are four weeks old, as they usually get all the insects, waste grain, and so on, that they require to make rapid growth. Fences, trees or buildings form the natural roosting places for turkeys after they are six weeks old.

These places are all right for them right through until fall, providing they can be safe guarded against wolves, skunks and other enemies.

In the fall of the year those turkeys intended for the market should be penned up for three weeks and properly fattened. The extra grain they have received up to this time should have them in fairly good condition to fatten up quickly. In the morning give them a mash made of boiled potatoes, or carrots mixed with equal parts of bran and corn meal. Add milk enough to make a crumbly mass. To this mash add powdered charcoal twice a week. At night feed all the whole grain they will eat.

The turkeys intended for next year's breeders can be housed in any outbuilding that gives them protection from storm and wind and also affords more or less of a shelter on extremely cold nights.

DISEASES.

There is probably nothing which retards the growth of the poultry industry more than the ravages of disease. A very conservative estimate of the annual mortality due to disease in old stock would be ten per cent., and in young stock about twenty per cent. These are what might be termed preventable losses. Disease will break out in a flock once in a while, in spite of all precautions, but as a general rule, it is due largely to neglect or lack of proper care and management. Should any disease break out in a flock it is always well to remove the cause first, then try and effect a cure. The practice of giving a flock Epsom salts, dissolved in hot water and mixed with a mash, acts as a very good tonic. One pound is plenty for one hundred hens. Some disinfectant, like carbolic acid, or potassium permanganate, in the drinking water, is a very good preventive of disease. Charcoal is also a very good tonic.

Space does not permit a [illegible] of the many diseases affecting [illegible] will be described here [illegible] if any.

Colds occur most commonly [illegible] early stages is comparatively [illegible] develop into roup of the most [illegible] In the early fall, especially [illegible] they may be caused by overcrowding the pens in the poultry houses. Damp, poorly lighted, and poorly ventilated, and dirty houses or draft over the hens may also cause colds. The symptoms are running nose rattling in the throat or [illegible] checked by using potassium [illegible] the drinking water. This is a poison, so be careful how you use it. As many of the crystals as will stay on a five cent piece will be sufficient for two gallons of water. A teaspoonful of crystals to half a pail of water is also a good preventive. A small quantity of [illegible] poured on the water [illegible] directed [illegible]

Photograph of hen troubled with roup.

Roup is a cold in its advanced stages, and may occur in a good many different forms. The form most commonly seen is characterized by a swollen eye, and canker in the mouth and throat which gives off a very offensive odor. The treatment for roup is the same as for colds, but a bird suffering from this disease might just as well be killed for even though a cure is effected the bird will never be of very much use as a breeder. Unless strenuous measures are adopted and the sick hens removed, the disease is liable to go through the entire flock. Birds that have only a slight attack of roup may recover. By washing their heads in one per cent solution of carbolic acid and inserting kerosene into the nostrils. Colds and roup attack both old and young birds and the means of prevention and cure are the same in both cases.

Tuberculosis is a disease affecting only old birds of stock that is fully matured. The germs of the disease may occur in the ground surrounding the poultry house, or in the house itself. They gain entrance through the food, drinking water, etc., by breathing. Birds suffering from this disease void the germs in the droppings, and these getting mixed with the food are taken into the system of the next animal to which it is transmitted to the rest of the flock. The symptoms of the disease are a pale comb, rapid loss of flesh, usually diarrhoea, and in the latter stage the bird will be lame in one leg. The bird may die in the course of a few days, or it may linger for three or even four weeks in which case it will be practically nothing but skin and bones. On opening the bird the liver and spleen will be found to be covered with raised whitish spots varying in size from a mere point to half an inch in diameter. In very extreme cases tubercles may be found on the peritoneum, the abdominal cavity, and also on the bones in various parts of the body. Unlike human or bovine tuberculosis, the lungs are very seldom affected.

