The Curtiss Poultry Book

$100,000 a year from Poultry

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Niagara Farm raises White Plymouth Rocks, White Wyandottes, White Leghorns, Pekin and Indian Runner Ducks. The illustration shows a flock of White Leghorn breeders on range. There are about twenty Colony Houses devoted to Leghorns

The CURTISS Poultry Book

$100,000 A YEAR FROM POULTRY

Being a Complete and Accurate Account of the Great Plant and Present Successful Methods of W. R. and W. J. Curtiss, Operating the Niagara Poultry Farm of Ransomville, N. Y., Largest General Poultry Enterprise in the World.

By

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Contents

Niagara Poultry Farm

In the northwestern corner of New York, almost in sight of Lake Ontario, and only thirteen miles by railroad from Niagara Falls, is the pleasant country town of Ransomville. It is surrounded by rich, level farming country. The town has no great factories or commercial establishments, and only a few hundred human inhabitants; but on the south side of the railroad is an industry with a population of from fifty to one hundred thousand—an industry which has made the name of Ransomville familiar in all parts of the country; for here is the largest plant of its kind in the world, the great Niagara Poultry Farm of W. R. Curtiss & Co.

The Niagara Farm is not carried on in a showy way. It "produces the goods," but they are not kept in the show-windows. Indeed, there *are* no show-windows. You might easily pass by the place on the train without dreaming that anything unusual was to be seen there. But here is an establishment (begun by a country boy with nothing but his own hands and head, and some debts) which has always had to make its own capital, yet has already been brought up to such a point of productiveness that its sales of chickens, ducks, and eggs exceed $100,000 a year; and so excellent are all its products, so safe and certain are its methods, and so profitable the results, that people come from all parts of the country to see the plant and learn "how it is done."

Practical, Not Fancy.—The methods which have built up the Niagara Poultry Farm are in close harmony with the business methods always advocated and followed by the FARM JOURNAL. "Practical not fancy farming" is the motto that has stood on the first page of the paper from the beginning; and "Practical, not fancy poultry raising" is the policy that has brought the Niagara Farm up to its present position as a profit-maker. Therefore, when the FARM JOURNAL was looking for the best examples of success in the various lines of farming for the help of its readers, it was natural and fitting that the Niagara Poultry Farm should be brought to its attention.

To the pioneers in any great industry we owe a heavy debt. They deserve a large reward, for they have found and marked

the safe path for us, at great cost to themselves. For long years the Curtiss Brothers have experimented, and watched, and tested, and compared results. They have met failure almost as often as success. They have had to devise their own methods, and to correct and improve them, little by little, through years of patient toil, and often of heavy loss. They have had to learn by experience, because there was no other way; but now others can make use of their methods, with the certainty that every step has been made plain and safe. The fruit of twenty years' labor is here available for the beginner's guidance, at less than the cost of a "setting" of eggs.

An Experienced Guide.—The great value of this book is that it is a *story of experience*. The Curtiss methods of running incubators, of housing and caring for fowls at different ages, their food formulas for young chickens, for laying hens, for "squab broilers," for young ducks, for market ducks, etc., have all been tested, modified, improved, and tested again, through years of experiment, until now they are so certain and reliable that losses or failures at the Niagara Farm are extremely rare. To beginners the value of such a guide is hard to estimate. The "poultry-fancier" who begins with a model plant and ample resources, inherited or made in some other business, can perhaps afford to make experiments and work out methods for himself. Not so those men and women who, like Roy Curtiss, must begin at the beginning, and maintain themselves and their families while they build up their "plant." Such practical poultry-raisers, who cannot afford to make mistakes and incur losses, will appreciate the aid of a book like this, written from actual experience, which is a safe guide in every branch of the business, at every stage of their operations, and whether on a small or a large scale.

In order that every detail might be studied, and that the facts might be brought out in their proper light, the writer spent the best part of a week at Niagara Farm, and collected matter that should be of great value not only to beginners, but to veterans in the business, as well. There are no phenomenal records to present to readers—there is no tempting bait held out; it is simply the narrative of two young men who, beginning in a small way, have accomplished what probably has never before been equalled. It is deeply interesting. It shows how, step by step, the plant was built up; it touches upon the mistakes made, and tells how, gradually, experience righted them, and thus how the enterprise has grown to its present gigantic proportions.

The Story of the Farm

It was about twenty years ago that the younger of the Curtiss Brothers (Roy) began keeping poultry with an aim to making a living. The father had a number of hens on the farm, but they were neglected, kept more "after a fashion" than anything else. Roy conceived the idea that he could make a profit out of them, and as the family actually received no income from the stock, he made his father a proposition. It was that he (Roy) was to feed and care for the fowls, while the father supplied the feed. In return for this, the boy was to deliver free to the family all the poultry and eggs that were needed, and all over that number belonged to Roy, to sell or dispose of as he saw fit. The proposition was accepted.

It requires quite an army of help on Niagara Farm, and each employee has his or her particular work to perform

Roy looked ahead. He wanted to enlarge the plant, and therefore it would not be wise for him to sell all the young fowls. So he carefully picked out the most desirable (according to his crude ideas) which he retained for additions to next year's stock. Gradually the plant enlarged, and all the time the father faithfully kept his promise to supply the feed.

Calling for a New Deal.—But, after a while, the heavy cost of feed became a serious question with the father, and he naturally became uneasy. Roy was entirely too ambitious for him. A few more years of enlargement of the plant and it would mean a case of bankruptcy. Already he was paying as high as a dollar for an egg, to say nothing about the fabulous price for a roasting fowl for a Sunday's dinner.

The father cannot be blamed for crying halt. It was time for him to do so. There was a consultation, and it was a very business-like meeting, too.

"I will give you every chance, and help you all I can," said the father, "but you must pay your own feed bills, and I will pay you the market rate for what eggs and poultry the family consumes."

It was a fair proposition, and Roy did not dissent. This move did not dishearten him in the least. He realized the merits of his father's protest, and resolved to work out his own problems.

He had already reached that point in his venture when he could see possibilities ahead, so he put additional energy in his work.

As early as two o'clock in the morning he would take his father's team and drive to Niagara Falls—thirteen miles distant—and sell his product from door to door. It was hard work, but the retail trade gave him a better price, and his profits grew.

Jay, the older brother, in the meantime left home to seek a livelihood in other channels. He returned a year afterward, and was surprised to find how Roy had branched out. Jay had been successful, but when he compared notes he found that his brother was making more money than he.

Then it was when the partnership was formed. The work had already become too great for Roy alone, but now with Jay's help they would be able to branch out to a greater extent. At that time the well-known Niagara Farm was established, under the ownership of W. R. Curtiss & Co.

For the first ten years there were many mistakes and drawbacks, but the two young men had placed their shoulders to the wheel, and their perseverance and energy overcame all difficulties.

Some of their troubles were the spoiling of thousands of eggs, for the reason that the incubators used were worthless; great difficulty in hatching and rearing incubator chicks through lack of knowledge of artificial methods, and chronic shortage of working capital, a very important matter. Then 1,400 ducks, hatched and raised in summer, were sold in the fall, leaving them in debt to the tune of four hundred dollars for feed. This was because they held the ducks too long, they thus losing instead of gaining in weight; and so on. The duck problem was indeed a serious one, and something must be done.

Learning How to Raise Ducks

The Curtiss boys realized that their knowledge of duck culture was entirely too limited, and so in order to get a better understanding, and that they might better become acquainted with the more modern methods, Jay secured a position with A. J. Hallock, of Long Island, who had the largest and most successful duck farm in this country.

Regularly Jay would write home to his brother, advising him of methods that would overcome their difficulties, and Roy put the instructions to good use. At the end of the season Jay came home to stay, and the boys worked hard correcting the mistakes of previous years. From that time on the duck proposition became a paying one.

In the start they experienced considerable difficulty in educating the people of the surrounding country to eat duck. They sold a ton of dressed carcasses to one of the leading Buffalo hotels at ten cents

a pound, but since that time they have sold tons at three times that price, and never at a figure lower than fifteen cents per pound. They are now annually marketing as many as 50,000 green ducks.

The Trade Catered To

The trade for both the poultry and the eggs consists principally of hotels, restaurants and clubs. Private family trade, it is argued, costs too much time and money, together with bookkeeping and worry over small accounts, thus leaving no greater profit, all things considered, than what they derive by their present system.

In some sections of the country, especially in and near large cities, they furnish stock to dealers who have built up a large and select private trade, as well as clubs, restaurants and hotels, but as these dealers pay outright for the goods, Niagara Farm has no concern over the custom. In some towns agents are employed who take orders which are filled by the farm, the agent being paid a commission for his work, and shipments and collections made direct.

The trade of the farm lies largely at Thousand Islands and in the Adirondacks, the latter trade being heavy during the entire year.

Over one hundred regular customers are catered to in semi-weekly, weekly, etc., shipments, many of these customers acting as middlemen in disposing of the product. It required more than ten years to secure this valuable outlet, which extends to such large cities as Niagara Falls, Buffalo, Rochester, New York City, etc.

The Farm, Buildings and Equipment

The farm is situated right across the road from the railroad station at Ransomville. It consists of sixty-three acres of sandy loam soil, known in some sections as a "chestnut soil." The land lies level, and

SECTION OF THE DUCK FATTENING PEN

Thousands of ducks are fattened each season on Niagara Farm, going into the market in prime condition

the houses are given a south and east exposure, thus having the prevailing winds of winter strike all the buildings endwise.

The feed storehouse, containing the office, is close to the railroad station. The grain elevator has a capacity of 10,000 bushels, and is located alongside the railroad tracks, so that most of the feed is unloaded, mixed and fed to stock without the use of a team for carting. One of the big mixing machines has a capacity of mixing up twenty bushels of wet mash at one time.

There is a long laying house, recently built at Niagara Farm, 200 by 16 feet, two stories high. On the upper floor are housed this winter (1910-11) 2,000 Leghorn pullets. Building is single slant with 3 by 10 muslin windows upstairs and down. On the ground floor young ducklings are placed after they are three weeks old. This heated by a heater in a pit at center of building and pipes along back.

DUCK BROODING HOUSES AT NIAGARA FARM

Here fully 5000 ducklings at a time are nursed and cared for a month or two before they are placed in runs

There are two hundred colony houses, one thousand feet of heated brooder houses, and three hundred fireless brooders.

The duck brooder house has a capacity of 25,000 ducklings at one time, and there are summer shades and shelter for as many more. The duck houses are immense buildings, one measuring 36 by 508 feet; the other, 16 by 450 feet. Fifteen tenant houses located on the farm and in the village are used exclusively for help employed.

The buildings contain 300,000 square feet of floor space.

Besides the incubator cellar, with brooding-house above, which is believed to be the largest in the world, there are 1,500 feet of duck fattening shed, thirty-six feet wide; ice pond and ice-houses right on the farm, one gas engine, one steam engine, two windmills, three complete water systems, and over 10,000 feet of water pipe laid all over the farm.

The picker house measures 18 by 50 feet, with a loft for the storage of feathers. Adjoining the killing room is a shed 20 by 30 feet, in which are quartered the ducks and chickens ready for killing.

The Feed Warehouse and the Work Shop

The feed warehouse and the work shop are combined. On the first floor of the latter there is a capacity of one hundred tons of grain at one time. It requires considerable feed to satisfy the hunger of the thousands of chickens and ducks on Niagara Farm. Not less than five hundred bushels of grain per day, or a full carload per week, is fed.

The machinery used in this building consists of a Smith meat chopper for chopping meat, vegetables, etc. This machine is used principally for cutting vegetables. It has a capacity of three bushels, and cuts potatoes, turnips, beets, etc., in very small pieces.

Two feed mixers are used—one a Maxwell, and the other a Morton. Each have a capacity of about twenty bushels at a mixing. One of these machines drops the mixed feed in cars on the track to be taken out to the duck ranch. The other machine places its product in wagons to be hauled out on the range where the poultry are quartered.

In the basement of this building is a Myers pump that furnishes water for the mixing machines, and besides supplies the water needed in the fattening and growing yards of stock located on the west side of the farm.

A Wilson Brothers power bone cutter is also installed for use when bone is required for the stock.

