SF

487

.D46

DEC 27 1897

....THE....

U 83

Poulter's Guide

PRICE, 15 CENTS.

SECOND EDITION.

PUBLISHED BY

DES MOINES INCUBATOR CO.,
DES MOINES, IOWA.

1898.

THE POULTER'S GUIDE.

SECOND EDITION.

DES MOINES INCUBATOR CO.,
DES MOINES, IOWA.

1898
THE KENYON PRESS
DES MOINES.

H.

SF487
.D46

Copyright, 1897, by the
DES MOINES INCUBATOR CO.

All rights reserved.

Introductory.

THE object of this little book is to point out, to all who will profit by its suggestions, a field of labor to which they may devote their leisure hours with pleasure and profit, or in which, if they desire to do so, they may find plenty of opportunity to enjoy the undivided thought and energy of their whole lives, without a fear of being pecuniary losers. Many avenues of profit lie open, but to the great mass of humanity the world seems a desert without an oasis within reach.

To-day there are thousands of persons eager to avail themselves of anything that will make their way of life easier and more pleasant. If they could only see some chance for doing so, they would willingly improve it. It is not so much a lack of energy or desire as a lack of foresight that keeps people in old and unprofitable ruts.

There is no field of human endeavor that presents to those of moderate means a fairer prospect than that of poultry culture, viewed in the light of modern progress.

A few decades ago there was very little inducement for entering the poultry business, but time has worked miracles in this line as abundantly as in others. Twenty-five years ago poultry culture as a means of profit, especially as an exclusive vocation, was almost unthought of. At that time there was no literature pertaining to poultry culture, but now there are published in the United States a large number of papers and magazines devoted exclusively to poultry matters, while the farm journals of every section of the country discuss the subject in all its phases, generally giving it a column or two in every issue. The regular

poultry journals, however, are the real guides and teachers. They point out to beginners the dangers to be avoided and unravel all the knotty problems that bothered the pioneers of the field. Their columns are always open to any one who seeks information or who desires to contribute for the benefit of his fellows at large some bit of useful knowledge that experience has given him. We delight in reading the valuable contributions sent to these poultry journals by readers from different parts of the country.

As a rule, poultry raisers are of a high order of intelligence, and advanced thinkers, and are, with few exceptions, adepts in the art of expressing their ideas in well-chosen and elegant words. So when one enters the realm of poultrydom and subscribes for a good poultry paper he seems to become one of a select circle of intelligent people, whose influence is always exerted for good, and whose views are instructive and entertaining.

The increase in poultry literature alone, while one of the most gratifying signs of the onward march of this industry, is a most convincing evidence of the development of the poultry business, for exponents of an unprofitable enterprise are not apt to wax great and prosperous. It is our special desire to give, herein, the fraternity as much information on the subject of poultry culture as can be gathered from practical resources, put under one cover and sold for 15 cents. We trust our efforts will result, at least, in some benefit to every subscriber.

The master achievement of this age, which has done more to advance poultry culture than any other cause, is the modern Incubator and Brooder. The hen, as a producer of eggs, is indispensable. In that special function she baffles human invention. However, the ingenuity of the higher animal, man, has raised the standard above her very highest attainments in the hatching and brooding of chicks.

FIRST CHAPTER.

POULTRY HOUSES.

CONSTRUCTION OF BROOD HOUSES — HOUSES BUILT FOR WINTER LAYERS — GENERAL IN- FORMATION ON THE CONSTRUCTION OF A POULTRY HOUSE.

Where a farmer has means at his command it is an easy matter to build a suitable poultry house. Nice poultry buildings, with their neatly fenced yards, add much to the attractive appearance of the farm home. But, fortunately for those who must start with limited means, Biddy is not particular as to outward appearance, and, providing certain requirements of her nature are complied with, will reward her owner just as generously in more humble quarters.

The most essential of these requirements are light, warmth and dry quarters. Dampness is the worst possible condition for poultry. It produces foul and disagreeable odors and promotes disease, which, if not fatal to the flock, will impair their vitality.

For want of better quarters, a building constructed after the fashion of a log house will do, and if chinked, mudded and well banked up, and covered with straw, will be so snug and warm that drinking water will hardly freeze in the coldest weather, and if other conditions are favorable, the hens will lay all winter. There are many ways in which a farmer can use materials within his reach and build a comfortable poultry house without much expense, but of all

mistakes in starting an egg farm the greatest is in having too small houses and runs. The old style of allowing the fowls to roost in trees will interfere with the egg basket; in fact, an egg basket is not needed. Nothing could be done that would contract colds, roup, etc., more rapidly than this exposure; and the person who will allow his hens no better quarters than trees and open sheds, during the winter, will not be put to the bother of gathering many eggs. Just any kind of a house will NOT do. Houses can be conveniently and comfortably made so that they will not cost more than a hit-or-miss one. They must be large enough to give the stock ample room, and divided into pens, so that separate families are practically alone. Fine architecture amounts to very little outside of general appearance. Plain but comfortable looking houses are always more pretty than elaborate affairs. It requires ten square feet to comfortably house ten fowls. That is allowing a square foot for each bird, and is not one inch too much. When you begin to crowd your hens, you begin to cut down their products. The roosts should be about two feet from the ground, and under them should be built a platform to catch the droppings, and this platform should be cleaned every morning and then sprinkled with air-slacked lime.

Do not favor the idea of putting glass fronts in your poultry houses. A more foolish expenditure could not be made; besides, too much glass, while it admits the sun at day, it also allows the cold to enter at night. A half window-sash to each house or pen is sufficient, but it must be kept clean to admit the light. In localities where the winters are long and severe your poultry house will be greatly improved by making the windows double. Let the walls of your poultry house be thick, and if built double with dead air space between the outer and inner casings, you are well secured against frosted combs. It is not necessary to use the best lumber, neither do we advise using the poorest. Select a grade that will work closely together and avoid cracks. It is the warm,

well-kept poultry house that will prove profitable to its owner. The fact is that labor and experience have proven that **POULTRY DOES PAY**. This or that farm that has gone under only gives color to shiftlessness, ignorance, and unbusiness-like methods of handling its business.

After giving nearly all the patent roofing material a trial, we are forced to admit that nothing equals shingles for a good durable roof, and if they are painted they are good for at least twenty-five years' use. Every pen in the poultry house should have an entry in the rear. It makes it more convenient and the individual runs can be entered without disturbing the other families. At a very small cost, two-inch mesh wire netting can be secured sufficient to make five or six divisions in a poultry house thirty feet long, and twenty-eight inches of the base of these divisions should be of a different material; canvas is good, which prevents the birds from fighting. If the drainage is proper, and no possible chance for the ground underneath the structure to become damp, make the floors of earth, but on the other hand, use boards and look after it that they are properly laid and fitted, and made proof against rats and other animal vermin. If the latter is used, cover the floor to a depth of three inches with clean soil, and this should be gone over carefully, every Monday morning, with a fine-tooth rake. Allow no manure and filth to accumulate. The scratching pen is comparatively a new addition to the poultry house, and has already proven a wonderful help to successful poultry farming.

The best plan is to have these pens well protected against storms and this is best done under the same roof with the roosting rooms, at the same time affords easy access to and from both apartments. The size of the scratching room depends on the amount of room you have to spare, and the amount of cash you wish to use in the structure. Greater the space, greater the exercise, and exercise is the keynote for eggs and health. Supply these pens

with plenty of litter, such as hay, chaff, fine straw, and leaves are good. The principal object of the scratching pen is to make the fowls work for what they get to eat, especially for the afternoon meal. It aids digestion and assists greatly in keeping the birds in prime health.

To complete the poultry house, the next important addition is the runs or yards. But with the exception of the warm pleasant days, runs not protected with cover are of little consequence during the winter season, but must be provided for at all other seasons. One hundred feet in length and same width as roosting and scratching pens should be the size. Within this space provision can be made for growing green food of different kinds, and every foot will be found useful. Small runs induce laziness, and lazy fowls contract bad habits, as feather-pulling and egg-eating. A run of that size, if the scratching pens are not omitted, is far more valuable than the average farm range, as the same results are obtained, and there is no chance for the hens to secrete their nests. An orchard is a splendid location for a poultry house, and a double benefit will result. The fowls will aid in the health of the tree by keeping down the insects, and the trees will, in return, furnish a generous shade which is of great value during the hot summer months. The most thrifty bearing plum trees are those grown in the poultry yard. We have had our trees loaded with this delicious fruit where our neighbors' orchards bore a good crop of leaves.

CONSTRUCTION OF BROOD HOUSES.

All users of incubators and brooders in time feel the need of a properly constructed brood house, and should carefully consider in their plans the question of convenience and ease of caring for the chickens, and provide an arrangement that will rear the largest possible percentage and number with the smallest expenditure of money in first cost of building. A practical brood house may be made of quite inexpensive materials. The plans and internal arrangement

are endless. A few points only are essential, and we will bring them up in their proper places. Brood houses may be of any length, single or double. The usual rate of capacity is five lineal feet of brooders per hundred chicks. Width: A single house should be thirteen feet and a double house twenty-four feet. A few feet more or less in width will make no difference. These are average widths.

The alley, in either a single or double brood house, should be of sufficient width for the attendant to carry a pail in each hand without having to walk sideways. This is a small thing, but it is a great aid in feeding and watering. In a double brood house for broilers the brooders are placed on each side of alley. A young duck does not require as much heat as a chick. A wire fence in a duck brood house is not needed between the pens, so that one heating system can be run through the center of the building and a walk made on top of the brooders. In making the alley on top of the brooder pipes, the width of an alley is saved from the width of the building.

Roof may be of shingles, slate, tin or sheet iron. We do not recommend the use of paper, felt, or any of the composition compounds, for the reason that they are frequently blown off during storms and the chicks get wet and chilled, and the whole brood is liable to be lost in consequence.

Height of a brood house should be low to save heat and bring the heat down near the floor where the chicks stay. A low house is the easiest to heat. A building should be just high enough for the attendant to walk through, the alley being in the highest part of the building.

Glass should never be put on the roof, always under the eaves. Ordinary sash can be used, made to slide or swing so that they can be easily opened in the summer time, the outside of the windows being covered with wire netting to keep out animals. In a double brood house, when the building stands north and south, the glass should be on both sides, but in case buildings run east and west the glass is put under

the eaves of the south side, and along the center of the building there should be a vertical offset in the roof and glass put along it, so that the rays of the sun will reach the pens on the north side.

VENTILATION.—No ventilation is needed in the winter time beyond what is accidental. In the summer time the glass sash are opened, and this provides all the ventilation required. This is one object of putting them under the eaves. In case they are opened the rain does not get in as it will when the sash are placed in roof, if left open accidentally.

Foundations may be of brick, wood or sand. Brood house floors may be of earth, sand or gravel, filled in at least six inches higher than the ground outside, so as to get a dry floor. In a sandy location, when troubled with rats digging under the foundation, if a one-inch mesh wire netting one foot or eighteen inches wide is buried around the outside of the building, making an underground fence, it will keep the rats out. They dig down to this net and as they cannot get through it they never think of digging under it, as they would a board or solid foundation.

Walls may be constructed of rough board and batten, or tongue and groove boards, as the fancy of the builder dictates. The inside, if made of single board, should be lined with paper, and if double boards the paper should be put between. The object of using the paper is to make the building wind-proof. This is something that should be done. Inside the house the partitions between the various pens should be constructed of fine wire netting, as laths or solid partitions darken up the building too much. In the winter time the sun is low down and strikes the windows obliquely, and by having the partitions made of wire netting it allows the light to go through. Your brood house having a dry earth floor, glass under the eaves, air-tight walls and water-proof roof, the next essential is a good brood system. In a small brood house sectional pipe brooders may be used ; on a large scale the hot water pipe brooders, burning coal, or a com-

bination of both systems. The end of the brood house should contain a shallow cellar or pit for the heater, the depth of this pit depending on the size of the heater, running from twenty to thirty inches in depth. Around this heater can be arranged feed bins, place for coal or any of the various utensils and labor-saving devices that the attendant uses in his work, making a house convenient and not adding to the cost in any way.

SECOND CHAPTER.

FOOD FOR POULTRY.

FEEDING MATURED FOWLS FOR BEST RESULTS
— HOW TO FEED YOUNG CHICKS — HOW TO
DRESS BROILERS FOR MARKET — MARKETING
DUCKS.

It is not a chicken's disposition to be lazy, and if they become so the fault rests with you. If you let your fowls have free range you will always find them busy, or if you have them in yards and scatter their grain for them you will find them scratching and hunting, or in other words keeping themselves busy. Therefore, it is very important to keep them at work, and in the winter months you should cover the runs of your hen house with straw, leaves or litter, throwing the grain in it and let the fowls work to get it. In this way it gives them exercise, develops their muscles, keeps their blood in circulation and is more beneficial to their health than all the medicine imaginable.

A scratching yard in connection with your poultry house will be found very beneficial in keeping the stock in a healthy, vigorous condition, and at the same time improves your hatchers.

The floor of the shed should always be covered with hay, chaff, or leaves, to a depth of six to ten inches, allowing the fowls access to it when it is too cold or stormy for them to be in the yards. If chickens are fed all they can eat without exertion, it does not take them but

a short time to devour it, then they will have several hours' leisure time to sit about and catch cold and other bad things.

Too many people think it a waste of grain to feed in this way, but such is not the case, as chickens are good hunters and will find most all you throw out, and in case they do not the same will sprout, grow up and furnish a good food for them in that way. Keep them at work as much as you possibly can, irrespective of the breed or size.

Avoid feeding very much soft feed when eggs are wanted for hatching purposes. Here a great many make a mistake during the early season. We admit that the egg production can be increased by feeding a mixture of egg food, poultry powder, pepper, etc., but the eggs will not hatch as well and a much larger percentage will die in the shell at all periods of incubation. *Forced egg production injures their vitality.*

When eggs are hatched early they must be gathered through the cold weather quite frequently in order to keep them from becoming chilled. Use care and good judgment in feeding. Provide warm houses for your poultry and keep them in good condition and you can rest assured their eggs will hatch well.

THE DRY-FEED METHOD FOR YOUNG CHICKS.

One great trouble with broilers is diarrhœa, caused in a measure by close quarters and extreme heat or cold. By using dry feed better results are claimed than by the wet or moist method. Begin to feed from twenty-four to thirty-six hours after the chicks leave the shell dry rolled oats, and continue five days, water being kept before them all the time. On the fifth day add one part of cracked corn or coarse meal (such as will pass through a 12-mesh to the inch sieve) to four parts of oats, gradually increasing the amount of meal and discontinuing the oats. After two weeks add green food, prepared meat or beef scraps, stale bread toasted and pulverized, well mixed and fed dry. Green food may consist of grated roots, turnips, carrots, potatoes or cabbage. When start-

ing to feed a new article of diet, give a taste the first time, gradually increasing the amount, and watch the effect upon the bowels. In case the bowels become very loose and need correction, use citrate of iron and ammonia, one teaspoonful of crystals in one quart of water in place of drinking water for young chicks. For old chicks there is nothing better than white oak bark tea, one part of the tea to three parts of water twice a week in the drinking water. Keep charcoal and bone meal, if you do not use prepared meat, before them all the time.

HOW TO FEED YOUNG DUCKS.

Give water from the start in dishes covered with slats that the ducks can only get their heads between. Never let them get their bodies wet until five or six weeks old. Keep sand about the size of granulated sugar before them all the time, and if they do not eat it put some in the feed. Most breeders put sand in the feed all the time, and frequently diarrhoea can be stopped by giving the young duck a good dose of pure sand. Never give young ducks milk to drink, as it has a bad effect upon them. Mix a little charcoal and bone meal in the feed occasionally.

Ducks are started on soaked bread or cracker dust and hard boiled eggs chopped fine, mixed well and feed moist the first three or four days. Then feed bran, fine meal, cracker dust, shorts, and a very little beef scraps to start with, gradually increasing the amount as the ducks grow older. Mix well and feed moist. Young ducks should be fed five times a day; as they grow older, three times a day; gradually add green food, consisting of boiled roots, turnips, potatoes, carrots, pumpkins, squash and green oats, wheat, rye or corn fodder, clover, etc.; run through a feed cutter and cut as fine as possible, the roots or cut grass being mixed with the feed. A growing duck may be fed one part of green food to two parts of the grain mixture to get large frame. The last two weeks before getting ready for market, shorten up the green food and give more corn. Too much green

food makes the duck soft and flabby, and will injure its sale. By fattening on grain the flesh is made firm and will "stand up," as the dealers express it. Fish is excellent food for young ducks, but if too much is fed it taints the meat and the duck is "fishy," which injures its sale. Buyers go shy of a fishy duck. The "beef scrap" duck is the best flavored, and will bring the best price. Too much bran or beef scraps will loosen the bowels. No two flocks of ducks can be fed alike. The feeder will have to use judgment. When they do not eat well, change the diet or proportion of the feed. Never let diarrhoea get a start. On the appearance of the first symptoms change the feed.

MARKETING DUCKS.

Pekin ducks should be up in weight and ready for market in ten weeks, before the pin feathers start. After the pin feathers start the ducks will lose in weight, and it will take two or three weeks to get them fat again. Ducks are either dry picked or scalded. Kill by cutting in mouth, hang by feet to bleed, with bill hooked below to prevent swinging.

The scalding method is the best, as a majority in the New York market are prepared that way. Remove all the feathers except head and part of neck, flights and tail. Boston ducks are dry picked with tail feathers removed and pin feathers shaved. After picking, cool thoroughly in ice water. Ducks are packed thirty or forty in barrels or boxes without straw or paper. Cover with crushed ice and place burlap bagging over all. Young ducks, if properly fed, run ten to twelve pounds to the pair. If extra care be taken in feeding, and in picking and packing, 2 to 4 cents a pound may be obtained over market prices.