There is no cure for the disease. It is simply a question of keeping it in check as much as possible by observing absolute cleanliness in all details of poultry management. Kill off all the sick or affected birds and bury them deeply and cover them with lime or better still burn them. Clean out the hen house thoroughly and whitewash it with whitewash having five per cent carbolic acid added to it. Clean out and disinfect all the nests, drinking pans and so on. Put in a layer of fresh earth, sand or gravel, and use an abundance of air-slaked lime under the roosts at all times. The land surrounding the poultry house should receive an application of air-slaked lime be cultivated, and a crop grown on it. Provide plenty of light in the hen house and feed only good wholesome food. The disease is seldom met with in the winter time, but is usually confined to the late summer months. While the disease cannot be cured, still by following these suggestions, it may at least be kept in check to a certain extent.

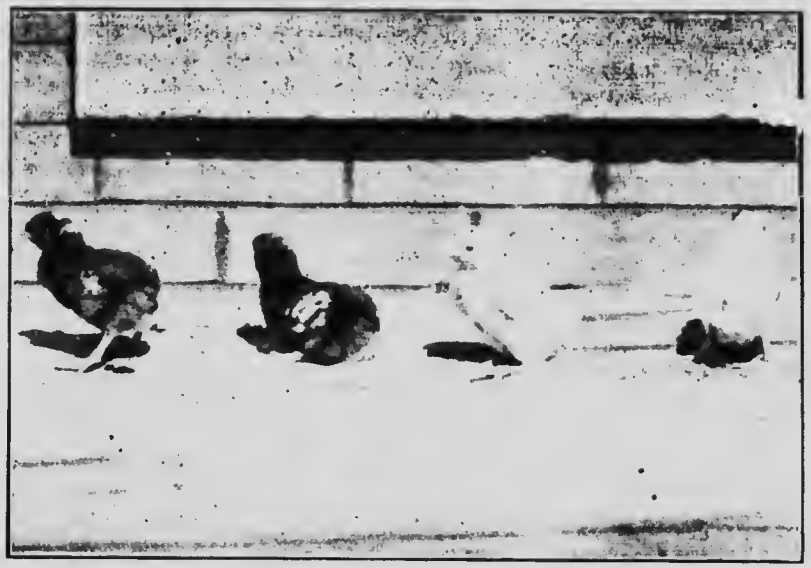
Blackhead is a disease very common in young and old turkeys and also in young chickens. In turkey flocks especially there is an enormous loss from this disease every year. The first symptoms of the disease in young turkeys and chickens are drooping wings and dull appearance, the

same as birds which have lice. Usually the head and neck is drawn into the shoulders more or less, and the head also turns a bluish color, which changes to a black after death, from whence the disease derives its name Slight diarrhoea always accompanies these other symptoms. A post mortem examination will show large, white sunken spots on the liver, and the appendix is also considerably swollen. The symptoms in old birds are the same as in young. There is no known cure for this disease. The germ lives in the ground, and is always more virulent in wet seasons than during dry seasons. As a means of prevention, no chicks or turkeys should be raised on the ground for a few years. It should be cultivated and cropped for a few years, and receive a liberal application of air-slaked lime previous to each cultivation. Never feed the mash or grain on the infested ground, but feed it in troughs or pans so arranged that the birds cannot get on it with their feet. The mud and dirt adhering to the feet of the birds is sure to contain germs, and if they walk over the food the germs will be mixed with it and taken into the system. Apart from discontinuing raising turkeys for a few years, no satisfactory method of preventing the disease has yet been discovered, although a few drops of muriatic acid put in one gallon of water acts as a fairly good preventive of a further spread.