An Olen five horse-power engine is now used to furnish power for running the different machines, but this will shortly be replaced by a ten horse-power engine to be run by a dynamo—the farm to be shortly supplied with electric power, as stated elsewhere.

About two hundred tons of coal are consumed each year on the farm.

In the forepart of this building is located the office, a spacious room, in which is desk room for the two proprietors (W. Roy and W. Jay Curtiss), and also for the father of the boys, whose duty it is to do the bookkeeping for the firm, and conduct visitors about the farm. A young lady, two expert stenographers and a bookkeeper are constantly engaged in handling the large correspondence.

The Incubator Cellar

The incubator cellar, believed to be the largest in the world, is 48 by 170 feet in dimensions. The building is two-story, the upper story being used as a chick nursery, where the young are first given brooder heat, and then afterward placed in fireless brooders, as is explained under the heading of brooding.

In this cellar are quartered one hundred and twenty-five incubators of the Prairie State manufacture, besides which there are three Hall mammoth incubators, 7,500 egg capacity, quartered in other buildings, and which are devoted to hatching baby chicks.

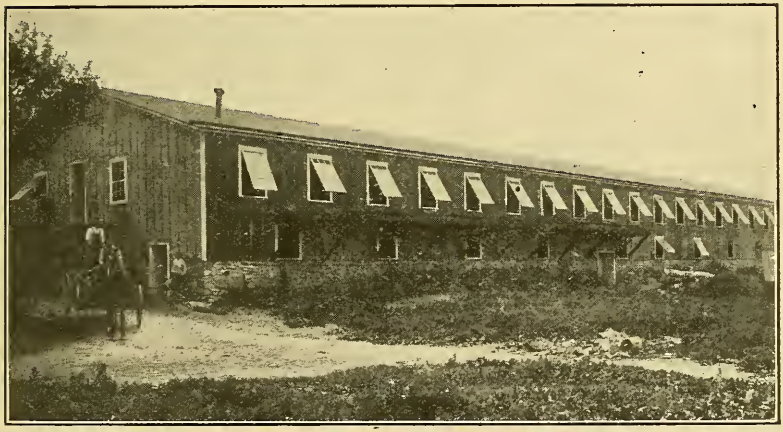
The cellar is ventilated by a six-inch terra cotta pipe placed through the side wall, about six inches from the floor, and this is connected by an elbow and a three-foot joint of terra cotta, pointing upward. In this

manner the foul air is conducted to the outside, and at the same time the outside air is prevented from rushing back into the cellar. These ventilators are placed every sixteen feet on both sides of the cellar. The cellar wall is two feet thick, and is banked up with earth on the outside, the floor of the cellar being even with the outside surface.

The incubators are placed in blocks of four machines, so that they do not stand in front of the ventilator holes in the wall, the latter being located between each block, thus preventing the lamps of the incubators from being blown out, and besides there might be a possibility of drafts of air striking the machines. As the incubators are arranged lengthwise, there is ample space to allow a four-foot aisle between each row.

Besides the ventilator holes mentioned, there are ten windows on each side of the cellar, about sixteen feet apart, and placed up near the ceiling. These are opened during warmer weather when it is intended to more quickly cool the atmosphere.

Near the center of the cellar are located two egg-testing booths,



THE INCUBATOR HOUSE AT NIAGARA FARM

Said to be the largest in the world. The nursery is on the second floor

measuring 4 by 6 feet, and about six feet high, encased with heavy lining paper.

There is telephone connection from the office to several buildings on the farm, greatly saving time in calling up the heads of the different departments.

This is a farm where visitors are always welcome, and one man is kept busy showing people about the place and explaining matters.

Methods of Hatching and Rearing

Niagara Farm bears the distinction of being the largest poultry plant of its kind in the world. There are farms upon which more chickens are raised, and farms upon which more ducks are raised; but there is no farm on which so many head of stock are produced—reared—counting both chickens and ducks—as on this place.

The products of the farm are table eggs, hatching eggs, roasting fowls, squab broilers, baby chicks and ducklings, and breeding stock in both poultry and ducks.

The Varieties Selected

As stated elsewhere, Curtiss & Co. tried all the leading breeds. They wanted a variety that would best meet the requirements of their trade. In short, they needed business fowls.

They wanted a broiler breed. A variety that would quickly grow a plump body, and at the least expense, and one, also, that would present an attractive carcass.

Twenty different varieties in the American class, some of the Games, a few of the Asiatics, and even some foreign breeds, in turn were tested, but finally they narrowed down to the White Wyandottes. They found that this breed not only gave them the broiler wanted, but also furnished an excellent small-sized roasting fowl. For sixteen years this variety has been bred on Niagara Farm, and by careful selection and mating they have also gotten up a strain of large, brown egg layers. The laying capacity of the hens is judged by the Hogan system, and it has proved successful with them.

The advantages they secured in the White Wyandottes were good size, with rich yellow skin and yellow legs, and a broad and meaty back and breast.

When the demand came for a larger sized roasting carcass than the White Wyandotte could furnish, the Barred Plymouth Rock was tested, and while it served the purpose there still was an objection in the dark pin feathers, which, despite the best of care by the pickers, would often present a bad looking carcass. The White Plymouth Rock was then tried, and in this breed they found the ideal for soft roasters, and being of a white plumage there was not that objection of dark pin feathers to be found as is the case with the Barred. Cockerels of this breed dress nine pounds each, and pullets seven pounds each, in four months. They also found the White Plymouth Rocks to be equal, or nearly so, to capons, bringing almost as good a price on the market, and saving ninety per cent. of the work and one-half the time in production that is needed with capons.

As the egg trade increased, and they found the trade calling loudly for white-shelled eggs (a fad peculiar in New York), they tested the Single Comb White Leghorns, and found them to be very hardy and a very profitable fowl to handle. They are light feeders and can be confined with less floor space in winter than any breed they ever kept. They also found them to be excellent for squab broilers, and for this purpose the cockerels are sacrificed.

The Best Breeds of Ducks

At present the Pekin is the only duck used on the farm, but, as already stated, a test is about being made with the Indian Runner ducks to supply a trade that calls for a lighter weight carcass.

A KILLING OF DUCKLINGS DRESSED READY FOR MARKET
Niagara Farm makes it a point to dress carcasses in the most attractive manner

The Pekin ducks on Niagara Farm are of large size, mature early, and average 140 eggs per duck during the season. The eggs are very fertile, rarely running below eighty per cent., and most of the time ninetv-five per cent. and even better. At seven to nine weeks old, the young average five pounds each, dressed. Niagara Farm has bred the Pekin duck for fifteen years.

Demand for Smaller Ducks

Fifteen years ago Niagara Farm had a hard time to grow ducks to weigh four pounds each, but by careful selection their stock each year has improved, and by breeding more for size, it is now hard work for them to have ducks weighing less than five pounds—the weight generally running between five and six pounds.

But gradually a demand increased for ducks weighing four to four and a half pounds each, and it became a serious question how to cater to that trade. So at present a test is being made with Indian Runner duck eggs, several thousand of which have been purchased. Some of the young were hatched at the time of the writer's visit, but not until next season can the Messrs. Curtiss tell if the Indian Runner will serve the purpose for what they intend or not. The chances are, however, that they will.

The Curtiss people report this year (1910) as the best in their experience for prices. During the winter of 1909-10, prices went so high as thirty-five cents a pound, and never less than twenty cents, and those prices, too, by the ton lot, sent to wholesale trade. As late as June, 1910, the prices still ranged from twenty-two to twenty-five cents per pound to the trade.

The aim is to have ducks for sale the entire year. There were just two weeks last year that Niagara Farm had no ducks to ship to market.

NIAGARA DUCKLINGS

It is a pretty sight to stand at one end of the Brooder Runs and see thousands of Baby Ducklings in their comic movements, and all as busy as bees

There were 50,000 ducklings marketed the past season, and of the total number hatched, the loss ran only from two to five per cent. During a wet season the loss is more heavy than it is during a dry one.

A specialty on Niagara Farm is its winter duck supply.

Methods of Operation

There are few theories on Niagara Farm. Every step taken has been carefully considered. There must be a reason for it. Every idea that proves to be good and useful is adopted. All unnecessary work is saved. Every move must show economy and profit. The proprietors have their sleeves rolled up, and are not afraid to work. Each has his section of the farm to superintend, and everything moves along smoothly.

About fifteen men are employed in winter and twenty-five during the summer. This does not include between twenty to thirty women pickers, who are at work every day of the week, excepting Saturday and Sunday.

It is a rule on Niagara Farm to have a hatch come off every Monday and Thursday, and it is another rule that every Tuesday and Friday every egg that has not been sold or placed in the incubators, must be sent to market. In that way the customers are guaranteed strictly fresh eggs, and there are no eggs on hand to become stale.

Operating the Incubators

The great incubator cellar is in charge of Leo Curtiss, a younger brother of the firm, who has as his assistant a bright Japanese boy, Shozo Nomiura, who came to this country from Tokio, Japan.

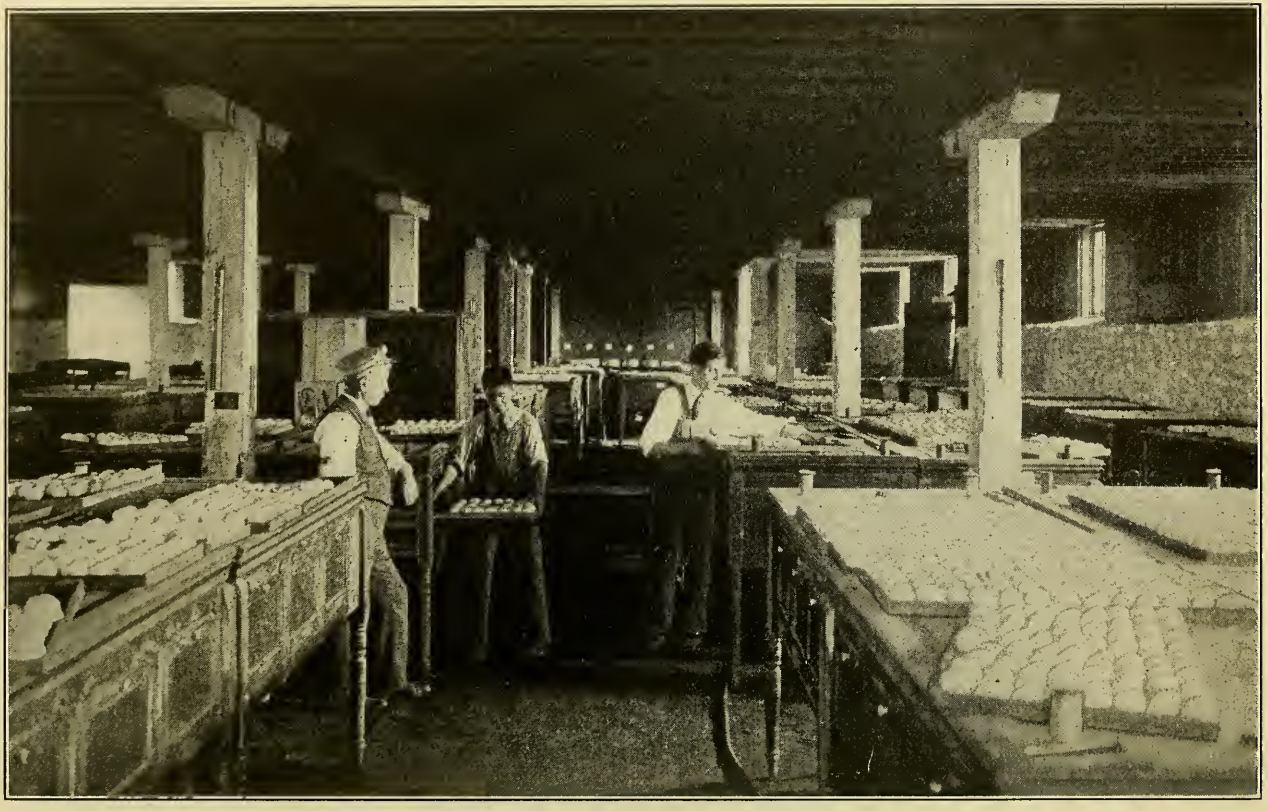
At five o'clock in the morning the incubator men begin turning the eggs, and so skillful have they become that by 6.30 o'clock every egg has been turned, and the men go to their breakfast.