HOW TO DRESS BROILERS FOR MARKET.

Chickens that are well fattened, carefully dressed and properly packed never go begging for a market. It is that kind which bring "gilt-edge" prices. Keep them from feed or

water ten to twelve hours before killing and never attempt to stuff a chicken by giving it all it will devour just before killing.

Prepare a place for dressing in any cool out-house; the wood shed will do. Drive large nails overhead, to which attach a long string, making a loop in the end to secure the legs. Hang the chick low enough to pluck with ease. Underneath place a box or barrel to catch the blood and feathers. Have a weight of about two pounds attached to a hook, and immediately after sticking fasten this hook in the lower bill. When everything is in readiness suspend the chicken by the legs, secured in the loop. Catch it by the head and with a sharp, narrow-bladed knife make a cut across at the base of the brain inside the mouth. Then run point of knife through roof of the mouth into brain, then attach weight hook.

This operation causes what is termed "dropping of the feathers," making them remove very easily. Soon as the knife enters the brain the bird loses all sense of feeling, and picking can be commenced at once with no fear of causing more pain. Take both wings in one hand and remove the feathers with the other as quickly as possible without tearing the skin. Soon as the body feathers are picked pull the quills from the wings and tail. With a little experience one dozen can be dressed per hour.

Never cut the heads off. Wash out the mouth well and not allow any clots of blood to remain in the throat, as it would discolor the neck.

See that the feet are washed thoroughly clean.

Be prepared with a bucket of ice cold water, containing a handful of salt. Let them remain in the cold water until the bodies are thoroughly cooled through.

They are now ready for packing, which should be done in small-sized barrels or boxes that will hold from forty to fifty. Weigh the cases first, and be careful that they are perfectly clean.

Turn the heads back under the wing and lay in regular rows or tiers, with legs straight,

Leave three or four inches space on top of cases for ice, providing it is during the season when the least chance would be taken by not using it. Never pack in a shipment of choice chickens a specimen that is poor or off in color. Put such in a separate case by themselves and mark them "culls." Have the quality up to what you represent it.

The market poultry man who exercises pride, care and neatness in delivering his shipments of dressed chickens never is burdened with an overstock. We advise taking up the method of the fancy butter maker, by packing in neatly made boxes, painted, hinged cover, a cleat handle at each end, plainly labeled, bearing return address.

This style of shipping affords a splendid advertisement, and can be made more complete by attaching a small card, neatly written, showing your name and date of killing, to the neck of each bird.

From first to last, make every point a feature of extreme neatness, and the outcome will be a ready market for all that you can raise and profitable prices.

OUR METHOD OF FEEDING YOUNG CHICKS — HERE IS THE SECRET OF YOUR SUCCESS.

Feed nothing until the chicks are twenty-four hours old. It requires fully that length of time for the yolk of the egg, which is the last formation of the chick's stomach, to become absorbed and transformed to its normal condition, and during that time food of any kind is injurious. We have had much experience and have watched the different food mixtures with an "eye single" to the best results only. The hundred preparations prescribed as the proper things to feed at stated periods are undoubtedly good, but we are endeavoring to point out the way to get the most profit without occupying your whole time, and we have found no feed BETTER for chicks than the following:

The first feed for 100 chicks: One egg boiled twenty minutes, mashed fine with a table-fork;

add a half pint of bread crumbs, with just enough sweet milk (boiled) to moisten and mix to a crumbling mass. Feed little and often on a clean board or paper. Contrary to what others claim, we would advise feeding hard boiled eggs sparingly, and in no case unless mixed with other food. For a standard food, take two parts corn and one of wheat, grind together, add a little salt and pepper, and moisten with boiled sweet milk. Occasionally, say twice a week, take the same materials, add a little meat scraps, a teaspoonful of soda, and bake in the oven. Care should be taken that no feed for chicks or fowls is given them in a wet, sloppy state; it should be a dry, crumbly mass. Oat meal and barley, equal parts mixed, make a wholesome change when they can be had. Either of the two last mentioned are improved when cooked, baked or scalded, especially if the chicks are confined closely. Sweet milk is one of the best of diets, but it should never be given to young chicks without its being boiled, until after they are two weeks old.

For variety give a little fresh meat as often as convenient.

Onions are especially good for chicks or fowls of any kind.

During winter, when other green food is hard to get, feed potatoes, cabbage or beets.

Variety of food is of the greatest value to keep the chicks in thriving condition.

Never feed spoiled or sour food to either chicks or old stock, as it is very liable to ferment in the crop and result fatally. Many a nice flock of fowls has been exterminated by feeding this kind of food during hot weather and the cause credited to cholera.

The regulator on the brooder should be set so that the temperature in the hovering departments will register 100 degrees for new hatched chicks until they are two or three days old, then lower the heat gradually for the next four days to 90 degrees, this being the temperature they will require for four or five weeks.

Soon as the chicks are large enough they should be taught to leave the brooder and go

on the roost. A light, low frame with flat strips two inches wide for the perches can be used at first, and they will do better than if left in the brooder too long; and when the bird has been brought to this state of maturity, the operator will need very few, if any, further instructions.

THIRD CHAPTER.

WINTER LAYERS — THE FOWL FOR THE FARMER — CARE OF OLD FOWLS.

WINTER LAYERS.

Under this heading the American breeds are preferred, which comprise the following varieties: Barred, White, Pea-comb Plymouth Rocks, Silver, White and Golden Wyandottes, Black Mottled and White Javas, the American Dominics and the Jersey Blues.

The Plymouth Rocks and Wyandottes undoubtedly lead in this class, but either of these varieties are recommended as winter layers. They combine with their ability in producing eggs, excellent table qualities, making them general purpose fowls. The Langshans, although of the Asiatic class, are also excellent layers and deserve to be rated with the American fowls as layers.

Writers on the subject of egg farming differ as to the advisability of crossing different breeds for an increased egg production. Our experiences in that line are rather limited, as we are partial to sticking to one kind. We do not believe that two varieties of thoroughbred fowls can be united to produce offspring that can break the egg records of the same breeds used. The Leghorns and Minorcas are acknowledged the two greatest laying varieties. We cross them, but up to date we have not been able to secure as many eggs from the pullets as the same number of either Leghorn or Minorca pullets gave. But there is a point in crossing that has its virtue. If, for instance, we cross a Leghorn on a Plymouth Rock, we get a hardy bird with a smaller comb than the Leghorn has, and a

bird that will do remarkable laying. A cross with a black Minorca cockerel on a black Langshan hen makes a most profitable fowl. Mr. Cushman, manager of the Rhode Island Experimental Station, says :

"The Indian Game crossed on Light Brahma gives good results, but as that is more of a table cross, it would hardly do as well as the crosses mentioned above."

While we have breeds noted for their laying qualities, and while some of them are especially recommended for winter laying, there is an important matter that must not be overlooked. Hens and pullets, to do their best, must be regulated by good feeding and care. This we will call your attention to in a following chapter. Egg farming becomes an important industry when the eggs are largely produced during the winter. An egg in winter being worth two to three times its value if produced in summer, it naturally becomes important to carefully study the requirements for the production, and the advice given in this book, while it may be far from perfect, and differ from the plans followed by others, comes mostly from the store house of our own experience, and for which at times we have paid more than market price.

THE FOWL FOR THE FARMER.

The merits of the different breeds of poultry would afford material for discussion sufficient to keep a full fledged poultry meeting in session a whole week. All varieties of standard fowls have admirers by the score, but our object here is to point out the bird that will, in our judgment, prove most profitable on the farm, both as an egg producer and for market purposes.

A flock of fowls uniform in color is a pretty sight on any lawn or farm yard, and we are sure no variety will surpass the White Plymouth Rock or White Wyandotte either in appearance or profit. Their pure white plumage, yellow legs and skin and large plump bodies make them very desirable for market. The black pin feathers that grow so abundantly on colored fowls and add discredit to their market value

when dressed are not to be found on our favorite white fowls. No black pin feathers to contend with in a day's picking would be a relief to the mind and fingers, to say nothing of its value. As egg producers no breed of the larger kind can equal them. In this respect they surpass their parti-colored sisters. Why? Because one-fourth of the White Plymouth Rock and White Wyandottes are composed of White Leghorn blood, which not only insures greater laying qualities, but greatly reduces their brooding disposition. In weight the White Plymouth Rock, when bred to standard, are one pound heavier than the White Wyandottes. The standard weight of the White Plymouth Rock hen is seven pounds. They have low single combs that will stand the cold weather where a Leghorn comb would freeze. In localities where the weather is extremely cold the Wyandotte with its low rose comb has a preference over the Plymouth Rock, but it suffers a slight loss in weight. A hen with a frosted comb will not lay until it is nearly healed.

FEED AND CARE OF OLD FOWLS.

The days of haphazard feeding of poultry, and the lazy man's method of throwing out corn to the flocks in quantity, are fast becoming obsolete.

The fact that the poultry industry more than equals in value that of any one agricultural crop begins to arouse many of our farmers. They are wondering why they do not receive greater profits than they are, or should be in poultry raising. The great number of poultry plants, or poultry farms, are opening the eyes of former easy-goers in poultry raising.

Raising poultry has attained that degree of importance that it is no longer sneered at as a trifling occupation. The feeding of poultry has now almost become a science. The main idea used to be that anything was good enough to feed to the poultry. Now the poultry is fed rationally and intelligently. They are given rations that are known to stimulate egg production without causing them to become too

fat. When the object is to fatten the poultry quite a different kind of food is given. The fact has also become established that different breeds require a dissimilar diet to produce the same effects. The large breeds do not forage to any great extent, and would become too fat if fed on certain kinds of feed that can be allowed the active breeds without any danger of impairing their laying qualities or making them too fat.

The low price of wheat in the past has done more to convince many farmers that there is a profit to be derived from feeding wheat to fowls than they could be induced before to believe. On many farms, hereafter, wheat will be fed to poultry, no matter what the price.

In feeding fowls the best success is attained where eggs are the object by feeding as varied a diet as possible. During spring and summer and until the heavy frosts of fall come, where the flock has a good range, two light meals a day is all that is necessary to give fowls. The morning feed should be ground oats and one-third the quantity of wheat bran mixed with scalding water given alternately every other day with corn meal and ground oats, using the bran with each. When the hens have been fed on grain exclusively they soon begin to show effects of a sameness of diet. A few experiments may be tried. Throw an apple into the poultry yards and notice how quickly it will be picked to pieces. When the hens are in the orchard they will not notice apples, though apples may be plentiful, because when on the range they can secure quite a variety of food, but now that they must be fed on grain without the green food an apple becomes a luxury. There is but little nutriment in the apple, but it is succulent and serves the purpose of the hens as a change of diet. The allowance of green food, if but a small one, will have a beneficial effect; they will be more thrifty, will more easily digest their food and keep in a condition to lay. There are many substances that hens will accept in the winter. Cabbage, cooked potatoes or turnips, scalded corn fod-

der, cut fine ; cut clover hay, ensilage, and even vegetable tops that have become dry. They like variety and will always give a good account of themselves when they receive it in the winter season. During the late fall and winter of course the fowls will require more liberal feeding of grain. Wheat, buckwheat and corn may be used, remembering that if eggs are wanted more will be secured by liberal feeding of good sound wheat than corn. To get eggs in winter animal food of some kind must be provided.

Nothing has been found more available or that produces better results than a green, raw bone. Green food of some kind will also be essential, and turnips, cabbage and rutabagas all answer well for this purpose; cut clover (steamed) has also been found to be an excellent substitute for green food. To insure perfect health, a portion of the food should be of a bulky nature.

The following is a good feed for the poultry and admits of a variety. Take about three-fourths of a full feed of oats and soak it in water for fifteen minutes. A large amount of water is not required for the soaking. Place with the oats a spoonful or two of ground bone, and then add bran enough to absorb all the water. When this mixture is made it resembles chop-feed, and it should be given to the fowls in the morning. At noon throw wheat in places where the hens will have to work to get it, and at evening give a full allowance of corn. The feed may be changed and barley, rice or other grains given for the midday meal. The morning feed may also be changed, but it is best to let the corn form the evening ration.

SHORT NOTES.

If your hens pip, or have swelled heads or eyes, there is a crack or hole in the wall. Usually the draughts from some ventilator are the cause, and the surest remedy is to keep the house close at night, but it must be kept clean and neat. Give warm water, once a day, in

winter. It is invigorating, and is superior to tonics.

Poultry yards should be spaded or plowed, and when alternate yards can be used, it is well to sow the yard not in use with clover and oats. These will make a rapid growth and can be used in June, when the other yard can be likewise prepared and sowed with the same seeds. We keep our runs seeded in this way, and it is astonishing what amount of green food a dozen hens will consume in a day. Try it.—*Western Garden and Poultry Journal*.

One stumbling block with poultry-keeping is in attempting to keep too large a number in too small a space.

Tartar emetic, five grains, placed in an egg, will prevent a dog or cat from sucking eggs, after it gets the first dose.

For large, heavy fowls have the roosts low.

Dry earth is a good material to scatter under the roosts.

Early hatched, well developed pullets make good winter layers.

It is easier to raise chicks when they are all one kind than a dozen different kinds.

The pet cat could often tell where the missing chicks have gone if she could talk.

Scrubs eat as much as pure breeds and don't give half the profit.

Pools of filthy water should not be allowed in the chicken house.

More meat and better meat in a shorter space of time can be produced from poultry than any other stock.

POINTS ON FEEDING.

The hen, like the cow, must be given bulky food. Give her all the chopped clover, scalded, that she can eat. If she is fat, the clover, with one ounce of lean meat per hen, will soon compel her to lay. Give your flock this ration twice a week and they will pay you with interest for the little extra trouble.

Grain is deficient in lime and mineral matter, but bran is rich in nitrogen, carbon and mineral matter.

Beans and peas, cooked, and thickened with bran, and fed twice a week, is an excellent food for laying hens.

The secret of feeding is to avoid getting your laying hens fat. Always keep your hens at work. An idle hen is never a good layer.

Feed is everything. The machine for converting food into eggs must be of the best to be had. Anything and everything will not do. Good warm shelter saves food.

When your birds have bowel disease, change the food a day or two, and change the grit. One-half the troubles are from lack of sharp, hard grit.

When it is desired to push the growth, rather better results can be secured by feeding cooked food.

Soft food is an excellent invigorator when fed warm on a cold winter morning.

Never feed on the ground, but always on a clean surface, which will prevent gapes and other diseases. Little troughs are best, which should be shallow and low enough for the chicks to eat without difficulty. Be careful to clean out the troughs as soon as the chicks have finished their meal, as any excess of food left over will ferment quickly and generate disease.

No fixed quantity can be estimated as to how much a chick will eat. A healthy chick will eat more than a sick one. The proper course to pursue is to give them as much as they will eat up clean at a meal, care being taken to remove the surplus, except the grain, which they should scratch for.

In winter but little water will be required, but it should be provided plentifully in summer. It should never be allowed to freeze, nor should the chicks tread in it or soil it in any manner. The vessel should be so constructed as to allow them to drink at a small aperture only. When the chicks are raised in a brooder they may be called to their feed by giving a few raps or taps on the bottom of the brooder. They will understand the call before they are two days old.

Put ten drops of tincture of iron in every pint of the drinking water as a tonic and change the water every morning.

Many of the bowel diseases arise from colds. If a chick once becomes chilled it never recovers from the shock and the effects of cold are charged to the feed when in fact it is due to the chick becoming exposed at some time or other.

About 90° is the proper temperature, and in many cases 95° will prove better.

Until the birds are two weeks old the heat should not be run lower than 90°.

In feeding, if you notice a struggle on the part of some to reach the food, provide more troughs. The accommodations should be ample. A few small troughs placed at different parts of the brooder are better than one long trough.

Always keep sand and fine gravel sprinkled over the floor, as well as a little ground bone and oyster shells.

Cold boiled rice is one of the best of foods for bowel disease.

Chicks raised in the house entirely, provided everything is kept clean and pure, will thrive better than those that run out, especially if supplied with a variety of food.

Fine cut straw makes one of the best and most wholesome beddings for young chicks to lie on at night.

Good warm shelter saves food.

FOURTH CHAPTER.

THIS CHAPTER IS DEVOTED TO THE RAISING
OF DUCKS, GEESE AND TURKEYS.

(Albert M. Kepper, Winfield, Iowa.)

Of all profitable poultry I believe ducks take the lead, when rightly managed. Have just come in from feeding mine which, by the way, number well on towards a thousand, and thought that I'd just write a bit to you all of their wonderful growth and vigor.

The first roast of the season was just about two weeks ago (or June 20), when Mr. Duckling was ten weeks old to a day. We helped him celebrate, and he weighed a full five pounds. Such a dinner! And to think that a chicken of that age would almost go into a pint tin. Last year, after paying for all cost, including eggs, oil and feed, I had \$150 clear; and they were all sold at live weight, home dealers' prices, 8½ cents per pound, feathers were a secondary object; only picked them once, but readily disposed of all I had at fifty cents per pound.

Now I am going to try to tell you how I managed all this, besides doing for a family of six, including one "hand."

I had worried along with a few and raised fewer each year, and just knew "duck raising didn't pay, anyway"; but concluded to try just once more.

We never use salt meats in summer, so there stood a good, tight smoke house going to waste, and after a good deal of talking I finally persuaded "Farmer" to move it out on a nice green patch, and put a good tight fence around it, but I had to make a solemn (?) promise to

place it where it had been if I fizzled, as he was sure I would.