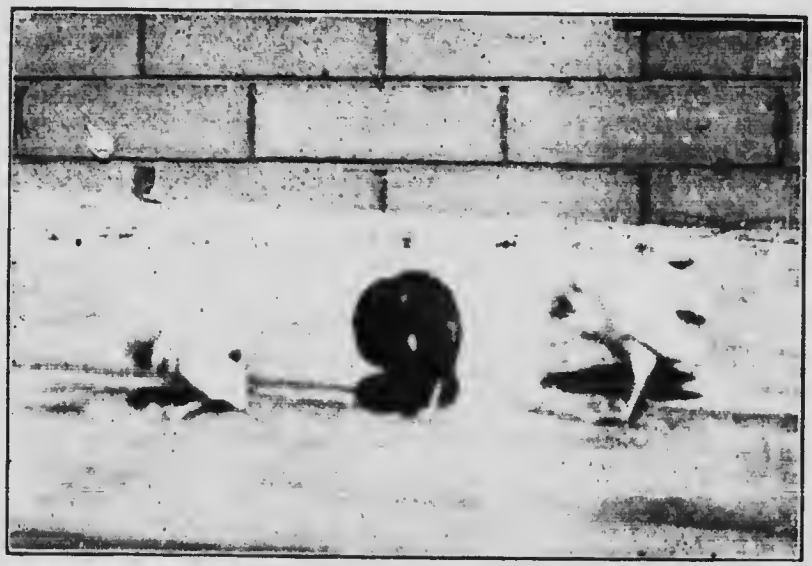
Cholera, though not a very common disease, may kill off the entire flock in the course of one week. It may affect all kinds of poultry. It is characterized by a general disorder of the digestive system, as indicated by the diarrhoea and the yellowish discharge. The bird presents a dull, lifeless appearance with a strong craving for water. The comb is pale and the crop is usually distended with food. Diseased birds rapidly lose in weight and may die in a day or two, or the disease may assume a chronic form and extend for a few weeks. The liver is usually considerably enlarged, and the entire alimentary canal may be inflamed. It may be caused by buying affected birds, or it may be due to unsanitary conditions in and around the poultry house. The use of sulphur, capsicum, copperas, alum, either together or alone are recommended, but generally strict precautions regarding the sanitary conditions will be the first steps necessary to prevent the spread of the disease.

Diarrhoea is a common ailment among all kinds of poultry, and is generally due to derangements of the digestive system caused by improper feeding, or food of an inferior quality. Ascertain the cause and remedy it if possible, and nature in itself may affect a cure. The use of Epsom salts in a wet mash, and powdered charcoal in a dry mash, is also recommended as an aid to get the organs to perform their natural functions again.

White diarrhoea in chicks is one of the most common plagues we have to fight. Simple diarrhoea is very often mistaken for this disease by the inexperienced eye. The two diseases are entirely different and separate. In the former the chicks often show practically no symptoms of diarrhoea except a very small discharge of a chalky white nature which usually causes the fluff to become pasted together slightly. In



Healthy Chicks—Note the length of body and depth



White Diarrhoea Chicks

the latter disease the discharge is far more abundant and of an entirely different color and nature, and the pasting up at the vent is far more pronounced. This type of diarrhoea is not nearly so virulent as the other and may last for days without causing any heavy mortality, whereas white diarrhoea usually lasts only a day or two and will kill off large numbers of chicks in a short time with apparently no cause whatever. On careful examination the different symptoms can be readily noticed. In addition to the outside symptoms, a post-mortem examination will show the yolk to be unabsorbed, the ceca swollen, distended and full of gas or cheesy matter, the lungs are also affected and small white spots or ulcers can be noticed over the entire surface.

The disease is likely to make its appearance from the third to the tenth day. It is very common in incubator hatched chicks but very seldom occurs in those hatched by hens. This is due to the lack of vigor and vitality in the former compared with the latter. The germs are supposed to be present in the ovaries of some hens and are transmitted to the eggs. The incubator hatched chick has not the power to throw off these germs, and as a result we find the disease quite common in chicks hatched by artificial means.

There are numerous advertised cures for this disease, but generally, precautions taken in selecting the breeding stock, disinfecting the incubator, and feeding only good wholesome food will act as the best preventative. The disease often occurs in chicks hatched in an incubator operated at an uneven temperature. Generally speaking anything in the operation of an incubator which retards the healthy growth of the embryo will be followed by a greater susceptibility to this disease in the chicks. It is important to select only strong, vigorous and healthy breeding stock to begin with, and follow this up by disinfecting the incubator with a ten per cent. solution of Zenoleum, applying it as hot as possible. Operate the incubator at a uniform and even temperature throughout the entire hatch. Provide plenty of fresh air and also supply sufficient moisture. By following these methods the danger of an outbreak of this disease is reduced to a minimum.

Simple diarrhoea in chicks can always be overcome by proper feeding. The use of a dry mash (the formula of which has been previously given) is one of the best remedies. Add a liberal supply of charcoal to the mash. Feeding boiled milk is also very good to check the disease.

It is often the case that chicks fail to feather out properly, this is due to lack of meat food. Supply this and also feed a soft mash once a day to stimulate the growth of feathers.