The eggs are turned mostly by placing an empty tray over a full one, and giving it a swing, thus emptying the eggs from one tray to the other. In some of their machines they are compelled to use the shuffling method, but prefer the old-style extra tray idea. This, they argue, guarantees every egg turned, and, in consequence, they cut down the percentage of deaths in the shell.

The eggs are again turned in the evening, beginning at four o'clock and generally ending at six o'clock.

When turning the eggs by the trayful, it is done slowly, and not by a quick whirl. Mr. Leo Curtiss says that the tray method of turning does the work more accurately, and prevents the blood vessels from growing fast to the shell.

After breakfast is over the work of trimming the lamps begins. Instead of cutting the wicks with a pair of shears, as is so often done, especially by beginners, the charred part of the wick is scraped off. This gives a more even and steady light, and does not leave corners to the wick which smoke and collect soot. There is considerable danger when soot collects in the lamp chimney, as it is apt to ignite and cause



THE INCUBATOR CELLAR

This is conceded to be the largest in the world; Niagara Farm believes in carefully airing the eggs each day, experience proving that it is the secret of strong chicks

a fire. The work of filling the lamps follows that of scraping the wick. The Curtiss people prefer filling the lamps in the morning in preference to evening, as is generally advised, for the reason that they have ample time to watch the flame and see that it is burning steadily. Past experience taught them that when the lamps were cleaned and filled at night, in many cases the flame went up after the attendants had left the cellar, and ruined hatches were the consequence. After each lamp has been filled it is carefully cleaned of all dirt and oil that may have dropped on the surface. Too much care cannot be taken in this particular, as every chance of fire must be removed, not only for the benefit of the hatch, but the safety of the building. The best kerosene oil is used, that which will stand 150 degrees test. Cheap oil is dangerous. A new wick is used at the beginning of each hatch, so that there will be no possibility of a short wick, which, after having lost all of its oil, burns out. Extra care is taken to keep the burner free from dirt, taking particular notice that the little sieve on the burner is not closed up, so that there may be a free circulation of air. Care is also taken that the flame of the lamp is not turned up too high or it may smoke, and in this way gather soot. In fact, they never allow the flame of the lamp to be higher than is strictly necessary. Eggs themselves throw off very little heat for the first two weeks.

The Curtisses believe that cooling eggs make strong chicks, and that once a day throughout the entire hatch is not sufficient for good results. When the first test is made, seven days after the incubator has been started, the eggs are cooled for five minutes in winter and fifteen minutes during summer. This is continued for one week. Then after that the cooling is performed twice a day, allowing the eggs to cool longer as the animal heat in the egg increases, which is about ten minutes in winter to twenty minutes in summer. To know just how long to cool, a thermometer bulb is placed on a live egg, and when it drops to eighty-five degrees the tray is returned to the machine. The trays are placed on top of the machine while being cooled, and the doors of the incubator closed. This is the opposite to the practice of some incubator men who cool the eggs in the machine by leaving the doors open. It is reasoned that the eggs more quickly receive the proper temperature if the heat is retained in the incubator, and, having tried both methods, the Messrs. Curtiss find the latter more reliable and practical.

The Curtiss method of adding moisture to the eggs is different from that generally practiced. No moisture pans are used in the machines. Instead, in the case of hens' eggs, they are lightly sprinkled with tepid water two or three times during the hatch, according to state of weather —once during the first week, and twice during the second week. In the case of duck eggs, a light sprinkling is given them after first test, and a more liberal sprinkling after second week of incubation. In addition to this the floor of the cellar (which is earth) is kept damp by thoroughly sprinkling with a hose. The dryer the air, the more rapid is evaporation of the egg. Too much moisture is as dangerous to duck eggs as it is to hen eggs. When too much moisture is given, the chick grows more than it should, and becomes too large to remain in the egg, yet not sufficiently developed to come out.

TURNING INCUBATOR EGGS

The eggs on Niagara Farm are turned by the old-fashioned method, placing an empty tray upon a full one, and giving it a turn over

The first test of hen eggs is made on the seventh day of incubation, and the second one on the fourteenth day. This gives a better chance to correctly judge the condition of an egg than is afforded when testing on the fourth day. Weak germs often die during the latter part of the first week, and if not detected on the fourth day test, remain in the incubators, to the risk of having the bulb of the thermometer rest upon them, thus giving a false registry of temperature, which, while it may not kill a hatch has a strong tendency to cripple it. The seventh and fourteenth days' tests give more positive information.

Duck eggs are tested on the seventh and twenty-first days.

The averages of percentages of hatches made by Niagara Farm, according to the reports, show ninety per cent. for White Leghorns; seventy-five to eighty per cent. for White Wyandottes and White Plymouth Rocks, and seventy-five to eighty per cent. for ducks.

It might here be mentioned that the Pekin ducks are used, and have been since the start of the farm, but experiments are now being made with Indian Runner ducks, as the call at Niagara Farm for smaller carcasses has tempted the proprietors to give the Indian Runners a trial.

On the day of the visit of the writer, six machines of hens' eggs hatched, and as the little chicks were being taken out of the incubators a careful count was made, resulting as follows: No. 1 machine, 203 chicks; No. 2, 252; No. 3, 250; No. 4, 244; No. 5, 267; No. 6, 327, making a total of 1,543 chicks from 1,673 fertile eggs. This is certainly a big showing. In machine No. 2, 351 eggs were originally set, out of which 252 chicks were hatched, and in machine No. 6, 327 chicks were hatched out of 337 fertile eggs.

In the case of the total, showing that 1,543 chicks were hatched from 1,673 eggs, it would appear that 130 eggs failed to hatch, but in truth, there were but 105 eggs in which there were dead germs or chicks, as twenty-five chicks came out of the shell but died before they could be removed. Only live chicks are above recorded.

On each machine is tacked a card which gives the history of the hatch, as follows:

RECORD.

Machine No.	Time set .....
No. eggs set	Kind of eggs .....
Time, first test	No. eggs fertile .....
Time, second test	Per cent. fertility .....
Hatch due	No. live germs .....

No. of chicks hatched .....

Remarks:

Mr. Leo Curtiss furnished the following report from his record book, which will give an idea of the wholesale manner in which chicks and ducklings are turned out in the incubator cellar.

For the season of 1910, up to the time of the writer's visit (the last week in June), 100,319 youngsters came out of their shells, of which 35,148 were ducklings and 65,171 were chicks. Besides there were enough duck eggs in the incubators to run the total number of ducklings up to 40,000. The machines are in constant operation for ten months in the year.

The total number of duck eggs set was 61,995, and the total number of chicken eggs 108,762. Fully 25,000 more head of youngsters are yet to be hatched.

This shows that a little more than one duck or one chick was produced from every two eggs set, taking the winter and summer averages.

The machines were run on duck eggs from February 28th to June 28th (time of writer's visit), and the chicken eggs from February 7th to June 28th.

Only fresh eggs are used for incubation. In fact, there are no stale eggs on Niagara Farm. It is a rule that every Monday and Thursday all eggs that are not placed in the incubators, or otherwise disposed of, must be shipped to market. They are equally careful in the selection of their eggs, discarding all deformed, small or extra large sized, and those having flaws in the shell.

Another point is to have the temperature the same in all parts of the machine, which is done by having the machine standing perfectly level, and also by tipping the trays slightly when needed.

It is the aim of the operator to have the thermometer register as near 102 degrees the first week of the hatch as is possible, about 103 degrees the second week, and 103½ to 104 degrees the third week

Care is taken not to allow the heat to run up the first week of the hatch, or the latter may be killed or badly injured. In case the heat gets a single degree above what it should register, the eggs are at once cooled.

The incubators are not allowed to stand near a window, as this often has a tendency to increase or decrease the heat in the machine.

Should the temperature get too high, the hatch is apt to come off before it is due; and if too low, the hatch will be delayed several days. Either extreme is detrimental to the strength of the chicks.

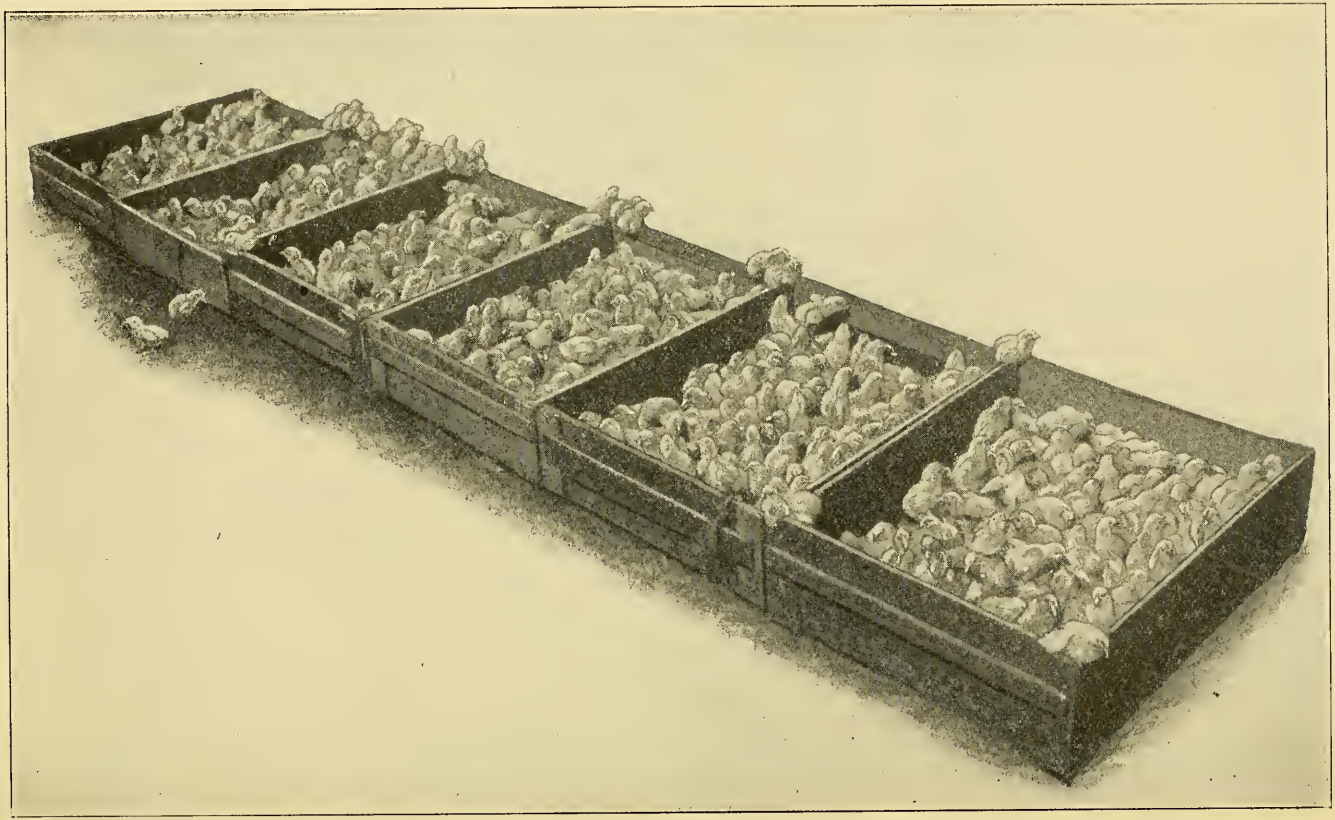
A study of the air cells of the eggs is made, and treatment governed according to their size.

In placing the eggs in the incubator, the large ends are all pointed the same way in the trays and slightly raised.

After removing all infertile eggs the fertile ones are spread out on the trays so that they will occupy about the same relative position to one another.

When eggs are overheated in the beginning of the hatch, the chicks are generally found dead in the shell when the hatch is due. They are also found dead when they form near the small end of the egg.

After each hatch the machines are thoroughly disinfected by a coal tar product, of which ten per cent. is used in warm water.