I had previously set twenty-three hens on duck eggs, and the very next day I rolled one hundred and eighty nice little yellow balls into their new home; lit an oil stove and kept the room at ninety degrees, as near as possible, the first twenty-four hours. Then the next day being quite warm I opened the door and let them out; fed the first few days on stale bread, eggs, sand, curd, etc. When weather was favorable I only housed at night; kept a fire at night for first ten nights, for in early spring the nights are quite chilly. Now, my very best prescription for keeping ducklings healthy is to keep them dry outside and wet inside. They should never be without drinking water, but a sudden shower is certain death if they are not feathered. This is my greatest reason for raising in yards. When I see a rain coming, which in Iowa means most any time, I can easily drive them in. They, when once they are accustomed to their home, are as easily driven as sheep.

Ducklings of different ages should not be allowed to run together, for they grow so fast and are so clumsy that they trample the small ones to death. My experience has been that they cost no more to raise than hogs and there is a great difference in the profit when hogs bring from \$2.50 to \$3.00 per hundred weight and ducks bring from \$7.00 to \$8.50; and if your hogs get into your potato patch it is good-bye to the potatoes, but if your ducklings find their way in it is good-bye bugs. We turn ours in every year to rid the vines of bugs, and it saves the price of a good deal of feed. I never knew them to destroy a potato vine, but they must be kept from the cabbage, etc. When preparing vegetables for dinner, the large leaves of cabbage, lettuce and beets are thrown in whole to my ducklings in pens and they make a fresh bite that is greatly liked. For main ration I feed them bran and corn meal mixed with sweet skim milk. Water will do, but milk is better, especially as I have very few meat scraps.

I have been at a good deal of trouble and expense, but I have obtained the very best Pekins I have ever seen and will keep a flock of about two hundred breeders another year, as a duck's egg must be fresh to hatch a healthy, strong duckling.

This year we piped the water into the yard. As we already had a good water system for the other stock it only cost about \$8 to bring it over, and now all I have to do is to turn a rod and count my ducks, and watch them grow while it runs. I buy my meal and bran by the ton. When I take a ton of corn or more at a time they grind it for \$1 per ton.

It pays to buy eggs to start with in quantity. The first I bought cost me here \$9 per hundred and it was the best \$9 I ever invested. I keep my very earliest hatched for breeders and sell my late ones at market; but I intend to have enough next year so that I can spare stock and eggs. I would not offer eggs unless I could be sure they were fresh, nor stock unless I could guarantee a certain weight and age. Last winter I lacked one drake and sent with my mother to a breeder who said his were "fine," and when it came the ugly little thing wouldn't weigh five pounds.

When starting, get the best, give them your very best care and they will reward you beyond expectations, for you will not have to bother with lice or gapes; and they will turn feed into money quicker than anything else that I know of. You can raise them in great numbers together. People come for miles just to see so many together.—*Iowa Homestead.*

HATCHING AND RAISING DUCKS.

(From our Annual Catalogue.)

It is a pleasure as well as a comical sight to watch the maneuvers of young ducklings when hatching. They are more interesting than any other variety of chicks. However, that feature alone would be of no special importance, but they are very profitable for market. The rich, sweet flavor of young duck is increasing the

demand, and in many of the eastern markets they are preferred to spring chicken. They are very hardy, easy to raise, good layers, less subject to disease, no lice; hence the mortality is greatly reduced from that of any other variety of fowl.

Duck eggs require one week longer to incubate than hen eggs, and should be hatched by themselves. The shells are very tough, which necessitates a different application of moisture.

We manufacture a machine especially adapted for hatching this variety of eggs. The only difference in this and our regular machine is the egg tray and chamber being larger. They require the same heat as any other, but the germs start more slowly than hen eggs, and cannot be tested with certainty until six or seven days; then if the shells are clean the unfertile ones can be easily detected. Ducklings usually pip the shell from thirty-six to forty-eight hours before they get ready to come out, and the eggs should be turned with openings up. On the morning of the twenty-eighth day those that are pipped should be examined to see if they have broken through the lining, as

often it is so tough that the little duck cannot break it, even after the shell has been pipped, and would smother for want of air. If needed, make a small opening through the lining and let them remain for eight hours; then if they are unable to relieve themselves, help them out by removing the top part of the shell, taking pains not to cause bleeding by tearing the tissue lining. There is no danger of this trouble after they have turned themselves around in the shell, but until they do blood will flow from the broken lining. Although a little bleeding will not kill them, it causes more or less weakness. These conditions will apply to any kind of chicks when hatching, except that the ducks that are helped out of the shell are usually as strong as their brothers who scramble out without assistance, but the chick that cannot come into the world without help will find it difficult to exist.

Let the young ducks occupy the nursery in the incubator until thoroughly dry, then remove them to the brooder and run the temperature same as for chicks.

After they are six weeks old, if the feathers have started well, all they need is a dry place in which to gather at night, and no artificial heat is required unless the weather is very cold.

Feed nothing until after twenty-four hours old.

First, give them a few drops of water, using great care not to let them get wet. Never allow young ducks water to swim in until after they begin to feather out well—five or six weeks old—but they must have it before them at all times to drink and wash out their bills.

The same food that is good for young chicks is good for young ducks, but for the first two days it must be quite soft, and water placed within their reach, that they can get a dip with each mouthful. A young duck cannot swallow unless it has water with each bite.

After two weeks it is of the greatest importance that the water dishes are deep enough to allow the young ducks to dip their bills well under the water. If not, a great many will be

lost, and few breeders would suspect the cause. If the nostrils of the young ducklings become stopped with any substance — food or mud — they cannot breathe and will die for want of air. This is prevented by supplying them with water vessels sufficiently deep and kept filled, and so protected that the ducks will get the least dampness upon their bodies.

Young ducks should be kept warm and dry, and given all they will eat three times a day. After they are ten days old they need plenty of exercise and a yard to themselves.

If it can be done, give them a clean pool of water to swim in as soon as the breast is fully feathered. However, they can be raised without this, but better with it.

After a duck is half grown the kind of feed is immaterial; they will thrive anyway, but they ought to have a variety of food, with plenty of corn in different forms — whole, cracked and coarse ground — as the main diet, if heavy weight for market is desired.

For breeding stock the main food should be one-third corn and two-thirds wheat mixed (whole). If possible give them a pond of water to swim in, else the eggs will be largely unfertile and contain many imperfect germs.

The best breeding specimens can be kept for five or six years for that purpose.

During the laying season give them comfortable quarters at night and plenty of clean straw to sit on, and do not let them out of their inclosure until eight or nine o'clock in the morning, as by that time they will have all their eggs laid, and they are in a nice, clean condition. Ducks are early birds and are on a look out for something to eat and drink the first thing at the break of day, and the earlier they get it the better.

If the improved variety of Pekin ducks are used for breeders, the young stock will take on their first full coat of feathers in nine or ten weeks and are ready for market. Have your market engaged at this time and be prepared to give them prompt attention, for as soon as the second crop of pin feathers starts the young

ducks begin to lose in weight and are not marketable until four weeks later.

Plump, clean and well dressed young ducks find ready sales and good profits.

If ducks are raised in large numbers the feathers are one feature of profit.

The best general purpose ducks are the improved Pekins, the Aylesburys and the Rouens. The Aylesburys are rather the heaviest bodied and very hardy. The Pekin looks much the largest, owing to its immense coat of feathers, which are pure white, and they are also very easy to raise. The Rouen is one of the smaller, beautifully colored varieties, but is not so easily matured under confinement. They are great foragers and have many admirers.

RAISING TURKEYS.

Turkeys are generally considered hard to raise, but it is greatly due to improper methods. Under close confinement they are a failure, but if given plenty of range they are easily and profitably raised though tender when young, but become very hardy after six weeks old, or after the head and neck begin to get red. Their eggs hatch well in incubators, even stronger than hen eggs, and it is during the first two or three days of their lives that the greatest care is necessary. A brood of young turkeys would starve unless taught to eat, but eat very greedily after they once begin. The easiest way to teach them is to prepare little pellets, composed of the same materials as set forth for young chicks, and put one in the mouth of each turkey when they will not take it of their own accord. It is very seldom that the second is necessary. The kind and variety of feed best for young chicks is also best for young turkeys, but look out for any sloppy mixture. Cooked curd or sour milk is splendid for turkeys at any age. After two weeks old, give them a feed each day of whole wheat. Keep them housed in dry, comfortable quarters at night until they are six weeks old and never allow them to go out in the morning

until after the dew is off the grass. During their tender age one thorough wetting will check their growth for a week if it does not cause their death, but as soon as they begin to shoot the red give them all the liberty that you can; feed them regularly at the same place; keep them under shelter at night, and you will find a flock of turkeys as profitable as any other farm stock. If the young turkeys are hatched by the parent fowl see to it that the mother is well dusted with some vermin exterminator.

For breeding and market purposes no variety will equal the Bronze, which is an improved American wild turkey. The weight of superior specimens frequently reaches forty pounds, and the young gobbler in the fall usually weighs from eighteen to twenty-five pounds, and if special care is given to the feed this weight may be increased. One hundred well kept turkeys matured and dressed for the holiday market will help to make the winter fireside more comfortable and happy, and at a season when most other farm products are unmarketable.

OLD TURKEYS FOR BREEDERS.

(C. P. Reynolds, Michigan.)

I believe that the average turkey raiser makes a serious mistake in disposing of his breeding stock every year and recruiting his flock from young and often immature birds. Young turkeys do not make number one breeders. While it is very true that a yearling hen will lay more eggs in a single season than a three or four year old, still from practical experience I have become convinced that the latter will produce a greater percentage of poults with sufficient vitality to carry them to maturity.

My turkeys this year vary in age from yearlings to six and seven year olds. As each hen has a leg band, it is little or no trouble to trace them accurately. After a close observation I am well satisfied that the oldest hens have paid the best. They have invariably proven to be the best mothers, a greater per cent of their eggs have been fertile, and the poults hatched have seemed to possess a greater degree of vitality.

One of my oldest hens, during the fore part of May, made her nest and brought off sixteen fine, strong poults, but owing to an accident, for which she was not entirely to blame, every one of the youngsters perished. Later she made two unsuccessful attempts to bring off another brood, but failed in both instances. In the first instance crows destroyed the nest, and the second time a mowing machine wheel put an end to her hopes.

One of the most striking instances, illustrating the hardihood of old hens, is the experience of a neighbor a few years ago, who succeeded in keeping one hen thirteen years. While she was not as prolific as compared with her earlier years, yet in the aggregate she reared as many poults towards the last as during her more youthful years.

Good authorities on turkey raising agree that breeding stock can be kept with profit as long as they live. While I do not know that I would put it quite as strongly, I feel confident that breeding turkeys can be kept with profit much longer than they usually are. In my earlier experience with turkeys I was a victim of the vigorous young stock craze, but I am getting further and further away every year, as I begin to see the errors of such a course. The fact that a domestic pullet will lay more eggs than a two or three-year-old domestic hen, and hence is the more profitable, does not argue that the young turkey hen will be better than an older one. A domestic hen and a turkey hen are two very different creatures, and are bred and raised for two entirely different purposes, generally.

There is another great advantage in keeping old stock. By so doing it greatly lessens the expense of procuring a tom every year to avoid inbreeding. If the breeder doesn't wish to go to an extreme with old stock, he will have no trouble in keeping stock three, four or even five years without a change. From actual experience I feel perfectly safe in saying that a breeder can keep turkeys until five years of age and still have them strong and vigorous.

NOTES ON TURKEY CULTURE.

Water the young often.

Turkeys must be dry picked.

Full feeding keeps turkeys quiet.

Wash the dishes thoroughly at each meal.

Avoid rough handling in catching turkeys.

The turkeys need not be cooped for fattening.

Don't fatten the turkeys you intend keeping over for breeding.

Tape worms cause the death of more little turks than gape worms do.

Put an equal number of hens and toms in each package you send to market.

Rhode Island turkeys bring the best price in New York and Boston markets.

Turkey broilers spoil quickly if kept on ice, and cannot be shipped from a distance.

Cushman says dry land, without shade, having short grass, makes the best turkey pasturage.

Have you marked your turkeys, so that you can tell them from your neighbor's this fall or next summer?

Don't let your little turks feed on ground that has been occupied by chickens infested with gape worms.

Put a stone into the water dish of little turkeys to keep them from getting into it and wetting their feathers.

Avoid overfeeding the breeding turkeys during the winter; get them moderately thin by spring. Feed less corn and more oats, wheat and clover.

If turkeys are shingled (a thin board tied to their shoulders so that they cannot fly) they can be confined to a field.

The Western Poultry Journal recommends barrels and boxes lined with hay well hidden under an armful of brush or fodder as nests for turkeys.

Can your turkeys drink from stagnant pools in your barn yard or near the pig pen, privy vault or sink drain? Then expect them to have sudden and fatal attacks of bowel trouble.

Having the roosts within a large shed, the front closed by wire, keeping the hens indoors

during the morning until they have selected their nests, is a preventative for hidden nests in the woods.

A Rhode Island man raised from 200 to 425 turkeys from twenty-two to thirty-six hens for a number of years. One of his daughters fed the little ones all through the season.

It is said that last season a farm in Clay county, Minnesota, marketed 600 turkeys, which sold for \$900, or more than was received for the grain crop of the whole farm of 700 acres.

Seven months ago a hen on Mrs. David Keiser's farm, Tuckerton, Pa., deserted a flock of eleven turkeys she had hatched. A game rooster took pity on the youngsters and raised them, and notwithstanding that they now weigh from four to six pounds each, he will not desert them.

Professor Cushman says the Rhode Island raisers feed little turkeys from start to finish on Northern White Flint corn, and use nothing but good old corn, unless it is to mix a little new corn with the old when fattening them. The coarse ground meal, mixed with sour milk, is given to the little ones. Later cracked corn is substituted for the meal.

"Did you ever train a turkey to sit when sitting hens were scarce, or when you wanted to hatch hen eggs early in the fall or winter?" asks Professor Cushman. It is surprising how few know that this can be done. Just shut a gentle old turkey on a nest of china eggs so she cannot stand upright, and darken the nest. Put her off into a coop where there is food and water for a little while each day, and then shut her on again. In a few days you have a brooding turkey that you can trust to go off and on of her own accord and to sit closely on eggs of hens, turkeys, geese or ducks. She will do so for several months and keep in good condition.

The turkey lays from 75 to 130 eggs in a year, and is capable of covering and hatching twenty eggs. Four weeks are required for incubation, and the young are not sold until matured.

A CHEAP DRINKING FOUNTAIN.

A model drinking fountain at a cost of seven cents each can be made by inverting a common plant pot, measuring five inches across the large end, into a saucer six and a half or seven inches in diameter. Drill a hole in the pot about an inch from the edge, and place a cork in the hole in the bottom. This makes a fountain for small chicks that they can't tip over, easily cleaned, and cheap. A good drill can be made by grinding the point of a common three cornered file so that the corners will be sharp; this in a bit brace is all the tool needed.

HERE IS ANOTHER WAY.

Take a gallon jug and set it in a basin with flaring sides, the bottom of which is about the size of the jug or a little larger. In the side of the jug, about an inch below the top, punch a small hole about the size of an eight-penny nail. This can be done with an ordinary steel wire, but a better way is to have a blacksmith drill it through. Set the jug in the basin and fill it with water, stopping the neck of the jug with a tight cork, and the water will run out until it stands on a level with the hole in the jug, as the pressure of the air will hold it at a level, and as fast as the fowls drink it the water will run out and maintain that level until the jug is empty. The cork must be air tight or the water will run out of the jug. Set this fountain on a block six inches high for old hens and they will not scratch dirt into the water. If it sets out of doors, the jug may be covered with a piece of flannel or old blanket. For debilitated fowls, or for chicks that have leg weakness, add a teaspoonful of chloride of iron to each gallon of drinking water. It is harmless, and will prove beneficial in most cases, though it is not a "cure all."

RAISING GEESE.

Goose eggs can be hatched in a good incubator, but usually the shells are very tough and many of the goslings are unable to free them-

selves without help, and the same trouble exists even where the old goose does the incubating. But they can be helped out of the shell with less danger of injury than any other chick. Where large numbers of geese eggs are being hatched some of them are liable to contain fully matured goslings, unable even to pip the shell, that die unless the egg is opened. This state of affairs can be determined by the noise they are making in their efforts to break through, and if you can tell in no other way just where to open the shell, lay the egg in a pan of warm water, and make the opening in the center of the part that floats out of the water. With those that are unable to release themselves, after breaking through the shell, assistance should not be offered too soon, as they can remain in that state for thirty hours without injury, but at the end of that time break away the shell sufficient to admit their coming forth without great exertion. Keep the young goslings dry and warm and give them their first feed when they are thirty-six hours out, the same quality as we have directed for feeding young ducklings, and also at this time give them their first drink of water, but none to swim in. When they are three days old commence feeding all the green food they will eat. Green onion tops chopped fine are excellent. Green clover chopped fine is highly relished. Give them a variety of food and feed them often until nearly three weeks old, then let them have access to a lot where they can get all the fresh green grass they can eat.

There is nothing growing feathers that will put on flesh so rapidly as goslings when they have reached the age of three weeks. They mature early and are good eating, and sell readily at good prices in any market. After the young stock is fully feathered they should have water to swim and wash in daily; running water is best. If geese are kept in large numbers it is best to pull three or four flight feathers from one wing, and this may save you the loss of the entire flock, as they are long-distance flyers. Geese usually commence laying in Feb-

ruary or March, and if hatched early the goslings are fully matured for market in the fall.

GEESE FOR PROFIT.

(From "A Few Hens.")

Breed only the best.

As a rule geese are hardy.

Geese do not need bathing water.

Geese cannot be successfully kept in runs.