Scaly leg is quite common in the ordinary farm flock. It is due to a small insect burrowing under the scales on the legs. The exudate causes a roughness of the scales which becomes more pronounced as time goes on. The simplest remedy is to wash or bathe the legs in warm water to soften the scales, then apply a salve made of equal parts of lard and coal oil. A little sulphur may also be added. Apply this once a week until cured.

PARASITES.

There are numerous parasites which infest poultry, but only a few of the most important ones will be mentioned here. There are three distinct kinds of lice: the head louse on little chicks, the body louse on all fowls, and the red mites, which live on poultry only during the night. Little chicks or turkeys having the head lice should have a drop or two of melted lard put on their heads, and under their ings. A few drops of any oil will also rid them of the parasite.

A good dust bath made of sand, ashes, and lime will generally keep the fowls pretty well free from lice. If, however, this does not answer the purpose, the birds should be thoroughly dusted with some reliable insect powder.

The red mites are always the most serious vermin in a poultry house. But very little trouble is experienced with them in the winter time, but during the summer, when the warm weather is on, they may literally cover the perches and nests of some poultry houses. It is, however, a comparatively easy matter to keep down these little insects. Their breeding place is in cracks or crevices around the roosts and nests. By simply spraying the roosts and nests once a month with kerosene having five per cent. of carbolic acid in it, the mites can easily be killed. Some other oil that will pass freely through a sprayer will also answer the purpose. Add a similar amount of carbolic acid and spray the roosts thoroughly, being careful to get the lower side and all cracks well sprayed. Broody hens, if allowed to sit on the nests for any length of time, will hatch out myriads of these mites in a comparatively short time. Cleanliness, thorough spraying, and breaking up the broody hens, will keep the hen house free from lice.

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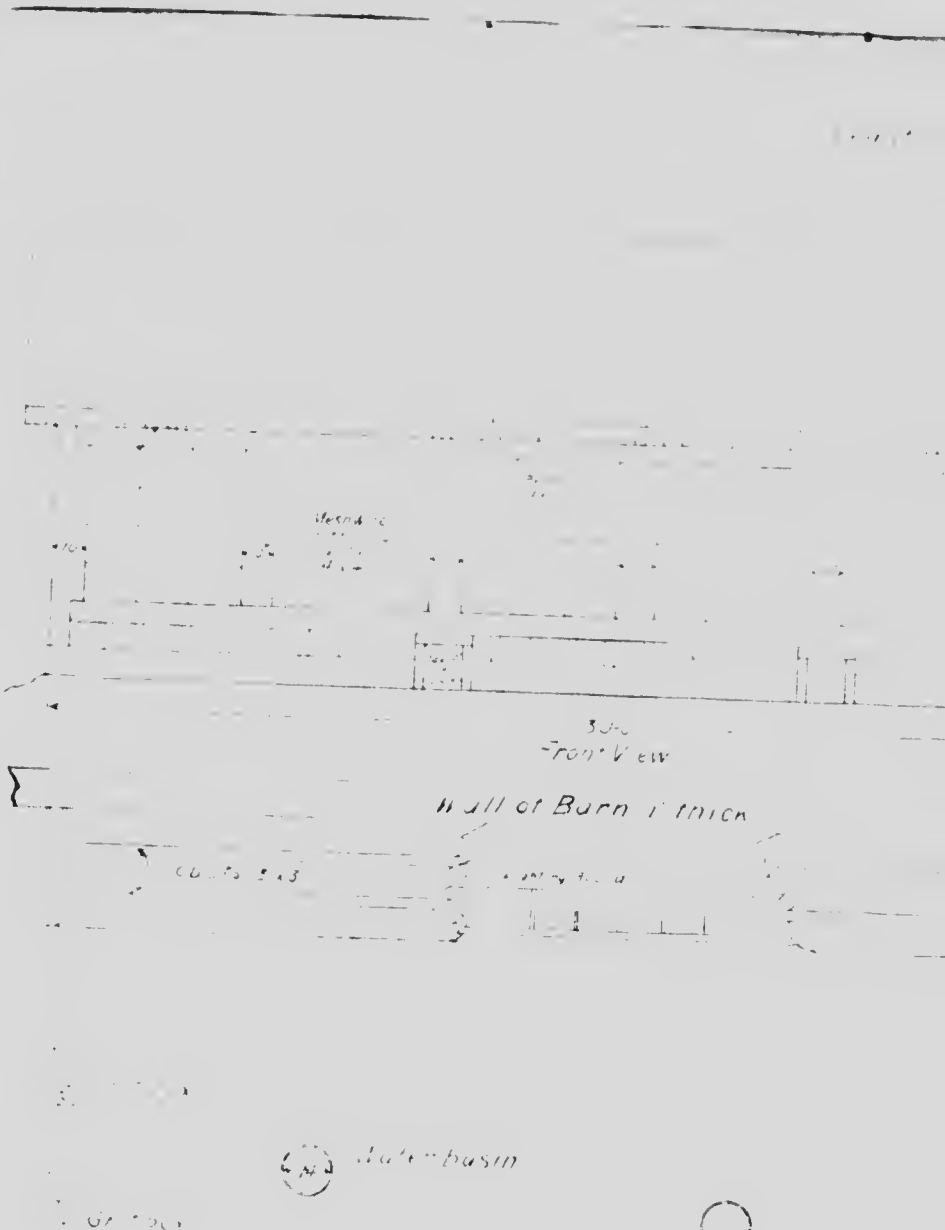