STRONG CURTISS CHICKS

It is interesting to note the thousands of chicks that each week come out of the incubators — strong, lively little fellows

When to Hatch

For breeding stock, Niagara Farm does its incubating principally during the months of April and May, as they find the hatches are more satisfactory at that season, the chicks being more strong and vigorous. They have, however, had good results from hatches made during March and June, but only resort to those months when the demand calls for it.

Niagara Farm also finds that chicks hatched the latter part of August to about the first of November, and carried over until spring, bring a better profit as roasting fowls than roasters raised and marketed at any other season.

The hatches of July and August, as well as those of November and December, are not so satisfactory, as the stock brought out do not meet the best markets. Besides there is less fertility of eggs, and other difficulties arise that do not appeal to or warrant much work being done in that direction during that time.

The Niagara Farm has for years experimented, by a series of tests in incubating, to find if it is not possible to secure a year-round duck egg yield, so that there would be continuous hatching. They have, by selecting pens of breeders from each month's hatching, gotten to the point where they can now run the incubators on duck eggs the entire year. They find that winter-hatched ducks prove to be the most profitable for next season's hatching, and have had ducks lay in June that were hatched in January.

For broilers, it has generally been contended that hatching should begin in October and end in May.

For ducks, the regular laying season commences about January 20th, and a fair average is four eggs per week, per duck, from that time on to June 20th, after which they gradually let down, stopping entirely toward the last of July. Now it is just that schedule that Niagara Farm has succeeded in improving by now getting eggs practically the entire year.

Feeding the Chicks

The newly-hatched chicks are not fed until they are about three days old. They find it a good rule to watch the condition of the chicks, and when they see them becoming active and hunting for something to eat, they know that they are ready for their first meal. It is a mistake to coax them to eat.

The chicks are not removed from the incubator until they are forty-eight hours old, and their first meal consists of a little pin head oat meal scattered on a board. The little ones are then allowed to help themselves.

After that they are fed a mixture composed of equal parts (by measure) of chick-cracked corn (corn cracked to about pin-head size), a fine grade of wheat screenings or finely cracked wheat, together with some fine seeds. These seeds are in mixture, and generally for sale by large seedsmen. The mixture contains clover, timothy and wild seeds, thus giving quite a variety. The wild seeds furnish a natural food,

such as is secured by the birds or chicks while out on range, and the Niagara Farm has found the entire mixture of more value than any of the commercial chick feeds that they have ever tried.

After a week or ten days, a mash is also used, consisting of one-third hard-boiled eggs (the infertile eggs tested out of the incubator are used for this purpose) and two-thirds of a mixture of equal parts of cornmeal and bran, mixed thoroughly by hand. The hard-boiled eggs, shells and all, are chopped up in an Enterprise meat chopper. The shells of the eggs furnish lime that helps to build up bone. This food is given twice a day. At all times, grit, charcoal and dry bran, kept in small boxes are constantly before the chicks, so they can help themselves at will.

This system is followed up until the chicks leave the brooder house —when four to six weeks old, according to the time of the year.

After that age they are given a grain ration of equal parts, by measure, of cracked corn and wheat screenings, or wheat. Also, a mash of one part low-grade flour, with about one-twentieth part beef scraps, all by measure.

Green bone is not fed at Niagara Farm, as it is claimed that after giving both beef scraps and green bone careful trials the stock did better on the beef scraps, and considerable labor is saved by not being compelled to cut the bone, as is the case with green bone.

From the time the chicks are three days old, up until they are placed on range, which is at the age of six or eight weeks, they are fed twice a day all the green feed they can consume. The green food is any kind of green stuff that is available, such as grass, rye, wheat, oats, corn, etc. It is cut up into one-eighth inch lengths, so the chicks can readily pick it up.

In winter when it is difficult to get succulent green feed, cabbage, boiled potatoes, onions, beets, sprouted oats or ensilage is used.

The grains and seeds fed the chicks are scattered among cut clover so that the little ones will be compelled to scratch and thus take exercise. Drinking water is allowed from the start, which is changed twice a day in winter and three times a day in summer.

After the chicks are removed to the fireless brooders, the hard-boiled egg ingredient in the ration is dropped and beef scrap substituted. After the first two weeks of age, the supply of hard-boiled egg is cut down to about one-half the quantity, and when beef scrap is substituted the egg part is again lowered to about one-tenth to one-fifteenth.

Feeding Chicks on Range

When the chicks are placed on range, if hatched before the first of April, they are given a dry mash all the time; and grain, scattered, twice a day. The dry mash is composed of the same materials and proportions as given in a wet mash to younger chicks, while the grain ration is changed to two-thirds wheat and one-third corn.

Chicks hatched after the first of April, when placed on range are given a mash of bran, middlings, cornmeal, flour and beef scraps.

Herewith is given a copy of the schedule posted up in the feed

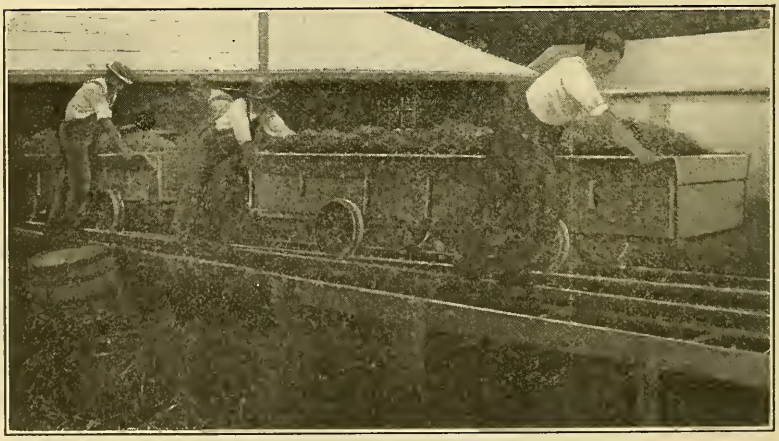
room, showing proportions of each ingredient for a given number of pails or bushels:

Pails or Bushels	Bran	Middlings	Flour	Cornmeal	Beef Scrap
1	3-7	1-7	5-21	1-7	1-21
2	6-7	2-7	10-21	2-7	2-21
3	1 2-7	3-7	15-21	3-7	1-7
4	1 5-7	4-7	20-21	4-7	4-21
5	2 1-7	5-7	1 4-21	5-7	5-21
6	2 4-7	6-7	1 3-7	6-7	6-21
7	3	1	1 2-3	1	1-3
8	3 3-7	1 1-7	1 19-21	1 1-7	8-21
9	3 6-7	1 2-7	2 1-7	1 2-7	3-7
10	4 2-7	1 3-7	2 8-21	1 3-7	10-21
11	4 5-7	1 4-7	2 13-21	1 4-7	11-21
12	5 1-7	1 5-7	2 18-21	1 5-7	13-21

NOTE.—The solution of the above table is to reduce to quarts. For instance, a bushel contains thirty-two quarts, or a pail (three gallon) holds twelve quarts.

Chicks on range are fed a soft wet mash mixed very dry for quick growth, or fed dry mash for slower growth, according to age of chick. Chicks intended for breeders are generally fed a dry mash, and those for market are given a wet mash. In the case of late hatched chicks, a wet mash is fed to force growth.

The point to be remembered, and which is closely followed at Niagara Farm, is this rule of proportions: In the start the chicks are fed a proportion of four parts of bran to one part of meal. Later in the season (about July) the start is made with two-thirds meal and one-third bran, and gradually lessening the meal and increasing the bran until the chicks are taken from the range and given laying food. The



The feed is sent out on trucks to the stock on range, for which regular railway tracks are built

feed on range is about four of bran to one of meal. Niagara Farm is a great believer in bran as a chick feed. A box of dry bran is constantly before them. It being an excellent bone and muscle food is gradually increased as the growth of the chick requires it.

Dry bran is also an excellent bowel regulator, while wet bran has a strong tendency to produce bowel troubles in young chicks. Diarrhœa is more or less rare among brooder chicks where dry bran is constantly kept before them, so that they can help themselves at will.

Feeding the Breeding Stock

The breeding fowls are fed a mash slightly moistened. It is placed in hoppers so the stock can help themselves at all times. All the grains fed are scattered over a territory as far as they can be broadcasted. The breeders are kept on range for about nine months of the year.

A light grain feed is given in the morning, between the hours of seven and eight o'clock, and another grain feed between the hours of five and six in the afternoon. About two or three o'clock in the afternoon the hoppers are again refilled with a mash.

The following table gives the formula for feeding the breeding and stock birds. The mash is fed wet, mixed very dry, when fertile eggs are wanted, and in case the eggs are intended for market purposes, the amount of beef scrap is doubled:

Bushels	Bran	Flour	Meal	Oatmeal	Middlings	Green Food	Oilmeal	Beef Scrap
1	1-6	1-12	1-6	1-12	1-6	1-6	1-12	1-12
2	1-3	1-6	1-3	1-6	1-3	1-3	1-6	1-6
3	1-2	1-4	1-2	1-4	1-2	1-2	1-4	1-4
4	2-3	1-3	2-3	1-3	2-3	2-3	1-3	1-3
5	5-6	5-12	5-6	5-12	5-6	5-6	5-12	5-12
6	1	1-2	1	1-2	1	1	1-2	1-2
7	1 1-8	7-12	1 1-6	7-12	1 1-6	1 1-6	7-12	7-12
8	1 1-3	2-3	1 1-3	2-3	1 1-3	1 1-3	2-3	2-3
9	1 1-2	3-4	1 1-2	3-4	1 1-2	1 1-2	3-4	3-4
10	1 2-3	5-6	1 2-3	5-6	1 2-3	1 2-3	5-6	5-6
11	1 5-6	11-12	1 5-6	11-12	1 5-6	1 5-6	11-12	11-12
12	2	1	2	1	2	2	1	1

How Often to Feed

The first two days the ducklings have a little feed left before them all the time, so they may help themselves at will. After that they are fed four times a day—at 5 o'clock and 9 o'clock in the morning, and at 1 o'clock and 5 o'clock in the evening.

The young chicks are fed every two hours from 6 o'clock in the morning until 6 o'clock in the evening. This is kept up until the chicks are placed in the fireless brooders, when they are fed but four times a day, equal number of hours apart, beginning at 6 o'clock in the morning and ending at 6 o'clock in the evening. After they go to the colony houses they are fed at 6 o'clock in the morning, and at noon, and in

DUCKS AT NIAGARA FARM

The illustration shows the feeder attending to the wants of one of the flocks of breeding ducks. Everyone has answered the roll call

the evening from 4 to 6 o'clock, according to the time of the year, being governed by the time of sunset.

When the chicks are removed to the fireless brooders, the number of mashes are dropped to one, and the richness of the mash is decreased. A rich mash is not again given until the young fowls are placed into laying quarters.

A Couple of Feeding Wrinkles

Niagara Farm has discovered the fact that by feeding March-hatched stock a light dry mash, composed of three parts bran, one part cornmeal, one part flour, with five per cent. beef scrap, they will not be so apt to go into molt in the fall, as when they are fed a wet mash. Pullets thus fed will, as a rule, begin laying in the fall.

When cockerels are found that have a broad, flat rump, with no tail feathers, nor long legs, and not too much head, nor big comb and wattles, they have the requirements of a good roasting fowl, and are placed in the duck fattening pens. The ducks waste considerable feed, and as their mash is of exceptional richness, the fowls grow very fast on it.

When feeding time comes, the ducks rush to the troughs and gulp down a lot of feed, then rush for drinking water, then back again, and so on, all the time in this way dropping food and wasting it. While the ducks are thus feasting, the chickens in the pen stand back at a safe distance awaiting a chance to get at the " remnants." After the ducks have finished, the chickens begin filling their crops to overflowing. The Curtisses say that they can fatten chickens in the duck pens in almost half the time that they can in any other way they ever tried.

How the Ducks Are Fed

When the ducklings are placed in the nursery, they are fed a mash composed of bran, flour, shredded wheat, oatmeal, cornmeal, beef scraps and clover, in proportions as explained in Formula No. 1. The oatmeal mentioned is really oatmeal middlings, being the finer part of screened oatmeal.