After fully feathered, geese will only need sheds for shelter.

The commencement of laying season can be generally noted by the goose running from one place to another, carrying straws in her mouth.

When a goose is shut up and lays her first egg in any particular nest, no further trouble need be taken with her, for she will continue to lay in that spot and not be likely to go elsewhere.

Richardson says the ideal gander has large dimensions, active gait, lively and clear eyes, an ever-ready and hoarse voice, and a demeanor of full boldness. The goose should be chosen for her weight of body, steadiness of deportment and breadth of foot—a quality said to indicate the presence of other excellencies.

In 1869 J. Brace said there seemed to be a great diversity of opinion among writers relative to the domestic goose of America, many contending that they derived their parentage from the Canada wild goose; on the other hand it is said by eminent ornithologists that the American wild goose is identical with the Canada, and that the latter derives its name from the former breed.

The American Standard classifies the weights as follows: Toulouse and Embden varieties, adult gander, 25 lb.; young gander, 20 lb.; adult goose, 23 lb.; young goose, 18 lb. African, adult gander, 20 lb.; young gander, 16 lb.; adult goose, 18 lb.; young goose, 14 lb. Chinese and Canada, adult gander, 16 lb.; young gander, 12 lb.; adult goose, 14 lb.; young goose, 10 lb. Egyptian, adult gander, 15 lb.; young gander, 12 lb.; adult goose, 12 lb.; young goose, 9 lb.

NOTES ON DUCKS.

Young ducklings should not be allowed to swim until they are five weeks old, or until they have taken on their white coat of feathers.

A handful of clean sand to every twelve quarts of soft food for either young or old ducks will aid to keep them in good health.

During breeding season keep ducks housed till 8 A. M. By that time they have laid their eggs. They usually lay at night.

A pair of well-raised ducks ten weeks old, when dressed for market, should weigh nine pounds.

Liberal feeding of whole grain will cause young ducks to have leg-weakness and apoplexy.

France's favorite duck is the Rouen, which is closely related to the Mallard.

The Pekins are bred more extensively than all other varieties combined.

To make duck farming profitable thorough-bred stock should be used.

Those that are strong and vigorous will breed well until six years old.

Ducks will do much better during warm weather if provided with shade.

The price of market ducks is best from April 15th to May 15th.

A good supply of drinking water is a very important matter.

The breeding stock should be at least two years old.

Weak breeding stock makes duck raising unprofitable.

Well-bred ducks lay from 100 to 150 eggs per year.

Duck culture is gaining ground every year.

England's favorite duck is the Aylesbury.

Duck eggs require four weeks to hatch.

The Cayuga duck is an American breed.

FIFTH CHAPTER.

THE MONEY MAKING BREEDS — FURNISHINGS FOR THE POULTRY YARD — LATE BROODS OF CHICKS.

THE MONEY MAKING BREEDS.

We take the following article, which contains information which is so generally sought by the beginner, from *Farm Poultry*, of Boston :

“In starting a poultry plant, whether on a large or small scale, the selection of the particular breed of fowls is a most important consideration.

“The first question to be decided is whether the venture is to be for pleasure or business. If the former, then a choice of any breed which may strike the fancy is the proper selection to be made. Of course, with an idea of beauty or oddity in view there is a wide field from which to choose. This may include the Polish family, with their peculiar and attractive head dresses ; the many varieties of Games, which are so fascinating to their admirers ; the Dorkings, world renowned for the beauty of plumage in the males and their excellent table qualities ; the Hamburgs, quick, active and beautiful ; and the Cochins, wonderful as to color of plumage and attractive because of their great size and docile natures. Next we come to the foreign breeds — Crèveçœurs, La Flèche and Houdans, and then to the oddities, such as Black Spanish, Red Caps, Russians, Silkies, Sultans and Aztecs, and finally to the large family of Bantams. All these breeds appeal to those who are looking for something to admire, and who are indifferent as to profits to be made from them. They are

in no sense business breeds, and should be classed wholly as fancy, and to be kept by fanciers.

"On the other hand, if we are inclined towards poultry keeping as a business, we must look to an entirely different class of fowls. Among such we can enumerate the following, each of which has a money making quality, aside from a purely fancy standpoint: Plymouth Rocks, Leghorns, Minorcas, Wyandottes, Langshans, Andalusians and Brahmas. This list, it will be noted, is small, and yet it can be narrowed down still more, to define exactly which are the very best business breeds.

"In making a selection from this list, many things must be thought of. What one may fancy is one thing, but what will pay best is another. The choice should be made entirely on the demand. For example, the Langshans are fine, large attractive birds, fair layers and good table specimens, but the demand for them is limited—hence, if bred to perfection the problem remains how to sell them? Andalusians are handsome, good bodied and good layers; yet the same fault is to be found with them—lack of demand.

"The Minorcas are most valuable in two ways, for eggs and table, and yet there are certain sections of the country where they are hardly known. This matter of demand cannot even be controlled. It is the public inclination toward one breed or another. Why one breed is popular and another not, is difficult to understand. Certain sections of the country run to certain breeds. New England, for example, is fond of Brahmas, and New York is perhaps the best Minorca state. The Leghorns are very well distributed, but the best in White, Brown and Buff are in but few hands. The Wyandottes have been pushed vigorously, and have won great recognition in many different sections.

"The breed par excellence known from one end of the country to the other is the Barred Plymouth Rock. There is not a farmer, amateur or fancier who does not at once recognize

the sterling qualities of this most popular of all breeds. It is almost useless to enumerate their qualities, they are so well known; yet they live up to these qualities and maintain year after year the excellence which is the foundation of their popularity. For egg producers, when eggs are highest in price, they are reliable; for good large bodied specimens, when meat is demanded, they seldom fail, and for hardiness and general health they have no superiors. They are not beautiful, except in the eyes of their admirers; yet there is a certain steady, business-like air about these plain specimens which appeals to all classes, and stamps them the great money makers of poultrydom.

"It is safe to say that the demand for Plymouth Rocks is far in excess of that for any other breed. This does not reflect unfavorably on the other breeds; it simply shows that they are the public's favorite. A great deal of this popularity may be traced to their ancestors, the American Dominiques and Black Javas. The former, until superseded by the Plymouth Rock, was America's pride in poultry. Therefore if, as I have said, the choice of a breed depends upon the demand for the same, the Plymouth Rock, especially the Barred variety, fills the bill better than any other.

"The very best quality any breed can have is hardiness. A vigorous constitution in fowls is the first thing to consider. With it we may expect a good growth, an early maturity, a good egg yield and a fine carcass; without it we cannot depend upon any of these results with certainty. Health and prime condition go hand in hand, and both mean the best results obtainable in poultry. The healthy hen is the egg type and the show room specimen. Condition should be the first consideration. Where can be found a healthier, stronger and more reliable breed than the Barred Plymouth Rocks? Climatic conditions do not affect them. They are bred in all sections of our country. They are alike indifferent to cold and heat. No matter how low the temperature, this popular

American breed attends strictly to business, and if they are comfortably housed at night and kept busy during the day, we may look for a full nest box at gathering time. Still, they lay a brown egg — and if the demand should be for white eggs, or both white and brown, we must look for another breed to run side by side with them, in order that the demand for both may be supplied.

“Among the business breeds which lay white eggs our choice is limited — we have the Leghorns, Minorcas, and Andalusians. The Minorcas lay a large fine egg, and, if properly handled, plenty of them — but are they business egg machines? The Andalusians also are prolific layers, but if we breed them to perfection, is the demand sufficient to justify their being kept for profit? We are forced to fall back on the Leghorns. Here we have truly egg machines — can they be beaten in this quality? The choice of the entire family is probably the White, Brown or Buff. It matters little which we select — it is a fancy; admirers of each claim superiority. Personally, I consider the White the choice. Are they popular? Yes — almost as much so as the Plymouth Rocks. They are well distributed throughout the country. The public has adopted them, and the demand for them has been, is and always will be strong. Any person who cannot make money out of eggs, and keeps White, Brown or Buff Leghorns, does not deserve to be called an egg farmer. They are active, healthy, beautiful and profitable. Does any other breed combine more good qualities?

“Their enemies, and they have some, call them spring and summer layers. They will lay as strong in the dead of winter as any breed, if properly housed. Being a closely feathered variety, they need warm quarters. Keep them shut up all winter in a house where the water never freezes in the pans; feed them liberally and keep them busy, and they will lay continuously; and when spring comes and the warmer air permits them to run out they will, like all other breeds, increase their egg yield,

but in greater proportion. They are the fit mates of the Plymouth Rocks for egg production. Being a non-sitting variety, they continue the laying when the Plymouth Rocks become broody.

"The greatest objection to the Leghorn is said to be its small carcass for market purposes. This is hardly an objection except to those who demand size and weight alone. As the chicks grow very rapidly and are very active, they can be made to dress as fine a broiler for sweet fine grained meat as any breed known — and at the earliest broiler season. As roasters there is nothing better than a well fattened three-pound Leghorn cockerel.

"To conclude, therefore, we may consider that the great business team of all the breeds is the Plymouth Rock and the Leghorn. This combination is based on public demands. If we wish to make money out of poultry we must keep what is in the greatest demand, and I have yet to meet the breeder who has produced too many Plymouth Rocks or Leghorns to meet this demand."—E. O. Roessle, in *Country Gentleman*.

FURNISHINGS FOR THE POULTRY YARD.

(By Priscilla Plum, in *Ohio Farmer*.)

The novice who studies the modern poultry catalogues or the columns of the poultry paper, with a view of finding out just what are the indispensable adjuncts of a poultry house, must think the business too complicated and expensive for ordinary mortals to engage in. I am often reminded of the remarks of a medical friend whose son was about to graduate an M. D.: "I must hurry to buy Charles what instruments he needs, and warn him that dealers in medical instruments make their goods to sell. They will try to unload on the new graduate all sorts of expensive things for which there is no real need in actual practice."

First, we have the incubator and the brooder. They are all right, providing they are made on the right principles. There are machines that will do splendidly, but there are others that are

complete failures. Still there are others that will do fairly good work by constant watching. The good incubator and brooder can be bought but not at the price of the poor one. Hydrometers are a useless article. There are incubator firms, however, who would have you believe they are indispensable.

Then there is the absolutely necessary feed cooker, so the catalogues say, smallest size \$12. Why not cook the feed for awhile in a large kettle on the kitchen stove, and save feed and cost of cooker? Cooked feed is not needed every day, and but very little for young chicks. Potatoes are excellent baked in the oven. Millet seed is preferable to mush any time.

Then come the patent roofing and accompanying paints. Plain shingles and matched sidings are all that are required. If warmer houses are needed, common plaster with a good proportion of cement is best. Bone mills are good things to have, but not indispensable. A hardwood block and a hatchet will answer the purpose very well, for a while at least.

Patent feed and water traps are not by any means an unmixed boon, and patent water tanks will freeze up. The self-heaters may explode. A clean board is just as good as a patent feed trough.

The patent lice-killing machine I have not tried, but any good, fresh insect powder and a can with perforated cover, is good enough for me. Medicated nest-eggs are a nuisance. Poultry invigorators and tonics are made to sell. Cholera compounds are not needed. Cleanliness, dry houses, lime and fresh drinking water with a few drops of carbolic acid, will keep away disease. Animal meat and blood compounds are not needed, with fresh cut bone. Crystal grit you can get from any stone pile, selecting the crumbly ones and crushing them with an iron mallet. Charcoal you can get from the kitchen stove. Ground oyster shells and dry ground bone, many do not think any better than gravel. The domestic fowl needs many things that the wild birds have no use for, but if it had been necessary for a hen to

carry a pack of medicines and prepared foods nature would have provided something of the sort in the primitive state. Even the oft-wanted Douglass mixture must be used cautiously or something that appears like epilepsy follows.

LATE BROODS OF CHICKS.

We have been warned again and again against late hatching of chickens writes K. Hill in Orange Judd Farmer; but the idea has been pretty thoroughly exploded that chicks will not do well if hatched in almost any of the summer months if—and the “if” is an important word here—one will provide the proper conditions for the growing birds. These conditions are freedom from lice, plenty of shade, plenty of water, and good, wholesome food. The most thrifty chicks I ever raised were hatched the last week in June, and they were Light Brahmas at that. This year I shall have Brahma chicks hatched in July, and if I had a warm, dry barn cellar for winter use, I would not hesitate to hatch Brahmas and Cochins all through the summer.

It is foolish, of course, to hatch late if one is to put the scanty feathered chickens into cold winter quarters. Too few of our farms have winter quarters sufficiently warm for even well-matured fowls to do their best. A hen must have warm quarters if she is to lay in cold weather, when eggs are high. Tight foundations, double boarding and stout building paper, with a low ceiling and double windows, will give warm quarters, but perhaps the most satisfactory of all houses for winter use in a cold climate are those built into a bank that slopes to the southeast. Provide warm quarters for your fowls, and you will have the satisfaction of hearing the hens cackling over eggs that are worth from 30 to 40 cents a dozen.

SIXTH CHAPTER.

AN IDEAL BARRED PLYMOUTH ROCK PULLET.

MATING AND BREEDING FOWLS—THE SCORE CARD.

The following chapter is taken from Mr. D. L. Lambert's "Pocket Book Pointers." "Death to Lice" (Mr. Lambert's invention) is noted everywhere. As a poultry breeder and judge his authority is universally recognized.

It is one thing to purchase good birds, and quite another to breed them or to mate the parent stock so as to reproduce themselves in their progeny. He is no *fancier* who does not *try* to improve on *fancy* points. By fancy I prefer not only those which makes the bird nearer perfect according to the Standard of Perfection,—yet utility as well,—something better and finer than the ordinary kind. There are breeds, plenty of them, that the nearer they

approach perfection on the score card, the better they are also from a practical standpoint.

A new beginner often puts too much value on the blood. That oft repeated adage, "Blood will tell," is all right in a way, yet one must not forget "that like begets like" just the same, and a cull will produce culls in a majority, no matter if he is blue-blooded to his toes.

A novice has a Plymouth Rock with enamel in ear lobes, and asks if I think he can breed it out? I tell him he can breed it *in* much easier.

Did you ever go through a poultry show carefully and note the fine specimens in each class; yet how few there are there even that approach our ideal, or the cuts of any variety that appear in poultry journals? How many really good bodied birds do you see among a hundred?

The first point a new beginner looks after is comb, yet the longer he breeds the further he will look beyond this appendage for excellencies on his ideal bird. Thus, in selling breeding males, we find it difficult to dispose of cheap specimens, unless they excel at least in comb.

Common defects of nearly all breeds are bad shaped necks, shallow or flat breasts, high tails, narrow bodies and knock knees, or those too near together. In fact, a bird that has none of these defects, is invariably a good shaped one.

There's a discussion among breeders as to which is most important, shape or color. I put shape first, because I consider it most important in a breeding bird, especially on the male side.

As for breeding in line or akin, I would say never discard a superior bird for an inferior, because the former is related to your flock, while the latter may be new blood. By breeding related we can easier strengthen the color principle, yet we multiply the defects at the same time; while if we can gain more than we lose and maintain the offspring, it is safe to keep working along in same line.

I would not introduce new blood unless to strengthen my stock with a bird that excelled

in points where mine was weakest. Few breeders mention in their advertisements where their birds are strong, yet this would interest and secure buyers much quicker than some of their winnings. For instance, if my stock of Barred Plymouth Rocks were great for rich bay eyes, nice shape, deep blue barring, or bright yellow legs, I would enlarge on their most prominent features and rest assured that my numerous customers would be satisfied, because they would know what to look for when they sent in their orders.

If my Light Brahmas had small firm pea combs or fine hackles, I would make the most of these, and specify their undercolor, whether pearl, bluish white or slate. I would use some printers' ink describing the excellencies of the color of their wings and tails if they were better than the average. Often some are looking for very heavy leg and toe feathering; if I had that down fine I would say so.

Partridge Cochins breeders have fads in their line, and if my stock excelled in any of their weaknesses, I would be pretty sure to remind them that rich mahogany color, fine delicate penciling, or whatever feature I had brought prominent in this breed, were theirs for the necessary spondulix.

Brown Leghorn cockerels, with nice combs, good ear lobes, well striped hackles, and saddles are often wanted, as well as pullets with drooping combs and dark salmon-brown breasts. If I had such to sell I would say so, and no doubt catch more orders than those who claim they win everything at sight. So on through the entire list of standard varieties, certain flocks have certain characteristics in a greater or less degree than others, either through mating for breeding or treatment in rearing, yet few there are that excel in all points; in securing one feature another is often sacrificed.

Defects that are one and same in both sexes should be avoided as much as possible when mating for breeding. A good rule is to never breed from a poor shaped crower. A sire is responsible for the style of his get. He also con-

trols the color of his offspring. Size and constitutional vigor are principally due to the condition of the dam.

It is very advisable to know the pedigree or lineage of your breeders; a point is often gained by having a cockerel from your finest hen. The male bird is one-half of the breeding pen, no matter whether he is mated to one or forty. A good vigorous crower will often fertilize the product of this latter number if allowed free range better than he would of two in confinement.

PEN PICTURES OF STANDARD POULTRY.

The American Standard of Perfection contains a list of one hundred and seventeen different varieties of recognized breeds. These include also turkeys, ducks and geese. These are divided into thirteen classes. The American or No. 1, has fourteen different breeds to select from, Barred Plymouth Rocks, Buff Plymouth Rocks, Pea-comb Barred Plymouth Rocks, White Plymouth Rocks, Silver Wyandottes, Golden Wyandottes, Buff Wyandottes, White Wyandottes, Black Wyandottes, Black Javas, White Javas, Mottled Javas, American Dominiques, and Jersey Blues. Among these, the Barred Plymouth Rock is most popular, and probably more extensively reared than any other breed, and traces of this barred or hawk colored plumage are seen in nearly every farmer's flock in the land.