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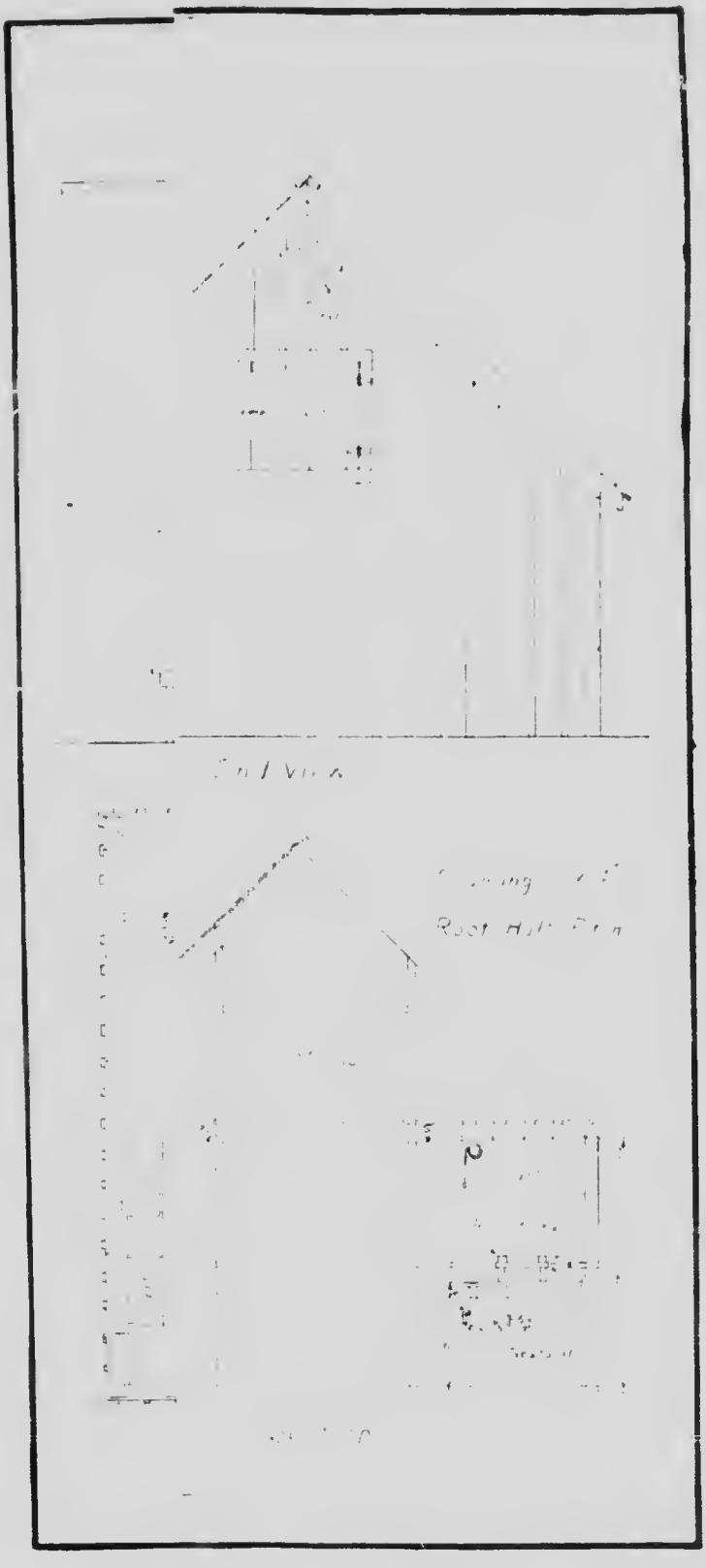