When taken from the nursery and placed in the brooder, the bill-of-fare changes, as is shown in Formula No. 2. If cut clover is given instead of green food, double the amount is allowed.

After the ducklings are placed in the cold brooder, Formula No. 3 is given.

When the ducks attain the age of six weeks, they are placed in fattening pens, and for four or five weeks are given Formula No. 4. Niagara Farm several years ago discovered that they made a mistake when they changed the food in the middle of the fattening period. Since they feed no fattening food at all for the first six weeks, and then for four or five weeks give fattening food exclusively, they are able to produce better carcasses in the entire flock.

The amount of beef scrap mentioned in Formula No. 4 is correct if bone soup is used to mix the feed. If not, then the quantity of beef scrap mentioned is doubled.

This bone soup is made from green bone. For the purpose a large condensing tank is used, which has a capacity of twelve barrels. Steam is turned on all day, eighty pounds pressure, which reduces the bone to a fluid. The tank is filled half full of bone, and enough water added to cover within a foot of the top of the tank.

It is a noted fact that ducks eat more than twice the amount of food at night that they do in the morning. Experiments show that a duck will consume on an average, eight ounces of mash in the morning, and twelve to twenty ounces at night. One hundred ducks will consume as much as seventy-five quarts of food a day.

Formula No. 1 — Nursery Feed

Pails	Bran	Flour	Shredded Wheat	Oatmeal	Cornmeal	Beef Scrap	Clover
1	1-5	1-10	1-5	1-10	1-5	1-20	3-20
2	2-5	1-5	2-5	1-5	2-5	1-10	3-10
3	3-5	3-10	3-5	3-10	3-5	3-20	9-20
4	4-5	2-5	4-5	2-5	4-5	1-5	3-5
5	1	1-2	1	1-2	1	1-4	3-4
6	1 1-5	3-5	1 1-5	3-5	1 1-5	3-10	9-10
7	1 2-5	7-10	1 2-5	7-10	1 2-5	7-20	1 1-20
8	1 3-5	4-5	1 3-5	4-5	1 3-5	2-5	1 1-5
9	1 4-5	9-10	1 4-5	9-10	1 4-5	9-20	1 7-20
10	2	1	2	1	2	1-2	1 1-2

Formula No. 2—Brooder Feed

Pails or Bushels	Green Feed	Bran	Flour	Cornmeal	Cracked Corn	Beef Scrap
1	1-4	3-7	1-7	3-28	1-28	1-28
2	1-2	6-7	2-7	3-14	1-14	1-14
3	3-4	1 2-7	3-7	9-28	3-28	3-28
4	1	1 5-7	4-7	3-7	1-7	1-7
5	1 1-4	2 1-7	5-7	15-28	5-28	5-28
6	1 1-2	2 4-7	6-7	9-14	6-28	6-28
7	1 3-4	3	1	3-4	1-4	1-4
8	2	3 3-7	1 1-7	6-7	2-7	2-7
9	2 1-4	3 6-7	1 2-7	27-28	9-28	9-28
10	2 1-2	4 2-7	1 3-7	1 1-14	5-14	5-14
11	2 3-4	4 5-7	1 4-7	1 5-28	11-28	11-28
12	3	5 1-7	1 5-7	1 2-7	3-7	3-7
13	3 1-4	5 4-7	1 6-7	1 11-28	13-28	13-28
14	3 1-2	6	2	1 1-2	1-2	1-2

Formula No. 3—Cold Brooder Feed

Pails or Bushels	Green Feed	Bran	Flour	Cornmeal	Cracked Corn	Beef Scrap
1	1-3	1-3	1-8	1-8	1-24	1-24
2	2-3	2-3	1-4	1-4	1-12	1-12
3	1	1	3-8	3-8	1-8	1-8
4	1 1-3	1 1-3	1-2	1-2	1-6	1-6
5	1 2-3	1 2-3	5-8	5-8	5-24	5-24
6	2	2	3-4	3-4	1-4	1-4
7	2 1-3	2 1-3	7-8	7-8	7-24	7-24
8	2 2-3	2 2-3	1	1	1-3	1-3
9	3	3	1 1-8	1 1-8	3-8	3-8
10	3 1-3	3 1-3	1 1-4	1 1-4	5-12	5-12
11	3 2-3	3 2-3	1 3-8	1 3-8	11-24	11-24
12	4	4	1 1-2	1 1-2	1-2	1-2

Formula No. 4—Fattening Food

Pails or Bushels	Green Feed	Bran	Low Grade Flour	Cornmeal	Whole Corn	Beef Scrap
1	1-2	1-5	3-40	3-20	1-20	1-40
2	1	2-5	3-20	3-10	1-10	1-20
3	1 1-2	3-5	9-40	9-20	3-20	3-40
4	2	4-5	3-10	3-5	1-5	1-10
5	2 1-2	1	3-8	3-4	1-4	1-8
6	3	1 1-5	9-20	3-10	3-10	3-20
7	3 1-2	1 2-5	21-20	1 1-20	7-20	7-40
8	4	1 3-5	3-5	1 1-5	2-5	1-5
9	4 1-2	1 4-5	27-40	1 7-20	9-20	9-40
10	5	2	3-4	1 1-2	1-2	1-4

11	5 1-2	2 1-5	33-40	1 13-20	11-20	11-40
12	6	2 2-5	9-10	1 4-5	3-5	3-10
13	6 1-2	2 3-5	39-40	1 19-20	13-20	13-40
14	7	2 4-5	1 1-20	2 1-10	7-10	7-20
15	7 1-2	3	1 1-8	2 1-4	3-4	3-8
16	8	3 1-5	1 1-5	2 2-5	4-5	2-5
17	8 1-2	3 2-5	1 11-40	2 11-40	17-20	17-40
18	9	3 3-5	1 7-20	2 7-10	9-10	9-20
19	9 1-2	3 4-5	1 7-40	2 7-20	19-20	19-40
20	10	4	1 1-2	3	1	1-2

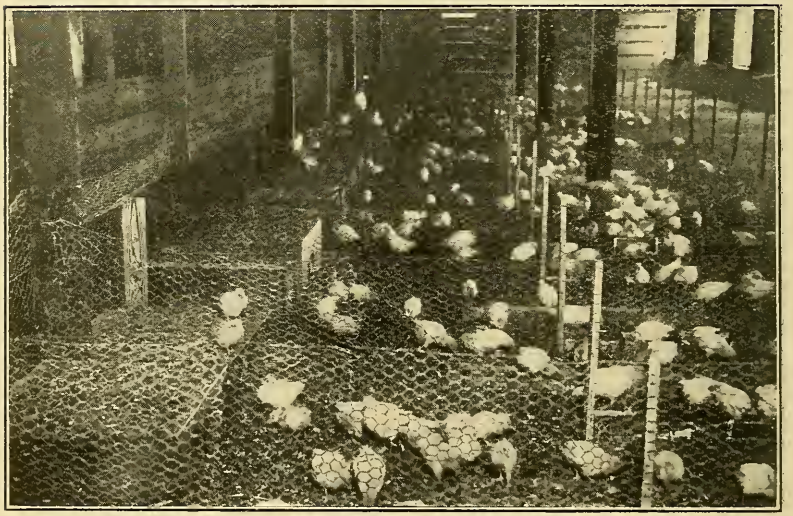
Formula No. 5 — Breeding Ducks Feed

Pails or Bushels	Cut Clover	Bran	Cornmeal	Flour	Oatmeal Mid.	Corn	Beef Scrap
1	2-5	1-5	3-20	1-10	1-20	1-20	1-20
2	4-5	2-5	3-10	1-5	1-10	1-10	1-10
3	1 1-5	3-5	9-20	3-10	3-20	3-20	3-20
4	1 3-5	4-5	3-5	2-5	1-5	1-5	1-5
5	2	1	3-4	1-2	1-4	1-4	1-4
6	2 2-5	1 1-5	9-10	3-5	3-10	3-10	3-10
7	2 4-5	1 2-5	1 1-20	7-10	7-20	7-20	7-20
8	3 1-5	1 3-5	1 1-5	4-5	2-5	2-5	2-5
9	3 3-5	1 4-5	1 7-20	9-10	9-20	9-20	9-20
10	4	2	1 1-2	1	1-2	1-2	1-2
11	4 2-5	2 1-5	1 13-20	1 1-10	11-20	11-20	11-20
12	4 4-5	2 2-5	1 4-5	1 1-5	3-5	3-5	3-5
13	5 1-5	2 3-5	1 19-20	1 3-10	13-20	13-20	13-20
14	5 3-5	2 4-5	2 1-10	1 2-5	7-10	7-10	7-10
15	6	3	2 1-4	1 1-2	3-4	3-4	3-4
16	6 2-5	3 1-5	2 2-5	1 3-5	4-5	4-5	4-5
17	6 4-5	3 2-5	2 11-20	1 7-10	17-20	17-20	17-20
18	7 1-5	3 3-5	2 7-10	1 4-5	9-10	9-10	9-10
19	7 3-5	3 4-5	2 17-20	1 9-10	19-20	19-20	19-20
20	8	4	3	2	1	1	1

Formula No. 6 — Stock Duck Feed

Pails or Bushels	Green Feed	Bran	Cornmeal	Whole Corn	Flour	Beef Scrap
1	1-2	5-16	1-24	1-24	1-12	1-48
2	1	5-8	1-12	1-12	1-6	1-24
3	1 1-2	15-16	1-8	1-8	1-4	1-16
4	2	1 1-4	1-6	1-6	1-3	1-12
5	2 1-2	1 9-16	5-24	5-24	5-12	5-48
6	3	1 7-8	1-4	1-4	1-2	1-8
7	3 1-2	2 3-16	7-24	7-24	7-12	7-48
8	4	2 1-2	1-3	1-3	2-3	1-6
9	4 1-2	2 13-16	3-8	3-8	3-4	3-16
10	5	3 1-8	5-12	5-12	5-6	5-24
11	5 1-2	3 7-16	11-24	11-24	11-12	11-48

12	6	3	3-4	1-2	1-2	1	1-4
13	6 1-2	4	1-16	13-24	13-24	1 1-12	13-48
14	7	4	3-8	7-12	7-12	1 1-6	7-24
15	7 1-2	4	11-16	15-24	15-24	1 1-4	5-16
16	8	5		2-3	2-3	1 1-3	1-3
17	8 1-2	5	5-16	17-24	17-24	1 5-12	17-48
18	9	5	5-8	3-4	3-4	1 1-2	3-8
19	9 1-2	5	15-16	19-24	19-24	17-12	19-48
20	10	6	1-4	5-6	5-6	1 2-3	5-12
21	10 1-2	6	9-16	21-24	21-24	1 3-4	7-16
22	11	6	7-8	11-12	11-12	1 5-6	11-24
23	11 1-2	7	3-16	23-24	23-24	1 11-12	23-48
24	12	7	1-2	1	1	2	1-2



SECTION OF NURSERY AT NIAGARA FARM

Second floor of large Incubator House. Not less than fifty thousand chicks each season spend the first ten days of their life in this immense room

Brooding the Chicks and Ducklings

The width of the pens in the chick brooder house (which is on the second floor of the large incubator building) is three feet, and the length twenty feet. These pens are arranged on both sides of the building, with an eight-foot alleyway. The heating is done by the old-style top heat pipe system, being a series of four one-and-a-quarter inch pipes—two flows and two returns. The hover is a twenty-inch square platform, with a three-inch hole bored in the center for ventilation. Fringe is hung on the four sides of the platform. As the hover is placed four inches from both the back and the sides, the chicks will not crowd, and should they become too warm can readily get out into a more cool atmosphere.

This second floor brooding house will hold 8,000 chicks at one time. On the outside of each brooding pen is erected a four-foot run, enclosed with wire netting. This run is practically a platform erected on the style of a roof garden, and so arranged that the chicks can at any time get out of doors into the open air and sunshine.

All the windows open from bottom out, and are fastened by a long iron rod. The sash swinging out acts as a shield in case of rain storms, and at the same time the chicks are not deprived of the fresh air.