BARRED PLYMOUTH ROCKS.

Thirty years ago they were often called the Great American Mongrel on account of being made up from other breeds, probably the Black Javas and American Dominiques, yet time has worn out this expression, and when a fowl is needed for business, the Barred (or original) Plymouth is first choice. Adult males weigh $9\frac{1}{2}$ lb., hens, $7\frac{1}{2}$ lb., cockerels or males under, or about one year old, should weigh 8 lb., pullets,

6½ lb., each. All Plymouth Rocks have stout, clean yellow shanks, free from feathers of any kind below the hock joint; these and permanent white in ear lobes, lopped combs, and wry tails are disqualifications by the Standard. Buff, also White Plymouth Rocks, are similar to the Barred with the exception of color.

Silver Wyandottes were admitted to the Standard at Worcester, Massachusetts, 1883. Previous to this time, they were known as

BARRED PLYMOUTH ROCKS.

American Seabrights, Hambletonians and other names. This new name Wyandotte, and admittance to the Standard, gave them a boom never before witnessed in the poultry world. Specimens good, bad and indifferent sold at exorbitant prices as everybody wanted them; culls were sold and bred from, and a raft of inferior birds palmed off on unsuspecting buyers as the proper article. This state of affairs cooled off the enthusiasm of many admirers, and brought the breed back to a level with the old varieties, yet they had been lauded by poultry people everywhere. Still the Silver Wyandotte in its purity, is a most excellent fowl; their size

is a trifle smaller than the Plymouth Rocks, matured males weighing $8\frac{1}{2}$ lb., hens, $6\frac{1}{2}$ lb., young cockerels ought to go $7\frac{1}{2}$ lb., at six months, pullets, $5\frac{1}{2}$ lb., according to the Standard weights.

The plumage of the male is a silver white neck, hackle and saddle, with a delicate black stripe in the center of each feather, while his body should be dark grey, and the tail glossy black, breast black with small white centres in each feather. The comb of both sexes is a well

SILVER-LACED WYANDOTTES.

rounded rose, the top being covered with small corrugations or indentures. The neck of the female should be striped, while the rest of the plumage, with the exception of fluff and tail, should be white webs, evenly laced with black. Their breast should be round and full; legs short, well apart and bright yellow. All these points going to make them a grand all purpose fowl. They are prolific winter layers and fine table poultry. By introducing new blood every year, they can be kept hardy and vigorous. We also have the Golden Laced Wyandottes, the centres of feathers, necks and saddles being a rich bay or yellow, in place of white in the Sil-

vers. These have many admirers. Following in the same line comes the White Wyandottes, alike in all respects to the Laced, excepting color, having a pure white plumage, short yellow legs, broad compact bodies combined with prolific laying and a hardy constitution has earned for them a place in the hearts of American poultry breeders that time will strengthen and increase.

WHITE WYANDOTTES.

The White Wyandotte of to-day is a rival of the finest practical fowl on earth. The winning cockerel at the late poultry show, Boston, Mass., sold for \$50, while another one cooped at his side brought a like sum; both buyers got bargains. Then comes the Black Wyandottes, which are black all over.

The craze for Buff varieties has brought out the Buff Wyandotte and placed it among the Standard breeds. The Columbian Wyandottes are white with black striped necks; and the Partridges with penciled feathers—both the latter being of recent origin, and not yet admitted to the Standard.

The Java is perhaps the oldest variety in the class of same weight as the Plymouth Rocks.

The Blacks have a yellow skin, and are excellent table fowls as well as abundant layers. The American Dominiques, one of the honored ancestors of the Barred Plymouth Rocks, has plumage similar, yet a rose comb, and about one pound lighter in weight.

Jersey Blues were on deck early in the fifties, yet have a few admirers; color, several shades of blue or slate. Standard weights. Cock, 10 lb.; hen 8 lb.; cockerel, 7 lb.; pullet, 5 lb.

CLASS NO 2 — ASIATICS.

Light Brahmas, Dark Brahmas, Buff Cochins, Partridge Cochins, Black Cochins, White Cochins, Black Langshans, White Langshans. At the great Boston show of 1896 the Light Brahma class numbered over 400 specimens alone; almost a show of themselves. This goes to show them the most popular Asiatic.

LIGHT BRAHMAS.

They are the largest fowl we have. Adult males have often been shown weighing 15 lb. Also some with a selling price of \$10 per lb. Standard weights, cock, 12 lb.; hen, 9½ lb.; cockerel, 10 lb.; pullets, 8 lb.; while cocks not weighing 9½ lb., hens or cockerels not weighing 7½ lb., and pullets 6 lb. each are disqualified.

Body color on surface, pure white; under color, white or bluish white. Neck, wing (flight feathers) and tail, black or striped with black. Pea-comb, yellow shanks, well feathered down to their toes. The Dark Brahmas are somewhat smaller than the Light, the Standard weights being one pound each less; their shape is also different in profile. Body color of male, black, often slightly frosted with white. Neck, silvery white with black stripe. Black, same. Tail, black. Shanks heavily feathered down to the toes. The female should have a small pea-comb, neck silvery white striped with black. Body feathers, a light steel gray, regularly penciled with black; the more distinct the better. A well bred specimen of this kind is one of the handsomest hens in existence.

The Buff Cochins are the oldest of the Buff varieties. Their color is buff all over even to the skin. Not that all of this breed come nice yet when one wishes to see the color to perfection, select an Oakland Farm Cochins for your samples. Partridge Cochins come next in the Standard with same proportion of size and weight as others of the Cochins family, *i. e.*, cock, 11 lb.; hen 8½ lb.; cockerel 9 lb.; pullet 7 lb. The male with his red-hued neck and saddle feathers nicely striped with black. The females with reddish brown body color, delicately penciled with a darker brown, makes them one of the handsomest varieties in the Asiatic class.

White Cochins and Black Cochins are both solid color throughout. Neither are extensively bred. Several years ago we had some breeders who made specialties of both these breeds, and very fine specimens were shown.

No matter what variety a painstaking fancier tackles as his exclusive specialty, they will come into prominence for their nearness to Standard requirements, and he will get the benefit if he sticks to them.

The Black Langshans have many admirers. The American people are prejudiced against a black fowl anyway, and this one has had unusual obstacles to overcome. The disqualifications are such that many otherwise fine spec-

imens are thrown out at the shows. For instance, feathers not always below the middle joint of the outer toes, yellow skin even on the bottom of their feet, side sprigs on combs, white or gray in any part of their plumage, etc., deprives many otherwise lordly Langshans of a score. The right color is a glossy greenish metallic black. Those showing purple in streaks or bars are cut accordingly, yet few there are that do not have this defect in a greater or less degree. White Langshans are pure white, with a single comb, and slatey blue shanks, showing pink between the scales.

SINGLE COMB WHITE LEGHORNS.

CLASS NO. 3—MEDITERRANEAN.

In this we have Single and Rose-combed Brown Leghorns, Single and Rose-combed White Leghorns; also Single-combed Black, Buff, Dominique and Silver Buckwing Leghorns, Black and White Minorcas, Blue Andalusians and Black Spanish. Among the eight varieties of Leghorns, the Single-combed Brown and White are the most popular. Old time

poultry writers named this race "egg machines," and while new breeds have contested for the honors, the Leghorns will have the appellation for some time longer. They originally came from, or near the city of Leghorn, in Italy, and as one writer puts it, "those who have kept them will cease to wonder why the organ grinder roams about in our land." Under proper conditions they will lay the year around without any inclination to incubate. Their fruit is large and white shelled, such as find favor in New York and Philadelphia markets. The average Leghorn is not a good market fowl, yet for small broilers, their breasts are round and plump as partridges.

There are no Leghorn weights in the Standard. A judge will sometimes cut for being too large and coarse, as well as too small and immature. A squirrel tail (projecting forward over its back) disqualifies a Brown Leghorn, yet not a White one. Why this is so is a puzzler. Black Leghorns are wonderful layers. Dominiques are few and far between. Buffs are becoming more and more common, and better colored ones are shown each succeeding year.

S. C. BROWN LEGHORNS.

S. C. BROWN LEGHORNS.

Black Minorcas are similar in appearance to Leghorns, although being larger in size and having larger combs, wattles and tails.

Andalusians are often called Blue Spanish. In appearance they resemble the Black Spanish with the exception of color.

CLASS NO. 4 — POLISH,

Contains eight varieties, as follows: White Crested Black, Golden, Silver and White, Bearded Golden, Silver and White, Buff Laced. These are ornamental breeds, yet prolific layers, and usually non-sitters.

The White Crested Black are the most popular, and their snow-white crests in comparison with their jet black bodies, make them one of the most beautiful breeds.

CLASS NO. 5 — HAMBURGS,

Contain Golden Spangled, Silver Spangled, Golden Penciled, Silver Penciled, White and Black, Red Caps, Silver and Golden Campines. The Hamburgs are much esteemed in England for their laying qualities. All varieties have rose combs, and lead colored or blue shanks and feet.

The Red Caps have the largest rose combs of any fowl, and are said to be wonderful layers.

Campines are, perhaps, a rejuvenated Bolton Gray we used to hear so much about years ago.

CLASS NO. 6 — FRENCH HOUDANS, CREVECOUER AND LA FLECHE.

The Houdans are mottled black and white, and have the peculiarity of five toes. The absence of the fifth being a disqualification. The combs of the first two are V shaped, standing in front of their crests, while the latter has no crest, yet comb appears like antlers pointing upwards.

CLASS NO. 7 — DORKINGS.

White, Silver, Gray and Colored. A long bodied fowl, with an abundance of white breast meat. These, also, have five toes on each foot.

CLASS NO. 8 — GAMES AND GAME BANTAMS.

Black Breasted Red, Brown Red, Golden Duckwing, Silver Duckwing, Red Pyle, White, Black and Birchen, all of which are duplicated in Bantams. There is no Standard for Pit Games; they are judged by comparison only. Weights are given for Bantams, cocks, 22 oz.; hen, 20 oz.; cockerels, 20 oz.; pullets, 18 oz., except Black Breasted, Red Malays, which are listed at 4 oz. heavier all around.

CORNISH INDIAN GAMES.

The Cornish Indian Games created quite a sensation in poultry circles when first imported from England a few years ago. They are claimed to be one of the best table fowls yet produced. They are very close feathered which

makes them appear much smaller than they actually are. An adult male will tip the scales at 9 lb.; hens, 6½ lb.; cockerel, 7½ lb.; pullets, 5½ lb.

CLASS NO. 9 — BANTAMS OTHER THAN GAME.

Golden Seabright, Silver Seabright, Rose-combed White and Black, Booted White, Buff Cochin, Partridge Cochin, White Cochin, Black Cochin, Black Tailed Japanese, White Japanese, and White Crested White Polish; nearly all of which are pigmies in counterpart of the larger breeds.

CLASS NO. 10 — MISCELLANEOUS.

Black Russians, Black Sumatras, White Silkies, White Sultans, Frizzles and Rumples. The two latter breeds are freaks. The Frizzles' feathers turn towards their heads, while Rumples are entirely devoid of tails.

CLASS NO. 11 — TURKEYS.

Bronze, Narragansett, Buff, Slate, White and Black. The first are often called Mammoth Bronze on account of not only being the largest turkey, but the largest fowl in the Standard. Adult cocks, 35 lb.; yearling cocks, 32 lb.; cockerels, 24 lb.; hens, 20 lb.; pullets, 15 lb.; each are Standard weights, while specimens are often shown weighing over 40 lb.

The turkey is a native of America, and was discovered here during the 15th century in a wild state, east of the Rocky Mountains. Free range is necessary for their successful rearing, as they fret and die in confinement.

CLASS NO. 12 — DUCKS.

Pekin, Aylesbury, Rouen, Cayuga, Colored Muscovy, White Muscovy, Gray Call, White Call, East Indian, White Crested. The Pekins are pure or creamy white, and most popular. Adult drakes weigh 8 lb.; young drakes, 7 lb.; adult ducks, 7 lb.; young ducks, 6 lb.

The Rouens, which, by the way, are colored like the wild Mallard, should weigh a pound heavier each sex.

The Muscovy adult drakes in the Standard at 10 lb. each. Duck raising, as a business, is of recent origin, as well as the consummation of the product. People have acquired a taste for roast duck as a change from turkey and chicken.

CLASS NO. 13 — GEESE.

Toulouse, Embden, African, Brown Chinese, White Chinese, Wild and Egyptian. The largest are the Toulouse. Adult gander, 23 lb.; adult goose, 20 lb. Young gander, 18 lb.; young goose, 15 lb. In color they are gray, shading to white on the under part of their bodies. The Embden Geese, being pure white, are most highly valued for their feathers. In size they are nearly equal to the largest. The Wild geese are often domesticated, and are used to cross with the other breeds.

PRIZE-WINNERS.

The essence of the fancy, the goal of the enthusiast, are the exhibitions which occur during the fall and winter months in sections where there are enough interested to support them.

While a desire to possess the best may be the main object of some, the most enticing incentive is the excelling of one's competitor. A scholar at school will study and learn not particularly to know the lesson well, but to reach the head of the class, and receive applause for it.

Winning at shows is *often* accredited to "the tricks of the trade," while those who win with birds of their own rearing and fitting know differently. Success is possible in close competition only to those who breed or possess really good birds, and have them in proper condition for the fray.

On this one point—condition—hangs the foremost trick of all. Good, strong winners can be ruined by neglect; moderately good ones improved by care. In close competition I have won the much coveted breeding pen prize on one quarter of a point. Suppose I had worked a week for this fraction that just bridged me

over, was I not well repaid for my work? If my birds were short of weight I fed them on sugar with bread and milk by lamp light every night before going to bed, while they had all the grain they could stow away day times. I would give a choice cockerel a room, yes, a whole building to himself, rather than have him deteriorate one single fraction before going into the show pen. I have shaped his tail night after night until his sickles took the proper shape and curve, and when I was awarded highest honors I did not consider it the reward of tricksters; simply the results of care and pains.

Condition isn't made in a day; we must begin in the early spring to bring out the best points of any variety or breed. We must start with healthy breeding stock kept under favorable condition for strong, fertile eggs and vigorous progeny. Not over ten or twelve chicks should be allowed with one hen in roomy brood coops. Growing chicks are often cramped as they huddle or roost in small boxes; one-sided, hunched backed birds are the result. Roosts that are too close to the wall will cause cockerels' tails to bob up like bouquets on the end of their backs, and no end of coaxing will make them assume the desired curve.

Separating the sexes as they begin to materialize is no secret or trick, yet it tends to better growth of both pullets and cockerels for breeding or show purposes. A Barred Plymouth Rock male kept from the sun, wind and rain while he gets his adult or new plumage will look cleaner in feather than those that run wild every day. Pullets that are cooped by themselves, not allowed to begin to lay, by changing them from pen to pen, one room to another, look their prettiest in the show pen, and are larger, finer birds for the trouble.

To put show birds into best possible condition one needs to have a building purposely. For my use I have what I designate as a cockerel house. This building is covered all over outside with heavy paper and over this tarred paper battened, is warm enough except during the

coldest of weather. Inside is divided in 24 cages or pens, 12 3x3, 6 3x6 and 6 6x6, with a 5 ft. alley through the centre. The pens at the right of north side of the building have fronts of 3x4 inch maple rods, each door swings on a rod which turns in its socket and buttons secure when shut. The 6x6 exercising pens have spring doors, each bird goes into these large pens alternately every few days. This is not an elaborate or expensive house, yet it answers my idea and is the best I have seen for the purpose. The stock keeps remarkably healthy, and goes into the breeding pens or show room in fine condition. By February the surplus cockerels are nearly all sold, the lower pens to the right accommodate two sitting hens each, when they hatch the broods and hens are transferred into the 6x6 pens until the weather is such that they can go into coops out of doors. As soon as hatching season is over this arrangement can be cleaned and renovated for early fall fair stock, which goes through the same process of preparation as before stated, except perhaps they are not as fully furnished as those that are to rise or fall with a score card.

I repeat my assertion that condition is the secret of success in the show arena. Soiled plumage can be washed, yet how much nicer is that that never is allowed to become soiled. A bird short of weight can be stuffed with heavy food previous to weighing and with crop distorted made to weigh a 1-4 of a lb. more, yet how much better it is to begin a month before and by feeding well have the specimens Standard weight, with body rounded into fulness of all parts.

Rough, scabby shanks and feet can be scoured, rubbed and cleaned previous to showing, yet they will show the effects every time; yellow ochre, vaseline or olive oil can be daubed on if no one objects to it, but give me that smooth, bright shank, where the divisions of scales are hardly visible, such as never have been saturated with anything stronger than dew or rainwater.

There's a time when every bird reaches its prime, look their best ; then is the time to show them, no matter whether it's a chick just reaching its maturity, or a fowl finishing its moult, it will score more now than at any other time. We cannot trot a bird around to several exhibitions and expect it to sustain its reputation in each and every subsequent show ; experienced exhibitors learn this and plan months ahead for a successful display at some particular time, and prepare later birds for other events. It wears a bird in appearance to show it, yet does not effect its value as a breeder. The feathered race are not accustomed to being up nights, arrayed on saw dust under electric light for the benefit of an admiring crowd.

One writes to know if I believe in sending my best birds to show, as some one had told him that it spoiled them. To which I reply : That I would send my best if I sent any. I show to win, and it takes pretty near the best to do this nowadays. He asks would I not send my best if I could be present ? I would not exhibit unless I could go and attend my birds, not that officers and attendants do not do their best, but there are minor details that they have not the time to look after, and that *fraction* that may decide the prize can sometimes be saved or gained by the arranging of tail or wing feathers—withholding too much grain—this will cause them to appear more sprightly and other little details incident to showing too numerous to mention.