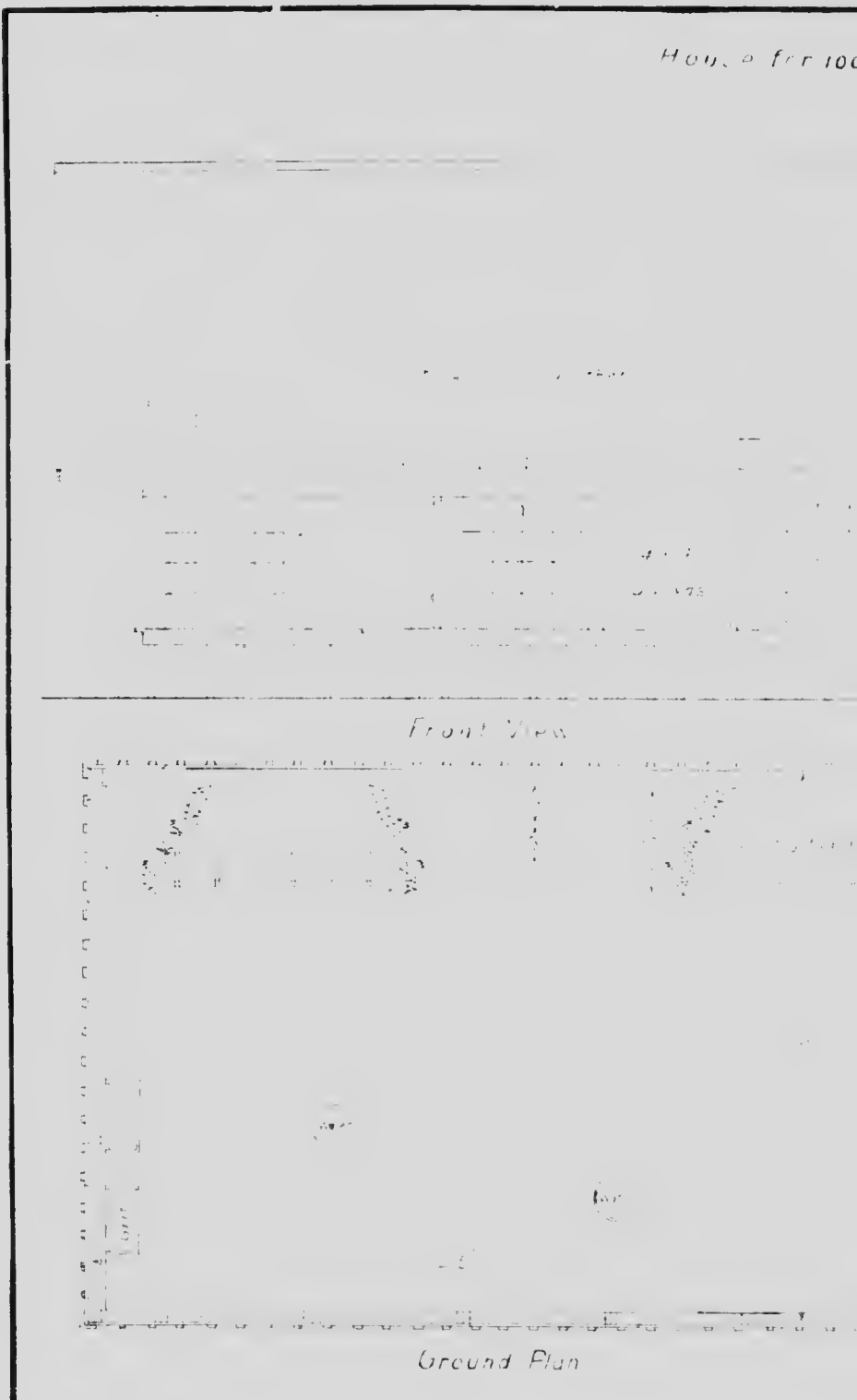

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