The young are kept in the heated brooders for from one to three weeks, according to the condition of the weather, and then they are trained to use the fireless brooders. This is done by placing a fireless brooder in the run of the heated brooder, up near the hover, and putting a board on each side of the brooder so the chicks cannot pass back to where there is heat. Being at practically the same spot to which they had become accustomed, they gradually learn to enter. In a few days there is no more trouble, and the chicks go over to the cold brooder.

After making repeated experiments, Niagara Farm has learned the lesson that not only will three-fourths of the labor be saved, but the mortality will be considerably reduced by putting the chicks under heat for the first week or so of their life. There is nothing to prevent them from crowding, should they not be comfortable, and the newly-hatched chick, like the new-born babe, requires warmth more than it does food. When given this heat in the start, by the time they are removed to the fireless brooders they have developed in strength and body to such an extent that the animal heat generating in the fireless brooder at once makes them comfortable.

The Curtisses say that the method of using fireless brooders from the start is not practical. They admit it is possible to begin chicks in that way, but it requires too much watching and care the first ten days, and therefore find that it is much easier and better to allow artificial heat at the start for the first ten days in summer and spring, and from two to three weeks in winter. Artificial heat teaches the youngsters where to go to get warm, and once having learned the lesson they seem never to forget it.

Where only a limited number of chicks are to be raised—say about fifty—it would hardly be necessary to purchase a heated brooder. Instead a jug of hot water, or a heated brick or soapstone wrapped up in an old cloth to keep it from burning the chicks, and placed in the center of the fireless brooder, two or three times a day for the first

PLOWING

The soil in the Chick Runs is kept loose. This is done by means of a hand-plow, keeping a man busy the entire season

UNIQUE BROODING AT NIAGARA FARM

Each house is separate, and in each fifty strong chicks are placed after a few weeks old, and kept there until taken out on range

week will answer the purpose very well. After that no artificial heat will be needed. Care must be taken not to use very many cushions on top while artificial heat is employed. Should the brooder be placed in a heated room, no cushions are needed, just the burlap on frame inside the brooder that bags down on the chicks' backs. When the artificial heat is taken away, more cushions must be used to retain the heat of the chicks' body.

One very important matter in brooding is to clean out the boxes at least twice a week, and three times would be better. Clean and disinfect the runs, boxes, etc., after each batch of chicks and spray inside of boxes with kerosene oil twice a month.

The ducklings are brooded in pens four to five feet in width, and twelve feet in length, according to the age of the young.

In addition to the brooder room over the big incubator cellar, Niagara Farm has a winter nursery brooder house, 110 feet long (to be lengthened to 160 feet for next season), sixteen feet wide, gable roof, shingled, ceiled over head at plate inside, double boarded with heavy building paper between. Windows two feet from floor extend up to ceiling; basement under filled with incubators; floor for chicks divided into three-foot pens; heat supplied by radiators along back wall.

The Curtisses have in the past season discovered a way to teach chicks to go in and out of fireless brooder without artificial heat and this method is used in this building. W. R. Curtiss, who has charge of the brooder experiments, says that by next season he will be able to brood in this house 100 chicks for every foot in length of building; at present they are brooding fifty chicks to each eight-foot pen. Outside runs are twelve feet long, two feet higher than outside ground at end, and four feet where chicks leave brooder house. This gives a dry pen no matter how hard it rains or how long. Fifteen minutes after it stops chicks can be let out. Chicks are kept in this house three to four weeks; first week to two weeks they are not let outdoors unless very fine weather. Floors and fireless brooders are covered and bedded with cut clover which is made on the farm. The fresh cut clover is put in fireless brooders first, then when cleaned are dumped in chick pens in house in which they scratch for grain. Later it is swept outdoors, where if any grains are missed they again have a chance to find them. There is a four-foot walk along back of this building from which chicks are fed and watered except the older ones, which are fed and watered outdoors when weather will permit. This building is heated by a large hard coal heater in basement of building. There is also a bedroom for attendant in one end, and feed room at the other.

The cold brooders for the chicks for spring and summer work consist of a series of forty-four separate houses, abutting against each other. Each house measures 6 by 8 feet, large enough for fifty chicks in a flock. Here they are placed when about five weeks old. In front of each house is a yard 30 by 6 feet. These yards are being continually plowed up by a small Planet, Jr., hand-plow, so that the soil will be loose and the chicks can readily scratch in it.

This plowing, too, has an advantage in disinfecting the soil, by turn-

ing under the excrement, and throwing up clean, pure ground. After the season is over, these yards are planted to a green crop like rye, and thus the soil is again sweetened for another season. besides a crop of needed green food is raised.

One of the secrets of the success of Niagara Farm is that they allow nothing to be idle, but make even the soil yield them an income.

Another building used for brooder purposes is the winter chick brooder. This building is 20 by 110. Basement under filled with incubators. (It is intended another season to lengthen this building 100 feet.) Heat is supplied by a heater in basement and ten runs of two-inch pipe along back wall. No fireless brooders or any brooding arrangement used; building kept at seventy degrees and chicks brought from nursery here, where they are kept in flocks of 500 to 1,000 each.

At night they sit along walk at back and seem very comfortable and cozy. The building has a single slant roof high side facing south. The runs are fifty feet long, outdoors well drained. Here the chicks are kept until eight to ten weeks old, at which time if intended for broilers, they are marketed; or if pullets are to be kept for laying, they are removed to a building without heat. This building is covered outside with a white asbestos roofing paper that does not draw cold in winter or heat in summer, and is practically fireproof. Front windows are four feet from floor, building is nine feet high in front, six feet at back. In stormy bad weather it is ventilated at highest point in each end by a window swinging down from top. Pens are from ten to twenty-five feet wide. The feeding and watering are done from back in stormy weather, which is most of the time in winter.

Feathering and Molting

As has been the experience of all breeders of Leghorn fowls, the chicks very rapidly develop wing feathers. It is common to have them grow so fast that the strength of the chick is fairly drawn from the body, and in consequence the wings droop and the chicks becomes weak. Every effort possible was made on Niagara Farm to counteract this trouble, but without avail. Finally clipping the tips of the wing feathers of the chicks, when three or four days old, was resorted to, and it worked like a charm. It proved that this had a tendency to send the strength back to the body, or rather, keep it there, and, coupled with the fact that the mash given is of a very rich order, it helped the youngsters over that fatal period.

The general richness of the mash has also a wonderful effect in feathering the Wyandottes and the Plymouth Rocks.

The molting period usually lasts about three months. August is the beginning of the period for the younger fowls, while with the older ones it seldom begins for a month or two later, according to age.

On Niagara Farm they aim to start the molting process in July, so that the fowls may be through with it by the first of September. The breeding stock at this time are on free range, and, beginning in July the mash and grain feeding is discontinued. This compels the fowls to depend entirely on what green food and bugs they can find. Naturally

During the summer the Breeding Stock is colonized. Thousands of carefully selected specimens can be seen on range

this gets them into a thin condition. As soon as it is noticed that individual specimens of the flock act weak, the feeding is resumed, allowing only a small quantity at first, and gradually increasing until the amount of full feed is reached. This method, Niagara Farm has found, hastens the shedding of the feathers, the new growth starts, and the hens are ready for late fall and winter laying.

The breeding ducks are fed on a rich mash until feathered, when they are given a light one.

How Green Feed Is Supplied

The Curtiss people have great faith in green food. It is the most important part of their bill-of-fare. All kinds of greens that are available are given in season, especially green clover and other grasses, and during the winter the main reliance is cut clover hay.

Every fall they sow large fields of wheat and rye. The rye grows the fastest, making green feed earlier in spring, which is mowed and fed as soon as it is of sufficient height. By the time the rye becomes too coarse, the wheat is in proper condition for cutting.

Oats are sown in early spring, and this comes up and is ready for cutting by the time the wheat is too ripe for green food. After the oats follows fodder corn, and this lasts until frost comes, when the cut clover hay is substituted and fed until green feed comes again in spring.

On the range occupied by the chicks, corn is previously planted, and when it has grown to about a foot in height, the chicks are placed in the field. Here they not only have a lot of insects to feast upon, but, naturally, an endless amount of small weeds grow up which furnishes them excellent tender greens. The shade made by the corn is a decided advantage to the chicks, and they, in return, furnish the crop with manure. This plan Niagara Farm has tried for a number of years, and they find it far better than their former plan of placing the chicks in the meadow. The youngsters grow faster, stay in a more vigorous condition, and the loss is very small. Fruit trees are now being planted in this field, which will make it possible to grow three crops upon the same area—chickens, corn and fruit.

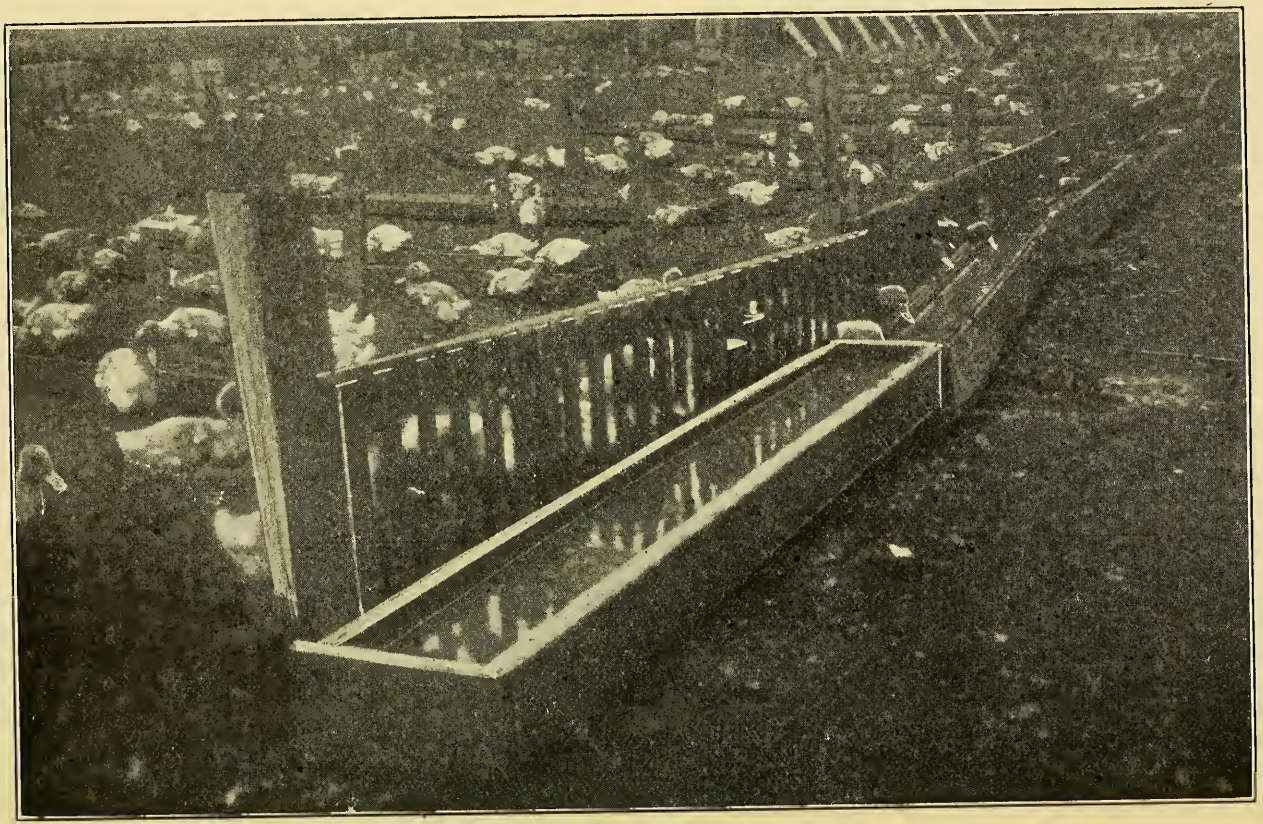
Colonizing and Mating the Stock Birds

The laying hens are quartered on range, in flocks of 1,500 to 2,000 in a flock. There are two rows of houses used, the houses being about two rods apart. Between each row there is a distance of twenty rods. All told, there are two hundred colony houses on the farm.