Last, but not least, I would look my birds over while preparing to show, and *be sure* they were not lousy. I would use Death to Lice on them every few days, which, in addition to keeping them free from vermin, cleanses and brightens their feathers if soiled or stained. It pays to dust frequently to keep them clean and comfortable. I handle and score hundreds of birds during the winter at poultry yards and the shows, and I see the ill-effects of lice in many ways. I see birds with webs of their feathers eaten away with vermin, swarming around their thighs and fluffy feathers, making

the life of that biped miserable. They grin and bear it, scoring less, winning less, (or nothing) until their owner gets his eyes open to the fact that *lice are here*.

A SCORE CARD.

The score of a fowl is the amount which remains after deducting the cuts for defects from the 100 points which is supposed to represent perfection. This valuation of 100 is divided among the different sections, such as so many points each for Symmetry, Weight, Condition, Head, Comb, Wattles and Ear Lobes, Neck, Back, Breast, Body and Fluff. These for the American and Asiatic classes, with nearly, if not quite the same for others. This is the copyright card of the American Poultry Association. There are several others in the field, Felch's, Fletcher's and Bushnell's, all subdivided with columns for both shape and color, of which the easiest to learn, easiest to use and easiest to understand is the Decimal card. This has ten sections, valued at ten points each, 5 for shape and 5 for color alike for all breeds, omitting symmetry, which has often a double cutting power.

The first score card was doubtless originated to get at a more accurate method of awarding the prizes. Poultry people of forty years ago wanted more than a look and a say decision as to which were the best birds exhibited; they wanted to know why and where they were considered the best, and the score card was the result. There is considerable controversy going the rounds of the poultry press at this time as to which is the best method of awarding prizes, the score card or comparison. It is my opinion that to do away with the card is to step backward. I do not say that the cards can be filled out perfect. I do claim that when the judge scores the birds carefully, thoroughly and conscientiously, the best will win, and a majority of the exhibitors will be satisfied. If a judge wishes to do any crooked work, he can cover up his tracks much better by comparison than by scores. "By their cards you can know them."

It is black and white for reference. Comparison is no doubt best for large shows, and experienced exhibitors. But there's an army of new beginners coming to the front every year ; they want to show their stock, they want to win at the smaller shows. If they cannot win they want their birds scored. They will compare theirs with the winners and know how far they are from getting there. Abolish the score card at local and state shows, and you throw away your draw card. Criticise the scores if you wish, remodel the card if you can make it any better or plainer ; leave us some method whereby we can make a record of our work that will bear inspection.

SEVENTH CHAPTER.

DISEASES.

From past experience and the frequency of inquiries as to cause and cure of the ailments common to the feathered race, we take it that sickness and the mortality among fowls is often the reason why so many fail to succeed.

Some will start in during the winter and early spring, increasing their flocks as rapidly as sitting hens, incubators and brooders will turn them out. A good per cent will live and thrive, and all is well until they get too big for their roosting quarters. They are crowded together night after night, and as the season advances, lice accumulate, distemper and roup appear. The keeper, instead of looking for the cause, will begin to dose and doctor the flock, and perhaps bury enough of the victims to eat up the profits of a season's work.

It is true you can keep fowls and produce chickens at a profit, providing you keep them well and thrifty. It isn't so important to learn how to cure this and that malady as to know how to keep them healthy at all seasons. The old saying, "An ounce of prevention," etc., is applicable here, and it might be well to say, "Use a pound of preventative and keep an ounce of cure on hand in case of emergency."

A flock that is continually dosed from January to December is as susceptible to sickness as one that is only condition-powdered at the most precarious times. It is a true saying that "cleanliness is next to godliness," yet many are as loth to apply the former to poultry keeping as the latter to themselves.

Roup in its first stages is a cold in the head and can be cured in two or three days with the "Eclipse" Roup Cure. We advise in connection to apply vaseline, balsam, or hamamelis to the swollen parts.

Chicken pox is another common disease. Wart like excrescences or sores appear on the bird's comb, face and head. This seems to be contagious and would advise separating those affected from the well ones.

This disease is most prevalent with the varieties having large combs, and it very seldom appears except during the summer months. Chicken pox is not a fatal malady, and if attended to a cure is easily accomplished. Common petroleum vaseline is considered one of the best remedies. Two or three applications of the tincture of iodine will, in some of the worst cases, effect a cure.

For gapes see page 73.

Cholera very rarely exists, but the farmer who has lost his entire flock by allowing the fowls to gorge on waste grain that has become spoiled or musty by laying on the ground after harvesting, invariably will say, "Cholera did it." We know of an instance where over 100 healthy fowls were killed by just one feed of fermented cracked corn.

The dust bath in a hen coop is what a bath tub is in a human habitation. Some men don't know any more than to "wait until summer and go into the ribber," yet hens follow the dictations of instinct and crave for a dust bath every few days. The floor of both roosting room and shed should be dry enough for this purpose, not necessarily sand—loam or road dust is better. If impossible to do this, put the dust in a shallow box where it is light and sunny during the day.

In former years hens died during confinement for lack of grit or grinding material, but modern thought and investigation comes along with the prepared article, and we no longer drug the biddies for indigestion when it is new teeth they want. Prepared animal foods, cut bone and clover replace the lack of natural green

stuff and insects during the winter months and keep the stock healthier, happier and more profitable.

OYSTER SHELLS AND GRIT.

The shell of an egg contains about fifty grains of the salts of lime, or about twenty grains of pure uncombined lime, besides the lime that is in the mineral matter of the white and yolk. The quality of the shell should be considered when feeding, by selecting those foods which are richest in lime. To produce the shell of one egg there is needed one hundred grains of lime.

Repeated experiments have proven that oyster shells are not a necessity for shell material, but at the same time valuable as grit. The feeding of oyster shells during the laying period is to be recommended. One pound of crushed oyster shell contains lime enough for about seven dozen eggs. Fine gravel containing limestone will probably as well supply the deficiency of lime existing in most foods, but the use of the sharper grits with it may be well.

Long or sharp splinters of glass or dry bone should be avoided in the grit furnished. The size of the particles of grit had better be larger than a kernel of wheat and smaller than a kernel of corn. An unlimited supply of well-powdered glass has been found to produce no bad results where the food and the grit accessible to the fowls contain an abundance of lime; but where the food is deficient in lime, and no other grit is obtainable, hens eat an injuriously large quantity of glass. There should always be an abundance of grit within easy reach of the fowls; a deficiency will retard the digestion and weaken the constitution.

EXERCISE.

Too much emphasis cannot be given to this consideration. Make your hens stratch and work. The best methods of giving exercise are by scattering the food, and burying it in the litter on the floor. While egg-producing fowls

may be fed from the hand, as it were, exercise will be far more satisfactory in the end. Good digestion is an important factor in egg producing, and exercise promotes digestion.

"CHICKEN POX."

The affection among fowls commonly called by the above name has been decided by experts to be caused by parasites. Two or three applications of tincture of iodine is considered the best treatment, and will usually effect a cure.

EGGS THAT HATCH WELL.

Pullets' eggs are not to be relied upon, at least not until the pullets are ten or eleven months of age. The offspring are weak, and it requires the very best of care to raise them. But matings of two-year old hens by a vigorous one-year old cockerel produce the most fertile and strongest eggs. Matings of one-year old hens to two-year old cocks are also good.

LEG WEAKNESS.

Leg weakness is caused by both too high feeding and by too strong bottom heat in the brooder. A good remedy is to sprinkle the floor of the brooder with water and feed more bone meal. Would not advise using brooder which is heated at the bottom.

FEED FOR SITTING HENS.

We give nothing but whole corn, grit, and fresh water. The corn is slow to digest and gives needed heat to the body. Grit must not be forgotten, as it aids digestion, thus keeping the hen in good health. Green feed can be given every now and then. The corn and grit and water should be constantly on hand, so that no matter when the hen comes off the nest, her feed and drink are ready for her.

GAPES — THE CAUSE AND CURE.

Herewith we give some simple rules for the care of young chicks — rules which if strictly adhered to will invariably insure a healthy flock. But, unfortunately, few people perse-

vere in good resolutions regarding the poultry yard.

The daily routine becomes tiresome, and soon some apparently insignificant neglect is allowed, and disease is almost sure to follow.

One of the first to make its appearance, and perhaps the most fatal of all diseases among little chicks, is gapes, which, though, in its strictest sense, can hardly be termed a disease, as often the healthiest and sprightliest are the first to show symptoms of an attack.

The assertion that gapes are caused by earth worms is the sheerest nonsense, as I have yet to see the first case in a brood that hustles over the fields in search of bugs and insects. Infected chicks are those that stand around the kitchen door waiting for the next feeding time. An embryo germ is gathered from the filthy ground and warmed into life in the chick's throat, passing from here into the windpipe, and by degrees interfering with the chicken's breathing, thus causing that gaping for breath which is called gapes, and, which, if not promptly removed, will, in a few days, cause death from strangulation.

There are many effectual remedies, the simplest of which, perhaps, is to put the entire brood into a large basket and cover with cloth. Then place the basket over a barrel in which a few pieces of tobacco are burning, and give them a thorough smoking. Do not let them smother, but in five or ten minutes they may be removed and placed in dry, clean quarters, and if necessary repeat next day.

A few drops of turpentine or kerosene added to the drinking water or mixed in the feed will act as a preventative for those not affected.

In severe cases the worms may be removed by inserting a feather stripped to within half an inch of the end in the windpipe and gently withdrawing same. Care must be exercised or death may result from choking. After applying the remedies feed lightly for a few days, giving but little soft feed. Cracked corn and wheat are the best; in fact, the chicks will thrive better if these are made their principal

food after the first ten days. At three months of age all danger of gapes is past, and from then to five months old there is little else to fear except it be those troublesome pests — body lice.

REMEDY AND PREVENTION.

Exercise is the best tonic.

Never feed sour or tainted food.

High perches cause bumble-foot.

Keep the drinking fountains clean.

Clean up the droppings three times a week.

Feather pulling is a vice caused by overcrowding and idleness.

The majority of cases of "cholera" are nothing more than indigestion and lice.

An ointment made of equal parts of kerosene and melted lard will cure scaly legs.

Never allow a hen with rough scaly legs to rear chickens, for she will surely impart the disease with them.

A tablespoonful of kerosene in a quart of drinking water is a good remedy for cold in the head.

Put four drops of tincture of aconite in a half pint of drinking water, if there are signs of cold by sneezing.

Gapes is a disease that shows itself in chicks between six and eight weeks of age, and very seldom after four months old.

To disinfect, clean the coops and then wash thoroughly with water containing five ounces of sulphuric acid to one gallon. Spade up the runs, and scatter carbolate of lime freely about the house.

A small piece of camphor about the size of a grain of wheat, daily, and ten drops of camphor or turpentine added to a pint of drinking water, is a good remedy for the gapes.

Crop Bound : In extreme cases, open the crop by cutting an opening an inch long, drawing the skin to one side for the purpose. Do not cut too low down. Clean out the contents, examine the passage leading to the gizzard, and sew up the opening.

For swelled eyes, bathe the head with a warm solution made by dissolving a teaspoonful of powdered boracic acid in a pint of water, and then annoint with a few drops of glycerine. Repeat this daily.

Roup is a disease affecting the mucous membrane of the eyes, nostrils, mouth and throat. It is at first a cold, and is not a serious thing, unless under unfavorable circumstances. It is a fall, winter and early spring ailment, and very seldom appears during the warm season.

EIGHTH CHAPTER.

POULTRY AND DAIRY — CAPONIZING.

HOW TO DETECT A GOOD EGG FROM A BAD ONE.

In the large end of the egg there is what is called the air cavity, or air chamber. It is a small space inside the shell, and outside of the inner lining, or membrane of the shell. In a fresh-laid egg it is about as big around as a dime, and an eighth or quarter of an inch deep. But in old eggs that have been on hand a good while it is larger, and in eggs that have been frosted it is also much larger. By holding the egg up between the thumb and forefinger, with the large end turned in toward the hand and holding it between the eye and a bright light, the air cavity can be easily seen through the shell. When the cavity is small and the egg inside the shell keeps firmly in place as it is turned over the egg is fresh, but if the air cavity is enlarged and there is a loose, watery substance that seems to run about within the shell when the egg is turned, it is an old egg, or else it has been frosted, and in either case it will not hatch.

If the air cavity is absent entirely and the inside of the egg turns about loosely, then the inside lining of the shell, together with the yolk, is broken and it is either a spoiled egg or very soon will be.

After an egg has been subjected to a few days of incubation—about five days—the formation of a chicken may be seen under a similar test. At first only small red veins,

until a dark, central point will be seen, but after the eighth or tenth day the veins enlarge and increase and the dark spot also appears much larger, so as to give about one-fourth of the egg inside a dark appearance with red outlines. The movement of the chicken which is in process of formation may then be detected.

The dark spot first seen is the head and eyes of the chick, and from that there grows, or gradually develops the balance of it. After two weeks of incubation the chicken has attained a size that gives the inside of the egg a dark appearance, through which nothing can be seen. Eggs that appear clear and fresh-looking may be rated as unfertile and removed after the seventh day.

In running an incubator, a test of this kind is quite necessary, as it is often the case that 30 or 40 per cent of the eggs should be taken out because of unfertility.

For soft-shell eggs put the hens at work scratching, as they indicate that the fowls are too fat. Soft eggs, apoplexy, egg-bound, and nearly all such diseases, are due to the hens being too fat.

AN UP-TO-DATE CHICKEN CARD—A NOVEL IDEA.

We copy the following from Western Garden and Poultry Journal:

An exchange says that when neighbors' chickens scratch up your garden or flower beds, or otherwise annoy you, here is a remedy that will cure them every time: Procure a number of small stiff cards, about 1x2 inches, write on the card, "Please keep your chickens at home." Tie a short piece of string to each card, with a grain of corn to the other end of the string, and scatter these with some corn in the place where the chickens congregate. When the hungry biddy gobbles up the grain that draws the prize she follows up the string, stowing it away until she comes to the card, which of course she can't swallow. Then you will see her pulling out for home, carrying in her mouth the card bearing your polite request.

POULTRY AND DAIRY — HOW MUCH WASTE CAN
BE CONVERTED INTO PROFIT.

Professor Myers, of the West Virginia Experiment Station, would combine the dairy and poultry and so insure success on the farm. He writes as follows:

"The poultry business requires no large amount of capital, and labor upon the farm that would otherwise be idle can very largely be utilized in caring for it. The same families that take the dairy products will be only too glad to get the poultry supplies, so that there is no additional expense in marketing the supplies. Every hen, properly cared for, can be expected to pay the owner at least \$1 net per year in eggs and considerable additional, either in the form of eggs or of chickens raised for sale. Considerable poultry can be kept largely upon what would otherwise be waste of the dairy business. Buttermilk or skim milk fed to hens will pay better than used any other way with which I am acquainted. There are wastes about the dairy stables which cannot be utilized in any way as effectively as by poultry, which pick up the lost grain, whether in the manger or in the manure pile, and convert it into profit.

"Poultry properly handled gives the farmer a certain and ample income at the time of year when dairymen are generally most anxious to have the deficiencies of the dairy made good, and there is never a time in the year when poultry products may not find a fair market.

"Much of the mixed food for dairy cattle is admirably adapted for feeding poultry; little additional building is necessary; no additional help is required. The capital invested in poultry can be withdrawn in a few days by the sale of the poultry; the waste products of the dairy are converted into profit, and the combination of the poultry industry with the dairy business is the most natural, the most attractive and perhaps the most profitable adjunct to dairying that can be thought of.

"It is only a step from a general poultry business to the fancy poultry business. For myself

I prefer the egg producing varieties to the all purpose fowl or fowl that is especially adapted for killing as meat. In the long run I think the egg producers more profitable than the meat producers, but that is a question of opinion, and the point is not to keep any fowls upon the farm that do not pay a profit to the owner. The man who expects to secure both qualities in a chicken is like the man who wants a good beef and a good dairy cow in the same animal. It is best to determine what a man wishes to do and work to that end."

CAPONIZING.

Capons are aptly termed the "finest chicken meat in the world," for there is nothing growing feathers their equal or superior. A capon is neither rooster or hen—it is nothing else than a capon. After removing the testicles from the cockerel, its nature becomes entirely changed. They take on a more rapid growth, are more tame, awkward in carriage and always exceedingly lazy, take on a very heavy and beautiful plumage, the comb and wattles cease to grow, and spurs do not develop as in the cockerel, and being cast off by both rooster and hen, soon show a fondness for the society of little chicks. To these they will act as mother, covering them with their heavy plumage at night or leading them about during the day. In France this is extensively practiced, the capons taking the place of the mother in rearing chicks, while the mother, unfettered by the cares of her family, soon becomes a layer only. France is the foremost nation of the globe for bringing much out of little. That they universally practice caponizing is a proof of the large and successful results to be derived from this operation. In poultry raising, as all other enterprises, the most successful results from certain lines are aimed at, and it is over this highly important point that the capon has stepped, opening up certainties never before dreamed of by the most sanguine.

"What shall we do with our cockerels?" has ever been a perplexing question to the poultry

raiser, as in many settings hatched the male predominates. Chasing about the yard, worrying the hens, continually spoiling for a fight, and cutting all kinds of capers in general, the cockerel loses his flesh almost as rapidly as gained, displays a voracious appetite, and in the end proves the cost of keeping to be far more than the price he brings in the market.