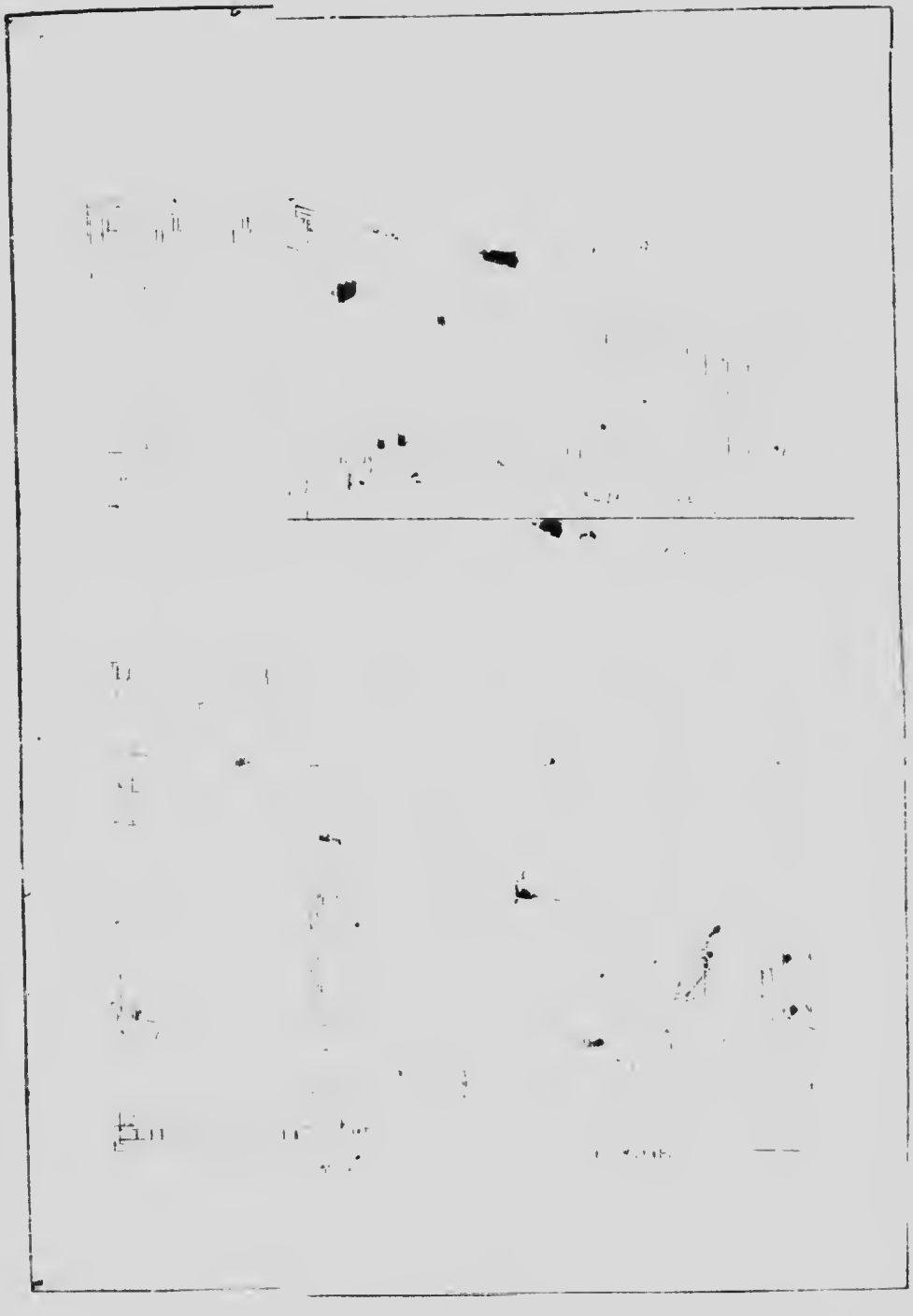

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