During the winter the eggs are gathered three times a day, but only once a day during the summer time.

In White Wyandottes and White Plymouth Rocks, where exhibition stock is desired, special matings are made, according to vigor of the male bird, giving him from eight to a dozen females.

Those fowls that are on range are generally mated at the rate of a male for every fifteen or eighteen females. For Leghorns, from twenty-five to thirty females are allowed each male.



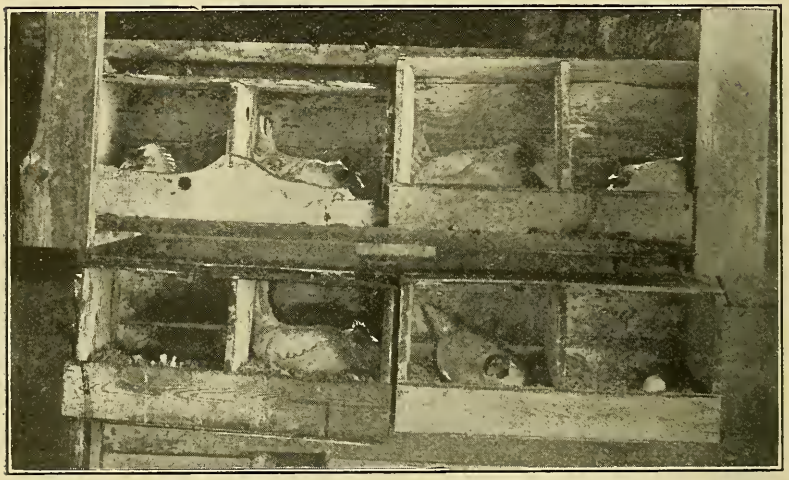
DRINKING DEVICE AT NIAGARA FARM

That the young ducks may not pollute the water, and that they may be kept from getting wet, racks are provided through which the little ones can stick their heads and take their drink

The fowls intended for breeding or exhibition stock have a range in a large woods. Being sheltered from the direct rays of the sun they keep a much whiter color.

In all the houses, for both old and young stock, which includes both chickens and ducks, planer shavings are used in place of straw bedding, which, it is claimed, are not only cheaper, but serve the same purpose as does the straw.

In spring the breeding ducks have a range of about twenty acres. The matings run from thirty ducks and five drakes to flocks of three



LAYING TIME AT NIAGARA FARM

The nests in the Colony Houses on Niagara Farm are crude affairs, but they are nearly always filled by busy workers

hundred ducks and fifty drakes. During the winter the breeding ducks are mated at the rate of one to six; that is, one drake to six ducks. At times, when the flocks are large, trouble will arise between the drakes, and then it becomes necessary to take out a few drakes from the flock, leaving about a drake to eight or nine ducks. This generally cuts out about seventy-five per cent. of the ruptured eggs. A ruptured egg is one that shows a blood ring in the egg.

It is a rule on Niagara Farm never to use a two-year-old duck for breeding. In every case they use the young stock. Experience has taught them that to get good fertility they must not use kept-over ducks, as they fatten too readily; besides, a young duck will begin laying two or three weeks earlier than will an old one. These old ducks, as soon as they are done laying, which is about July or August, are sold alive to the Polish and Italian settlements of nearby cities. Some of them, however, are also sold, dressed, to second-class hotels.

Lanterns are hung each night in the different duck yards. This has a wonderful effect in keeping them quiet. Instead of the lanterns, however, electric lights are about being installed. In fact, they will not only be placed in the duck yards, but in the various lanes and paths on the farm, and in all the buildings, a convenience that will be exceptionally valuable.

When ducks are in the dark, they are apt to stampede, becoming frightened at any noise or object, and when in this excitement they send out a deafening cry. It can be imagined the racket the thousands of ducks on Niagara Farm would make.

How the Breeding Stock Is Reared

Each year considerable stock of Wyandottes, Plymouth Rocks and Leghorns are hatched and reared for special matings, so that the fowls can be used for breeding purposes. In order that there may be no chance for getting them mixed they hatch and raise these chicks by hens.

For this purpose rows of outdoor box nests are made, to which partly shaded runs—twelve feet long and about two feet wide—are attached. After the hen has hatched her young, the nesting material is removed and the box acts as a coop for the hen and her brood. In these runs the hen and the chicks are kept until about four weeks old, when they are taken out on range. When a few days old they are marked by a numbered punch, making the figure 1, 2, 3 or 4 in the web of the foot. The number represents the mating the eggs came from. In this way males from the one lot can be crossed on females from another lot without any chance of inbreeding.

Two young men are employed to attend to this work. They must not only feed and water, but keep the place clean and attend to every detail. In order to have them take a deep interest in the work, and that it may be thoroughly done, they are offered a bonus for good performance. This they get in addition to their regular salary. For instance, a certain bonus is given for every fifty head raised, and a special bonus for any number over five hundred chicks that are handed over to the range. Guineas are a sort of "by-product," and as they are more or less difficult to grow, these boys get a good bonus for every hundred that they are able to get beyond the danger stage, or, in other words, that become fully feathered.

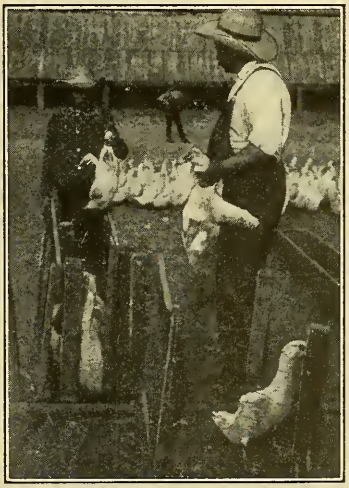
How the Breeding Ducks Are Selected

In order to secure a thousand standard breeding ducks, considerable and careful selection is required. About one duck in ten will pass muster as a breeder.

The standard set down on Niagara Farm for a breeder is that it must be broad in the breast, broad in the back, deep in the keel, not too large in head and neck, medium length in body, and sharp and quick in eye.

When the selection is about being made, W. Roy Curtis, who has charge of that part of the work, has a lot of ducks driven in a small enclosure. Opposite him are two unoccupied yards. Those that come up to the requirements are placed in the one yard, and those that fail in the examination are placed in the other yard.

That work being finished, an interesting event takes place. A flock of from two to three hundred of the selected ducks are slowly driven a half mile across the farm to a woods. It is a hard pull for them, and the drive is a slow one. But, notwithstanding that they are not hurried, every now and then a duck will drop by the wayside, all gone in the legs. It is allowed to remain



Great care is taken in the selection of Breeding Ducks. This work is entirely done by W. Roy Curtiss, who has adopted a regular standard

CHICKS AND MOTHERS

In order to keep them separate, and to give them the best of care, the chicks intended for future breeding are hatched and reared by hens

while the stronger ones continue the march. It is a case of survival of the fittest. Those ducks that are able to stand the trip prove their strength, a qualification so necessary for producing good offspring. From twenty-five to fifty from each flock are unable to stand the journey.

Upon the return of the men, they pick up the stragglers and place them in the fattening pens.

EGGS READY FOR THE INCUBATORS

It is the rule to have eggs as near a size, color, age and shape as possible

How Fertile Eggs Are Secured

The eggs produced on Niagara Farm show a very large percentage of fertility. This is pointed out in the record of hatches referred to in another part of this book.

All the birds are kept on free range during early spring and summer, near a running stream of water, in movable colony houses. In winter these houses are drawn up from the back of the farm and placed near the home buildings.

The fowls are never confined to their houses summer nor winter, and under this treatment (together with good feed and good care) the eggs are exceptionally fertile and produce strong, hardy chicks that come out in the incubators with a kick and are bound to live, thrive and make good hardy layers for next season.

The Curtisses are great believers in following nature. While they are opposed to fowls roosting outdoors at night on tree limbs, shed roofs, fences, etc., at the same time they strongly believe and know that for health and good returns, poultry must have a constant supply of fresh air. Their favorite house is built after the Tolman plans, which is a deep house with an open front, the hens roosting in the rear away from direct winds and protected from drafts.

They claim, and rightly too, that hens shut up in houses, with hardly a chance to get a breath of fresh air, are sure to become sickly, and unhealthy stock certainly cannot produce profitable offspring, nor can there be good fertility to the eggs.

Furthermore, they believe that the houses should not only be kept perfectly clean, but should be free from all bad odors, not merely for the agreeableness to persons compelled to be more or less about them, but particularly for the fowls' health.

BREEDING DUCKS AT NIAGARA FARM

The Breeding Ducks are given the privilege of bathing in the large pond on the Farm, where they take considerable exercise and thus are able to keep in the best of condition

For that reason they have dispensed with dropping boards under the roosts. They state that where a large number of fowls are quartered in a building, the droppings of the night on these boards is considerable, and, as the boards are always placed only about six inches below the roosts, the fowls are compelled to breathe this bad odor the entire night.

Instead they have the roosts about four feet from the floor, and planer shavings are scattered thickly underneath, which holds the droppings and which they can readily clean up.

After testing this plan for several years they are satisfied that it prevents considerable sickness, inasmuch as there is not so much possibility of the bad odor reaching the stock—at least not in a very strong state.

The Curtisses are also great advocates of exercise. The chicks as well as the hens are compelled to scratch among light litter for their grain feed. The grain fed the chickens and fowls on range is broadcasted so that they must be constantly on the move in order to find something to eat. They are busy from feeding time to feeding time, for there is always more or less grain to be found when it is widely scattered.

The breeding ducks get their exercise in the creek that runs through their pens. Bathing is about the only real exercise they can get, as ducks cannot scratch like land fowls.

Of course those ducks being reared for market are not allowed near the water, as it would reduce them in flesh and would be unprofitable. The object with market ducks is to put on all the weight possible.

Exercise puts the blood in good condition, it hardens the muscles, sharpens the appetite, and digests the food. All these are requisites for good, strong fertile eggs.

Killing, Dressing and Shipping

The secret of the success of the Niagara Farm is mainly due to the fact that it is so planned that there is always something on sale. Every day, excepting Saturdays and Sundays, a shipment of some kind is made. More than three-quarters of all the shipments by express from Ransomville Station are from the Curtiss farm.

It requires 3,500 head of broilers, roasters and spring ducklings each week to meet the demands of the regular trade.

From twenty to thirty women are employed every day, excepting Saturdays and Sundays, at dressing ducklings, roasters and broilers for market. At the time of the writer's visit about 2,000 ducklings were being dressed in a week, but before the close of the summer season it is intended to butcher not less than 2,500 a week. During the month of July about five hundred squab broilers were dressed weekly, and for the month of August it is necessary to double that number, as the demand from the summer resorts increases.

The record weight of dressed ducks in one day was nearly two tons.

Killing Chickens

The broilers and roasting fowls are killed in the regulation way. They are dry-picked, so that the natural firmness of the flesh remains, and they will keep in better condition when shipped. After having allowed them to fast for from twelve to twenty-four hours, so that nothing will remain in the crop to sour, the feet of the fowl is fastened to a stout cord suspended from a rafter, and the wings locked, that the

BABY CHICKS AT NIAGARA FARM

A big lot of day-olds just fresh from the incubators. Shipments of baby chicks are made in large lots nearly every day in the month during the season

birds may not flutter. The head is grasped by the left hand, and a sharp-pointed knife is thrust in the mouth, severing the jugular vein, and shoved up into the brain. The stab is made in the center of the mouth, between the eyes and ears. The knife is then drawn from the side to the center on each side at top or roof of mouth. All this was done in less time than it takes to tell it.

While the bird is being killed, the operator takes it under his left arm, and the mouth is held open with the fingers of the left hand. At once the feathers of the breast are removed, then those of the neck, followed by those of the back, the tail, the wings, and finally those on

DRESSING POULTRY AT NIAGARA FARM

Twenty-five women are employed every day (save Saturday and Sunday) dressing fowls for market

the legs. As soon as the long feathers are removed the women pickers begin their work, and before the carcass has time to get cold, it is bare of all feathers.

After the women have completed their part, the carcass is examined, and then given its first bath in cold water, to which a little salt has been added. After remaining in the water for some time, the clotted blood is removed from the mouth of the chicken, and the carcass is placed in another tub of clean, cold water.