Instead of chasing about the yard, the capon keeps his own company and spends each day in quiet living. Without the drawback of physical exertion the flesh rapidly increases, the bones add weight to weight, and where under the old way, a farmer would kill an ordinary looking cockerel, of but little weight, he now dresses for market, a bird rivaling the turkey, in size and weight, whose flavor is superior to that of the spring broiler, and as tender and juicy.

Caponizing solves the problem of disposing of a large number of cockerels whose diminutive size is small inducement to the dealer. Caponize the chicks and you have at once laid the foundation for a handsome profit, in a short time to come. Outside of the cardinal points of profit the simplicity of the operation (when proper instruments are used), recommends itself to everyone. A boy ten years old can readily perform the operation, and any one can soon become an expert. Fully realizing the necessity of having proper instruments, we have arranged with reliable manufacturers to supply us with these tools.

The principles of caponizing as practiced by the Chinese are unexcelled, although the instruments are crude indeed. In our instruments, the principles have been so perfected as to insure both ease and perfect safety in performing the operation.

The cat that catches birds is apt to take chicks. Watch her.

Have a lock on the poultry house door. "A stitch in time," etc.

Start at the bottom round of the ladder, and gradually go to the top.

The finest set of instruments, complete with instructions, \$2.50. In velvet lined case as per engraving, \$2.75. We send book, "Complete Guide for Caponizing," with every set.

Address all orders to the

Des Moines Incubator Co.,
Des Moines, Iowa.

LITTLE BITS.

(From "A Few Hens.")

Start small.
Cull closely.
Put in a crop of rye.
Buy your stock now.
Inbreeding is a crime.
Keep a diary of events.
"Keep pegging away."
Keep a good watch dog.
Prepare for winter eggs.
Filth is a stumbling block.
Profit by your own experience.
Beware of the man who knows it all.
Don't winter stock that will be of no use.
Have the hawks and rats visited your farm?
Middle-toe feathering don't give any more
eggs.

NINTH CHAPTER.

ARTIFICIAL INCUBATION.

MOISTURE AND VENTILATION FROM A SCIENTIFIC STANDPOINT—TESTING EGGS—BEST LOCATION FOR AN INCUBATOR.

HEN EGG.

The amount of moisture given is always indicated by the size of the air cell. To see cell use tester.

Figures show correct average air cell during incubation. Figure 5, first day; figure 10, tenth day, etc. To increase the size of air cells open ventilators and run with little or no water. To retard development of air cell give full pan surface of water and close ventilators. But do

not close ventilators entirely, as the machine must have some ventilation. By using the tester you can see the size of the air cell at any time.

Moisture is the rock upon which many an incubator has gone to pieces. A proper amount of moisture is as essential as a proper amount of heat. The moisture or air saturation is effected by the size of the opening of the ventilators on top of the machine or the amount of pan surface exposed in the machine. A wide opening of the slide will reduce; a small opening will increase the moisture. We do not advise the use of a hydrometer, as they are unreliable.

After an experience of five years we have discontinued the use of moisture gauges, as machines are put in so many different places. We are unable to procure a moisture gauge that will work under the various conditions in which the machines are placed.

In starting the incubator give no moisture until the cells appear to be growing too large. There is no danger of drying up the eggs in a few days. Incubators located in a cellar hardly ever need moisture until the eggs begin to pip, and if any moisture shows on the glass door they do not need it then. When you put moisture pans in fill with lukewarm water. Clear, thin-shelled eggs will require more moisture than dark, thick-shelled eggs. The only absolute test is the size of the air cell in the end of the egg. This cell should be one-fourth to one fifth the contents of the egg by the pipping period. After the bird pips it enlarges and frequently no cell can be seen, although twelve hours before it was plainly visible. In a dry location if no moisture was supplied the egg would dry up, while if the air was saturated at all times no cell would appear. Moisture is not supplied to soften the shell. That is a delusion. It is furnished to prevent the air cells from becoming too great. The operator will soon notice thin porous shells dry down rapidly, while thick shells are slow about it. A general average will have to be struck. The purpose

of the air cell is to allow the chick room to expand its lungs and work its head around in breaking the shell. If sufficient room is not given the bird soon dies. Chickens should begin to hatch on the nineteenth day and all be out at the end of twenty-one days. Ducks twenty-six to twenty-eight days. Keep the doors closed when hatching. Remember that every time you open the door moisture escapes at the very time the chicks need it the most.

If a chick can not get out by its own efforts leave it in the shell, as it would never amount to any thing anyway. In the new design Successful machine the chicks and ducks are dropped below as soon as hatched and left until the hatch is over. The bottom of the machine should be covered with chaff or wheat bran and always cleaned out after each hatch is over. We use moisture pans above the egg trays so the chicks can not get into them and drown. Some people will not follow directions. They have their own theories in regard to artificial incubation, and then if they fail to get a good hatch the machine is blamed for not fulfilling their expectations. Many chickens die in the shell from improper ventilation. Air can not be seen and measured. The operator needs a little experience before the proper amount can be given. Too much moisture is nearly always given under the mistaken notion that moisture is what makes the downy balls pop out. Mistaken kindness. Eggs pip but are wedged fast in the shell and can not move. In very bad cases chickens get out of the shell but fail to absorb all the yolk and this sticks. Then the poor chicken, in moving around, pulls out its bowels. After several get out in this manner the tray presents a horrible appearance. Shells present a sticky appearance with white and green deposits after birds hatch. When chicks are very much shriveled and small, and air space very large, not enough moisture has been given. In a large number of cases poor hatches are caused by poorly fertilized eggs and the incubator gets all the blame. Eggs laid in cold weather in the winter months are seldom

properly fertilized. Eggs from birds in poor condition or in confinement may start to hatch but not having sufficient vitality they will die in an incubator or under a hen.

As we stated before, no rule can be laid down in regard to moisture that will suit every case, but in nearly every case when an incubator is operated in a cellar, as it should be, it will not require any moisture until the eggs begin to pip, and in many cases not then.

SUGGESTIONS FOR THE INCUBATOR OPERATOR.

Never set an incubator in the sunlight, or where there is a draft or current of air. Any variation of temperature between 101 and 105 is injurious, and if continued any length of time will kill the chicks, although a temperature of 108 to 110 for two or three hours will not kill the chicks, but will injure the per cent of hatch. Low temperature, on the contrary, will not kill, but will prolong the hatch and make the chickens weak. The chickens should all be out by the twenty-first day, the same as with a hen. If the machine is mismanaged in any way the hatch will be prolonged and the results poor. When the chicks begin to hatch let them alone. Do not assist them from the shell. Do not open the door oftener than is necessary, as the cold air on the damp chicks may kill them. Do not remove the chicks till the down is dry. It is not necessary to remove them at night. Turn the eggs twice daily after the second day up till the eighteenth. It is an excellent plan in turning the eggs to change the place of trays by putting right hand on the left side and *vice versa*, so that all the eggs at different times may be both in the center and on the outer edges of the egg chamber.

If the chicks begin to hatch on the evening of the eighteenth day too much heat has been carried. If they do not begin to hatch until the twenty-first day the heat was run too low. Turn away the curious visitor while the hatch is going on. Use moisture sparingly. Never sprinkle the eggs.

USUAL QUESTIONS ANSWERED.

How often should the tank be filled?

One filling will do for a whole season by adding just enough at the end of each hatch to make up for evaporation.

When is the best time to make the first test?

Some test on the fourth day, some on the fifth, but our rule is to test on the seventh day, it being the completion of the first week.

Could not eggs be added at different times after the machine is started?

No; the eggs would chill those already started and the conditions are different during the period of incubation.

Why does the temperature have a tendency to go up after the seventeenth day?

Because of self heat produced from life within the egg. At this time the lamp flame should not be so strong.

When should the egg be turned for the first?

On the second day.

When do you stop turning them.

On the eighteenth day.

Is there any difference in hatching duck eggs from the plans given for hatching hen's eggs?

No; with the exception that duck eggs require more air, because they are larger. When turning cool a little longer than you would hen eggs.

What is the right temperature for brooder when young chicks are first put in?

Ninety-five degrees and a gradual reduction as the chicks grow older.

Why does moisture show on the door of the incubator?

If run in a cool room, the moist air of the machine will condense on the glass.

What causes the chicks to die in the shell?

Improper ventilation, too much moisture, overheat, too low temperature, old eggs, too fat breeding stock, diseased stock, in-bred stock, and in fact, anything that will lower the vitality of the fowls or the eggs before and after incubation.

In winter the hen will not hatch but one-half of her eggs, nor raise one-third of her chicks.

Do not use extra large eggs or the smallest ones. Have all of normal size, and of perfect shape.

Do not hatch ducklings and chicks together.

No matter how much you read, experience will be your best teacher.

For further information address with stamps to
DES MOINES INCUBATOR Co.,
Des Moines, Iowa.

TESTING THE EGGS.

Fig. 1 shows a strong, fertile egg after the sixth day of incubation. Keep the thermometer on eggs like this one.

Fig. 2 shows a weak or imperfectly fertilized egg at the end of the first week. Throw out all eggs of this kind.

Fig. 3 shows a stale or spoiled egg at the end of the first week. It should be thrown out.

The principal object of testing is to watch the development of the air cell and to remove bad or dead eggs. By keeping out dead or unfertile eggs the operator runs no risk of getting the thermometer on a cold egg and overheating the live ones. The removal also aids in keeping the air pure.

The germ of a duck egg can be seen in thirty-six hours by shading the egg with the hand when held up to the light. Duck eggs should be tested frequently, as they decay very rapidly and create a bad odor in the machine. To test the eggs remove the tray from the machine and close the door. Testing will not injure them if the hands are free from any greasy substance. Use tester in dark room on an ordinary hand lamp in place of glass chimney.

Contrary to what some people think, all eggs will not hatch. The percentage of a hatch is the number of chicks from the fertile eggs, not from the number of eggs placed in the machine. It frequently occurs that eggs are fertile, but the germ is so weak that it will seldom live after the tenth day. Eggs should be tested on the seventh day and again on the fourteenth day. A strong germ will show a small black spot with red veins radiating in all directions, and will present the appearance of cut No. 1 on the seventh day. Addled eggs will show cloudy, detached black spots floating in the egg without any veins attached. (See cut No. 2.) A circular red line will be found in such eggs, and they must be removed or foul odors will be the result. Cut No. 3 shows a stale or spoiled egg at the end of the first week. An unfertile egg will be perfectly clear and nearly as good as a fresh egg for cooking purposes, at the end of the first week, and will not rot if left in the incubator three weeks. Eggs should be thoroughly tested for an unfertile one will show two or three degrees less heat during the last part of incubation than a fertile egg, and by having the thermometer on an unfertile egg you may be running the heat so high as to injure the hatch. On the tenth or twelfth day

the chick begins to move and the egg is entirely opaque excepting a small space in end called the air cell. The latter varies in size according to the amount of moisture and ventilation used during incubation. By setting eggs under hens at the same time, an excellent idea of the proper size of this air cell may be obtained by comparing them every few days. A study of nature's methods will do much to help the operator of an incubator.

BEST LOCATION FOR INCUBATORS.

A good cellar is considered one of the best places to run an incubator.

Our next choice of location would be in a basement room. Good work can be done in any inclosure that is free from foul odor, mold, or dampness, and sufficiently secure that sudden changes of the weather will not easily affect the inside temperature. Many prefer a cave, made especially for the purpose, and often high per cent hatches are made in such inclosures. The greatest difficulty with incubator caves, is to overcome dampness. Care should be taken that the excavation is made on ground naturally dry, and with good drainage, sloping to the south. The walls inside should be protected with either cement or stone, and some provision made for a little ventilation. An inclosure of that kind is another excellent place in which to operate an incubator.

However, some pay very little attention to the location. We know of many instances where results have been splendid and the machine run in the kitchen. Again we have had brought to our notice remarkable results where the hatching was done in a garret, in a three-story building.

While a nicely arranged incubator room or cave affords advantages and convenience, the best hatches are not always secured in such places. The method of operating is of equal importance.

Never set an incubator in a location where the sunlight shines upon it, or where it is subjected to drafts of air.

VENTILATION FOR INCUBATORS.

(From our Direction Book.)

Don't labor under the mistaken idea that a current of air must be constantly rushing through the incubator chamber. Too much air admitted to the eggs will dry them up too rapidly. Too little ventilation will cause the chicks within the eggs to develop too fast and the air cell will become entirely closed. With no room to expand its lungs, or move its head to break the shell, the chicks will die, apparently fully matured. The proper amount of ventilation will depend on the condition of the weather, the season of the year, and also where the machine is being operated. When the weather is warm, and during the summer season, give more ventilation, and a less amount through winter and early spring. Watch the air cell by examining with egg tester every other day after first week. Select four or five from different parts of each tray, which will give you their average condition. It does not injure the eggs to handle them, providing the hands are free from grease and perspiration. The air saturation or moisture is affected by the size of the opening of the ventilator. With the slide opened full the air space within the egg grows larger, while if only a small amount of ventilation is admitted it grows smaller. Therefore the safest and best rule for the guidance of the operator, as to ventilation and moisture, is to become familiar with the amount of air space needed within the egg and watch it carefully. In a perfectly tight machine, with the ventilators closed throughout the hatch and no attention paid to cooling the eggs, the strongest germs would not live longer than the fifteenth day.

TO START AN INCUBATOR.

(From our Direction Book.)

The first important point necessary for a good hatch is *fresh*, fertile eggs.

Eggs three weeks old, when properly cared for, that is, kept in moist, cool, airy places, set on end and turned every day, will hatch well,

but not as well as fresh ones. If it is necessary to keep the eggs for some time before they can be put in the incubator, pack them in an egg case, nail on the cover and place it in the coolest corner of your cellar, where the atmosphere is pure and the temperature from 50° to 65°. Turn the case over every day.

For your incubator select such eggs as you would use for setting under hens. Should the eggs be soiled, remove all dirt with a clean cloth and warm water, free from soap or grease.

Put all eggs in at one time and complete the hatch. The trays full or part full, that is immaterial.

Eggs cannot be incubated successfully by adding them at different times in any machine — not even under the old hen.

Don't attempt to hatch hen eggs, duck eggs and turkey eggs all at the same time. Some think an incubator ought to do this, and fill in the corners with bantam eggs besides. One kind at one time will work best.

When you have all the eggs in the trays for this hatch, place the thermometer three or four rows back from the front with face outward, slightly inclined with the bulb between the eggs, just a trifle above their centers or its upper edge on a level with top surface of the eggs. Never place the instrument in a standing (vertical) position in any incubator.

When the machine is first filled with eggs, the temperature will go down and will require from six to ten hours' time for it to come back to 102; but bear in mind that it must not be hurried by increasing the lamp flame. The heat must raise gradually.

For the first four days run the temperature from 102 to 103; after that time keep the heat at as near 103 as possible, but be sure it does not fall below that point after the nineteenth day. Test on the seventh day, and leave out all eggs that are perfectly clear, also those that are dark and cloudy.

NUMBER OF DAYS REQUIRED FOR HATCHING
DIFFERENT VARIETIES OF EGGS.

Chickens.....	21	Swans.....	38
Pheasants.....	25	Pea Fowls.....	28
Ducks.....	28	Partidges.....	24
Geese.....	30	Guinea Fowls.....	25
Turkeys.....	28	Ostriches.....	42

THE POSITION OF THE THERMOMETER WHILE
HATCHING.

When operating your incubator it is important that the thermometer bulb lies against fertile eggs, or rather between two fertile eggs, with its top about on a level with their upper surface. An unfertile egg or one containing a dead germ is colder than one having a living embryo, and such eggs are liable to mislead the operator as to the correctness of the heat being carried. An egg containing a dead germ will soon decay, and the odor it will create in the machine will be very offensive if not injurious to the other eggs.

When the chicks begin to hatch, do not open the doors oftener than is necessary, as it allows the moist heat to escape when it is needed most. In our Successful incubators when the chicks become strong enough to run about they will soon find the openings in the tray or the space between the trays which will admit them to the nursery underneath, where they can remain comfortably until the other eggs are hatched. We have found that it is an advantage to the chicks to let them remain in the incubator at least twenty-four hours.

IN CASE OF ACCIDENT

from any cause, should the heat in the egg chamber go to 110 or 112, don't imagine your hatch is ruined. Remove trays from the machine and cover them with a clean cloth, first dipping it in warm water and ringing out just so it will not drip. Cool the eggs down to about 85°, leaving the doors of the machine open while cooling in this case.

TURNING AND COOLING THE EGGS.

While hatching turn every twelve hours, commencing on the morning of the second day.

Stop turning and cooling hen eggs on the evening of the eighteenth day. Duck eggs on the twenty-fifth day. Commence to cool on the morning of the fourth day, by removing the trays and closing the doors of the machine. Avoid placing the trays where a draught of air will pass over them. Have thermometer in same position as before removing the trays, and cool down to about 90. By careful observation we have found it best not to cool below that point. At first the eggs will lose their heat in a very few minutes, but as the hatch advances they hold the heat longer and will require more time to cool. During the months of April and May it will often prove beneficial to leave the trays out of the machine thirty-five or forty minutes on the seventeenth day. Cooling and turning should be done at the same time. If it requires ten minutes to cool the eggs, turn them after the trays have been out of the machine five minutes.

INCUBATORS AND BROODERS COMBINED.

They look very attractive, that's all. If you are taking up the poultry business on that score we have no further argument to offer; but if you expect to combine profit and success with it we would not advise you to combine the brooder with the incubator. To make both machines profitable, they must be operated under entirely different conditions, different locations and different temperatures.

TENTH CHAPTER.