The carcasses are then shipped in boxes and barrels (according to the size of the order), packed in ice.

Killing Ducks

When ready to kill ducks, two rows of eight each are hung up by means of a wire hook fastened to each leg. A long piece of wire is then drawn through the nostrils of the eight ducks and fastened to each upright post of the scaffold, in which way the ducks are kept quiet in the proper position.

This is considered an improvement over the old style of fastening a weight, by means of a piece of wire, to the nostrils of each duck. Underneath this scaffold is a large trough four feet wide, six feet long, and one foot deep, to catch the blood and the feathers.

SHIPPING BABY CHICKS AT NIAGARA FARM

Twenty-five bright day-old chicks are placed in each compartment, the illustration showing one hundred ready for the trip

DUCK KILLING AT NIAGARA FARM

Two rows of ducklings are hung up at a time, securely fastened by wire, and the "executioner" does his deadly work in a very few minutes

The ducklings are then stabbed in the mouth, the blade penetrating the brain, very much on the style used for killing the broilers and the roasters. For the purpose of killing the ducks, a butcher's knife is used. The ducklings are then scalded and at once picked. Shipment is made in the same manner as with other poultry.

The Baby Chick Trade

Hatching and shipping baby chicks is one of the specialties at Niagara Farm. Thousands of these are turned out and sold during the season of early spring to way late in summer. On the occasion of the writer's visit, a single shipment of 2,000 chicks was made in lots of fifty to several hundred, to points in Virginia, Illinois, New York, Maryland and Michigan.

The shipments are made in corrugated pasteboard boxes, with corrugated pasteboard pads placed in the bottom of each box. Each box has from one to four compartments, measuring eight and a quarter by ten inches each, in which twenty-six chicks are snugly packed. In these boxes a lot of holes are punched, on the top and the sides, to admit air. The boxes are so strong that they will bear the weight of a man weighing two hundred pounds.

Where more than one hundred chicks go to the same party in one shipment, the boxes are placed in carriers.

Each box and carrier is labelled "*Live Chickens*" in large red letters, so that there can be no misunderstanding as to the contents.

This branch of the business of Niagara Farm has grown so that two large incubators have been ordered (7,500 egg capacity each) in addition to one of the same size they now operate, to help meet the growing demand for the day-old youngsters.

The fact that little chicks just hatched should not be fed for the first forty-eight to seventy-two hours, gives a splendid opportunity to ship at that age without having to feed or water in transit. W. Jay Curtiss has full charge of the incubators, and personally oversees this department. His experience covers the past twenty years, he having operated nearly all the different makes of incubators with varied success.

BABY CHICK TRADE AT NIAGARA FARM

Over 50,000 baby chicks were hatched and sold the past season. They are packed in pasteboard boxes, very much on the order of cut flowers, only better ventilated

The Income

The income of Niagara Farm is derived as follows. About four thousand head of stock, consisting of Single Comb White Leghorns, White Wyandottes and White Plymouth Rocks are kept for breeding purposes. From these were produced and sold during the 1910 season, a little over 75,000 day-old chicks, which brought, up to April 1st, twenty to twenty-five cents apiece; during April, twenty cents; during May, fifteen cents; and during June and July, ten cents each. This gave an average of a fraction over fifteen cents per head for the day-old chicks during the season.

Besides, 30,000 eggs were sold for hatching purposes, being mostly disposed of in lots of fifty, one hundred, two hundred, five hundred, and even as high as five thousand, at an average price of six dollars per hundred.

In addition to the baby chicks, from 15,000 to 25,000 chicks are raised, of which half go to the market as squab broilers or roasters, and the rest are either kept for breeding purposes or are sold as such.

During the season, the squab-broilers, eight ounces in weight, dressed, average fifty cents each in price, and the soft roasters run from a dollar to a dollar and a half each, dressed.

The Wyandottes, as roasters, are marketed at from five and a half to six and a half pounds, dressed weight, and the White Plymouth Rocks at from seven to nine pounds. The prices range from eighteen to thirty cents per pound.

The squab-broilers are produced from the Leghorn stock. Niagara Farm does not grow the regular sized broilers (weighing from one and a quarter to two pounds each, dressed) for the reason that they find it more profitable to put extra weight on the carcasses and grow them to soft roaster size.

A limited private egg trade is supplied in winter, but the Curtisses do not cater to it, as they deem it a better business move to turn into table poultry such eggs that are not sold for hatching.

From 5,000 to 7,000 head of breeding stock, of all varieties, are sold in one year.

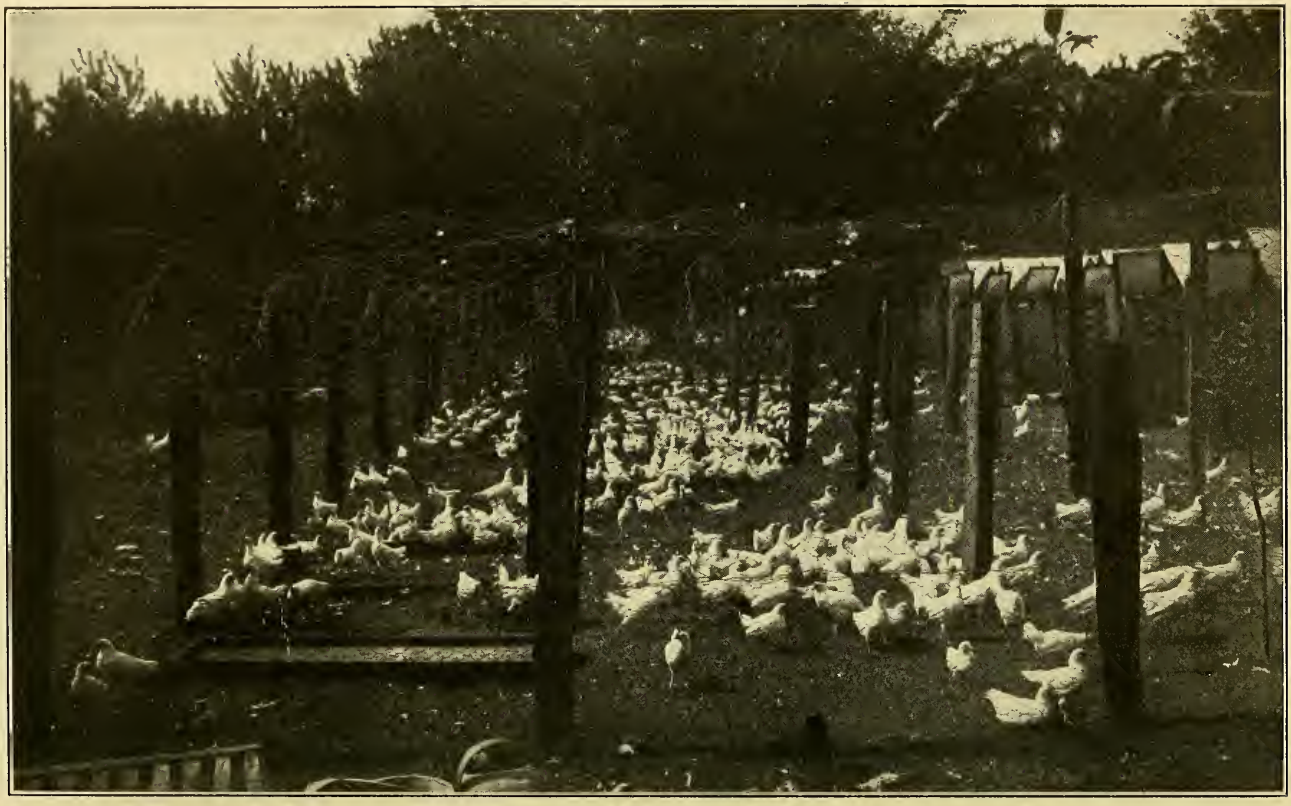
As near as can be estimated, it costs about $1.25 per head per year to feed the Wyandottes and Plymouth Rocks, but the Leghorns are kept for about one dollar per year, although these figures vary with the price of feed. It would not be possible to keep the stock at those prices were it not for the fact that Niagara Farm buys all its feed in carload lots. They estimate that the sale of the Leghorn cockerels as squab-broilers about pays for the feed of the Leghorn pullets up to laying age.

These squab-broilers do not exceed three-quarters of a pound, when dressed, and sell best during the months of March, April and May. They are grown in from eight to ten weeks in brooders, kept in a room where the temperature is about seventy degrees. The shipments of these small broilers are made to clubs, high-class restaurants and hotels in large cities and summer resorts. This branch of the business is carried on throughout the year, although prices drop in the summer and fall.

Advice to Beginners

The Niagara Farm had a small beginning. There was plenty of territory to work, but there was a serious lack of working capital. Consequently they had to go more or less in debt, but as the income warranted they would "pay on account," until finally they got rid of their burden. The Curtiss boys were progressive, they were wideawake, they did things at the right time, and always aimed to "never put off until to-morrow what should be done to-day."

At first their knowledge of the poultry business was rather meagre. They studied the authorities, then they worked the problems themselves. They realized that the more experience they secured the easier would be the work.



GROWING CHICKS AT NIAGARA FARM

Thousands of Pu s and Cockerels are raised in these yards each year to make their mark as breeders of the next generation

From the start they worked by system. No time, room, feed or anything was wasted after they once saw a way to improvement. They made good plans and good rules, and they strictly obeyed them.

The Curtiss boys were ambitious, they were energetic, they were alive to all matters. The repetition of each day's work did not tire them. It has been this growing "tired feeling" that has sunk too many promising enterprises.

They make it a rule now to invest their profits in real estate, instead of "living up to it." They want to save what they earn, and their holdings in real estate are already giving them a good income independent of the business.

The Curtisses give this advice to beginners:

Begin in a small way; study and investigate; don't over-estimate your capacity—keep within bounds. Don't try to walk before you can crawl. Keep out of debt as much as possible, and what must be had on credit should be repaid at the very first opportunity.

It was a joke with the elder Mr. Curtiss when his son Roy suggested "going into the poultry business." So much of a joke that he agreed to buy all the feed—our readers know how he subsequently crept out of that bargain, and all owing to Roy's ambition.

"If any one had told me twenty years ago that my sons were going to build up the business they have, I would not have believed him," the elder Mr. Curtiss remarked to the writer.

W. Jay Curtiss is very enthusiastic over the future of the poultry business. "It is growing with wonderful strides," he said, "and as fast as the supply grows the demand increases."

Asked what he thought was the keynote of their success, he said:

"First, always having something to sell, thus creating a regular income. Second, always aiming to have choice goods, thus securing the best, or fancy, trade. Third, being punctual in filling orders so that shipments can be depended upon. Fourth, systematizing the work so that it will be readily and more easily performed."

There are men for all departments, and the head of each department has full charge and responsibility. Regularity is an important rule, and it is followed carefully. A time is set for all things, and punctually everything, even to the smallest detail, is attended to.

"We could fill a book with a record of the mistakes we made," said W. Roy Curtiss, "and I often wonder how, in view of the blunders, we ever managed to do as well as we did.

"We made blunders in feeding, yes, many of them—and in this particular we suffered heavy loss. We made blunders in management; we made blunders in housing; in fact, we were continually heaping up our mistakes."

Roy kept a diary, and in it each day he noted everything of importance that happened on the farm. In that way he was able to steer clear of such stumbling-blocks as cost time and money.

The lessons taught were varied—the importance of green food and fresh water, and pure grains; the value of keeping the premises clean; and the advisability of being punctual and regular.

The beginner should start with a single variety, and not only study how to house, how to feed, and how to care for his fowls, but he should become acquainted with the habits and traits of his stock. He should study their egg yield as well as their ability to produce good table poultry. He should know the breed thoroughly, and increase the numbers of his flock as his knowledge of them increases. In that way he will be best fitted to take on the business on a larger scale.

Then, should the trade call for something that he is unable to produce with his breed, it is time to add another variety, as did the Curtiss brothers.

"The beginner should always be sure he is right before he goes ahead," is a maxim that ought to be cherished. If it was good enough for Niagara Farm it certainly should be good enough for those who are entering the ranks.

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