SHIPPING BREEDING STOCK—AN OSTRICH
FIGHT—THE PROPER WAY TO ARRANGE
HEN'S NEST—VALUE OF GOOD BLOOD—
VALUE IN CLOVER.

We publish the following, as it comes from actual experience, and contains matter that will prove valuable to the amateur:

A SUCCESSFUL SEASON.

(E. O. Roeselle in Country Gentleman.)

A successful breeding season is the delight of the poultryman's heart. Whether the season just finishing has been up to the mark with the majority is impossible to say. We hear rumors that eggs have not hatched out over well, yet this is an annual complaint, and but little attention should be paid to it. With all the advantages of modern incubation, both natural and artificial, and the better understanding with regard to the care of the old stock, eggs should be as fertile one year as another, and they should hatch equally well. Some seasons hens are inclined to sit early and others late, but as we are no longer dependent upon the whims of Mistress Biddy, it is the breeder's fault alone if he refuses to use an incubator and waits for tardy hen to make up her mind to hatch him some chicks. I will venture to say that the breeders who use incubators and know how to run them successfully utter fewer complaints about poor hatches than the conservative hen men.

Artificial incubation is undergoing changes every season, and improvements are constantly being made, not so much by the inventor, but by the operator. In fact, the operators usually make valuable suggestions gratis to the manufacturers, and they are gladly accepted and added to the revised catalogues. The stumbling blocks of a very few years ago have been removed, and to-day, and rather during this hatching season, the machine men have had many advantages and better opportunities for greater success than the last. The two great points of moisture in the machines and heat in the brooders have not yet been thoroughly tested to satisfy the majority.

A few remarks on my own season — the most successful I ever had — may be of benefit to the discouraged ones. To begin with, I discarded the hen as a sitter and hatcher last year and made up my mind I had had trouble enough with her, and hence I used machines entirely. I shall not write a record of my season, but simply give a few points, which I consider led to my success. First, I used no moisture whatever in my machines. My hatches averaged about 88 per cent of all fertile eggs. After the chicks were all out, I left them thirty-six hours in bottom of machines, and some hatches as long as forty-eight hours. The result of this was strong, active, hungry youngsters, ready to stand the change to the brooder and strong enough to keep their legs under them and ready to eat at once. Every hatch was removed at night to the brooder and started at 90 degrees. The next day they all remained almost constantly outside of the hover in the indoor runs and were ready for their feed every three hours. The second night I made it a practice to reduce the heat to 85 degrees, and kept it so generally for one week, some times a little less than a week. On the fourth day I let them outdoors, to run in and out freely, and found they would invariably cover the entire length of the outdoor run (twenty-five feet) almost continually. I must state, however, that my first hatch was not placed in

the brooder until about April 1st; hence the weather was suitable for outdoor exercise.

My feed was the same I had used for two previous years—corn cake, with the addition of bone meal and a handful of small sized grit to every mess, thus compelling them to eat a little of the grit with the food. Instead of feeding every two hours, I fed about every three, and sometimes at longer intervals, taking pains to note that they were quite hungry before feeding them. Keeping them hungry compelled them to exercise and helped to keep them healthy. After one week, I fed them small grain and sifted cracked corn and reduced the corn cake food to morning and night feed. I gave them green food usually the second day and continued it daily—first oats, grown in pans, and then, as soon as obtainable, lettuce. Charcoal and water were always before them; also a box of chick grit.

The result of the above system gave me strong, active chicks, and less bowel trouble than I ever hoped to see in any flock. In fact, I have had so little of this trouble that it has been hardly noticeable.

At the end of the week, the heat in the hover was reduced to 75 degrees, and kept so until they were five weeks old, when they were shut out entirely from the heat and hover and left at night in the indoor runs; and if the weather proved to be warm, the windows were left open all night. The indoor runs are six feet long; hence the chicks were about six feet or less from the open windows and sufficiently protected.

To follow the course I pursued after the chicks were five weeks old, I placed them in the upper end of the brooder house where they had the run of two or three acres free. Later I separated them, dividing them into flocks of 15 or 20, and placed them in drygoods boxes for coops, giving them free range and feeding them three times a day—a mash in the morning, and whole grain noon and night, all they could eat. At present I have about fifteen hundred very strong, active chicks, of different ages, but all healthy and fine in every way.

I tried an experiment with my last hatch, which came off July 2. As the weather began to get hot and I did not care to run my brooder-house stove to accommodate 78 chicks, I shut off the heat entirely when they were six days old, and they did not suffer any bad effects, nor did I lose one of them. They are all alive to-day, July 12, and no sign of bowel trouble or any other sickness. These were let out of doors when but two days old, and did as they pleased running in and out.

I attribute my success to attention to the following points:

1. Keeping chicks in machine at least 36 hours after all were hatched.

2. Feeding only when hungry and not too much.

3. Grit and bone meal mixed with all soft feed from the first day.

4. Reducing heat in brooder as quickly as possible and as soon as chicks could stand it.

5. Plenty of fresh air and exercise and as soon as possible after being placed in brooder, weather permitting.

My method has given me the strongest lot of chicks I have ever had. My mortality has been remarkably small.

When my brooder contained twelve hundred chicks I would throw out perhaps two or three dead ones each day. Just as soon as they had a more extended run and were separated and given free range, to find a dead chick was a surprise.

I do not consider that my success is phenomenal or that my system is at all extraordinary. It was all based on common sense and judgment. Many other breeders may have done better, but I know a few who did not do as well and it is for the latter that my experience is written. Beginners are too much the slaves of book instruction; they become automatons and do not exercise any sense or judgment. What will succeed with one man will fail with another. Experiments may be expensive, but they are our best teachers.

Incubators run best in cellars, but all cellars are not alike; hence one needs to experiment with his own to understand its qualities, especially as to dryness or moisture. Mine happens to be a trifle damp; therefore, my machines run best without moisture, and with slides wide open from beginning to end of hatch, except during pipping stage, when they were closed two-thirds. All hot water piped brooders are similar. By raising or lowering of the floor of the hover I can raise or lower the heat of the chicks; bringing them close or dropping them away from the pipes. The food question is a personal study. If chicks grow and thrive continually from the start, then the food is right, no matter what is used. If you are annoyed with bowel trouble, then the food or heat, or both, are to blame. Chicks will never become chilled if they have suitable heat. I consider that too hot brooders have killed more chickens than all the food used by the whole world of breeders. If chicks become accustomed to less heat gradually they will grow strong enough to do without it entirely in a few weeks. This is especially true from April on during the regular hatching season.

To those who have had poor hatches and have failed to raise the survivors, my experience may be of benefit for another season. Do not sell your machines; if they are of the standard make and reputation, try them once more. If your brooders have failed to work experiment with them and make them work. Use practical common sense and let theory and fairy tales alone, and perhaps your next season may be your best.

We are inclined to believe that Mr. Roessle would find it necessary to carry a little higher temperature for brooding chicks during the colder seasons; 70 to 80 degrees of heat is not sufficient to prevent young chicks from "piling up" during the early spring months.

DES MOINES INCUBATOR CO.

THE VENTILATION SCOURGE.

If there is one error in poultry keeping supreme over all others it is what is called ventilation. In our experience we have yet failed to find a single person who rode this hobby who has not done more harm to his flocks than has resulted from the cholera, roup, or other diseases. We may, however not be far wrong when classing ventilation and roup as twins, for, as a rule, where there is plenty of ventilation there is plenty of roup. Just how the theory was ever launched forth, that a flock of hens would suffocate in a warm and comfortable poultry house is more than we can learn.

SHIPPING BREEDING STOCK.

First of all measure the fowls to be shipped, and give them plenty of room to stand erect and move about. Make a light frame with floor of quarter inch stuff, and cover ends, one side and top with burlap or strong muslin well tacked on. Put feed hopper in one corner at least six inches high, and water cup outside in front, where the fowls can reach it between upright slats. Use chaff or straw on the floor. If the fowls are going a long distance a small bag of gravel should be provided. These suggestions are intended to apply only to shipments by express on land. For shipment by water an entirely different style and make of coop should be used. Young chicks, broilers, should be shipped to market in neat wooden crates, sufficiently high to allow the birds to stand erect. Twenty to twenty-five should be the greatest number put in one inclosure.

AN OSTRICH FIGHT.

Two of the largest ostriches at the Norwalk ostrich farm yesterday fell out about something. They were together in the same corral, and at once set to work to annihilate each other. The battle was a bloody one, and will probably result in the death of one of them, called "The Marquis."

As soon as the birds commenced fighting their keeper tried to separate them, but met the usual fate of a peacemaker, receiving a dangerous kick on the leg. The "high kickers" then continued their fight, and it was not until "The Marquis" was severely wounded and hardly able to stand up that he gave up, and it is extremely doubtful whether he will survive. There are now on the Norwalk farm 150 full grown birds, and fights between the old cocks frequently occur, but seldom with such dangerous results. The value of the wounded bird is about \$125.—*Los Angeles Times, February 25th.*

A PROPER AND CONVENIENT ARRANGEMENT FOR NESTING.

One of the most important fixtures connected with a poultry house is the arrangement of nest boxes, and we doubt if a more complete or convenient device could be made than the one illustrated herewith.

The long box with sloping top is stationed against the wall inside the poultry house, about eighteen inches above the floor.

The hen enters the alley, takes possession of one of the darkened nests, and apparently has no desire of seeking a more secluded spot. The darkness of the nests will prevent egg-eating.

The eggs are gathered by lifting the cover. The convenience of this sectional nest box can be improved by attaching the front board to

hinges at the bottom, then it can be let down and the different apartments can be cleaned out.

If you provide plenty of nests in a dark place you will not be troubled with hens stealing their nests out.

Carbolic acid and coal oil are no friends of lice, at least the lice never keep company with these parties.

VALUE OF GOOD BLOOD.

October and November is the season of the year when you should cull out the fowls intended for market and reduce your flock to the number you intend to winter. In the first place, if you have just the common barn-yard fowls, you should dispose of every male bird on the place, and replace them with a required number early hatched thoroughbred cockerels or yearling cocks. Decide what breed you prefer. If your aim is to produce eggs, get the Minorca or Leghorn males; if general purposes, the Plymouth Rocks or Wyandottes; or if heavy-weight market fowls, Light Brahma, Indian Game or Langshan. Send to some reliable breeder and get your birds, then stick to it and you will soon have a flock of fowls that you and your neighbors will be proud of, and your increased receipts will pay the cost of the new brood many times over.

While on this subject we would like to relate an incident that occurred within our own observation. Two years ago last spring we persuaded a farmer friend who had a splendid location for raising fowls, and whose wife was very successful in their raising, but who had none but the common barn-yard fowls, to get rid of all the males and purchase six good Indian Game cockerels, paying \$12 for them. In the following October he made this report: He had penned up eight dozen of the largest cockerels for a huckster who had bought his surplus for years, without seeing the fowls, but knowing what they had been in past years. The huckster offered to pay either twenty-five cents each, or seven cents per pound. They were sold

by weight and netted forty-one cents each, or a clear profit of \$15.36 on the lot, due to the cross with good males. This one lot more than paid for the six cockerels, and the permanent benefit on the remainder of the flock was many times as much more.

GREAT VALUE IN CLOVER.

Many poultrymen fail to realize the value in rowen cut clover as a feed for their stock during the winter season.

It should be of the second crop, cut while green and tender. Carefully preserve all the leaves and blossoms, and when cured store it away in a clean dry place, or pack it in barrels.

To feed it properly it should be cut fine. At night scald it in a tub or bucket by pouring boiling water over it, then cover well with an old blanket or carpet, and let stand over night. In the morning it will be still warm, and possess a savory odor that will almost tempt you to eat it yourself.

After scalding over night, to every bucketful of cut hay add one pint of ground corn, one pint of ground oats, one quart of wheat bran, and just enough salt to season. Mix well. Feed in a trough so arranged that it will prevent the fowls from getting into it, and give them all they will eat once a day.

The above mentioned amount will feed about 30 matured fowls, and they will relish it highly. No other green food will be necessary. A half pint of wheat scattered in the litter will induce the flock to indulge in that necessary exercise which aids so much in keeping them healthy.

We can assure you that if the clover feed is tried one season it will not be discontinued.

ELEVENTH CHAPTER.

SELLING PRESERVED EGGS — BUYING EGGS — KEEPING SCRUBS.

PRESERVING EGGS.

After experimenting with several different methods of preserving eggs for winter use and for market, we are convinced that simply packing in salt is the easiest and best method for housekeepers who desire to put down a few dozens for winter use, and poultry keepers who have only a barrel, or two or three barrels to pack for the market. They may be packed in anything that is clean and handy — boxes, barrels, jars, tubs, pails, etc. The eggs for this method of preserving, as for all others, should be fresh, clean and uncracked. Cover the bottom of the barrel, or whatever you pack in, with salt; upon this place the eggs, on end, and far enough apart so that they will not touch each other, or the sides of the barrel; then put on another layer of salt, then another layer of eggs, and so on until the box or barrel is full. Keep them in the cellar and do not turn the package as some poultry writers recommend. When the eggs are packed on ends as they should be, the turning of the package upside down every few days is not only useless work, but it is positively injurious to the eggs. We have tried both ways and know whereof we write.

We have kept eggs thus packed from the middle of April until the middle of October in a cellar where the temperature ranged from 50 to 60 degrees and they were good, every one of them, at the expiration of that time.

The item of salt enough to pack several barrels of eggs looks large on the debit side of the account and probably the cost of salt is one of the reasons why the method is not more generally used ; but after all, the salt method is not so expensive in the long run as it seems at first thought, for the same salt can be used over and over again. The grade of salt used is that known as coarse fine.

Remove all males from the yards when eggs are desired for packing. Contrary to what some may think, the production will be just as great, but they will not hatch.

ABOUT SELLING PRESERVED EGGS.

Don't hold them too long. It is usually better to sell in November and December than to wait longer. You certainly should not hold preserved eggs until February and a long into March, as we have known some inexperienced packers to do. After the middle of January the price of preserved eggs go down hill in proportion as fresh eggs come into market. And don't try to sell your preserved eggs for anything except just what they are. When you send a consignment to your commission merchant mark the packages plainly, "Preserved eggs," and in the letter which always should be sent when the eggs are shipped or one mail before, you should also state that they are preserved. Of course the men who inspect the eggs upon arrival will know as soon as they see them that they are not fresh laid, but your stating in the letter that they are preserved, and so marking the package, will show that you are honest and not trying to pass off preserved eggs as fresh.

When shipping by express it is advisable to put a duplicate of the letter sent by mail in one of your packages and mark this package "bill," on outside. This letter of advice holds good when you are shipping anything, fresh eggs, preserved eggs, dressed poultry or any kind of produce to be sold by a commission house, for it vexes commission men to receive a consignment without instructions.

Every year or two some one who is anxious to make a living without honestly working for it, advertises some "new and infallible recipe" which they claim will preserve eggs for any length of time so perfectly that no one can tell them from fresh laid eggs. Thousands of these recipes are sold at prices ranging from one to ten dollars, but instead of being "new and infallible" they are "new and worthless."

BUYING EGGS.

"What! \$5 a setting for eggs?" says the buyer. "I can get them all around me for 25 cents a dozen." So far the buyer is correct. Nobody wishes to pay \$5 for thirteen eggs, but is the buyer when he wishes to purchase, desirous of *eggs or stock*? Eggs contain the germs of future offspring. An egg is but the temporary receptacle of that which must be warmed into something else. The egg, as a substance, has only a nominal value, but the egg, as a means of procuring a noted strain of superior fowls, possesses a value beyond its use for ordinary purposes. A Jersey calf, which is the foundation upon which a noted herd may be constructed, could not be bought except at a very high price; but the butcher would not pay a penny per pound more for it as veal. The animal comes from an egg, which is hatched by heat at a regular temperature *inside* the body, while the chick comes from an egg, but hatched *outside* the body. Man, all animals, and some kind of fishes are hatched from eggs, strange as it may seem, but under different systems from that pertaining to fowls. Mammals bring forth their young ready hatched, but fowls bring forth young and hatch them afterwards. A wise provision of nature thus permits of the rapid multiplication of birds, which would be an impossibility were the young produced the same as with animals. The hog, cat, dog and other animals are capable of producing more than one young at the same time, but they must provide nourishment for them by converting food into milk. Birds feed their young with the food in its natural condition,

and are not capable of nourishing a brood within the body during the process of development.

The egg, then, being the produce of the parents, represents the young of such, and should be valued according to the worth of the parents. It matters not from what breed of fowls the eggs may come if they are intended for the table, for the price may be regulated by its domestic uses, but in purchasing eggs for sitting purposes let it be remembered that they contain the germs of something grander and more beautiful than the common scrubs that have no name nor family lineage.

USING AN INCUBATOR.

(Copied from Poultry Keeper.)

The incubator should be ready for use by February 1. The hen will answer fully as well but you cannot make the hens sit, while the incubator can be started up at any time. An incubator holding 200 eggs will do the work of twenty hens and will hatch out the chicks at one time. It is better to have a large number of chicks, as it requires no more labor to attend to 500 chicks than it does for one-fourth that number. The first hatch should be experimental ; that is, do not expect the best results, but determine to learn "the idea" of the thing, and by the next hatch the work will be easier. Hens do not become broody, as a rule, in the winter season, but it will be necessary to hatch out the broilers in the fall and winter in order to get them in the market in the spring. The most important matter is to use good eggs. Select them from the most vigorous stock, and discard all eggs that are not perfect in every respect.

"A GOOD incubator will always be found a profitable investment to those who raise poultry to any extent.

KEEPING SCRUBS.

One reason for the lack of interest in poultry on the part of the farmers, is the failure to

manage the flock in a manner to secure the largest returns possible. It is an astonishing fact that many farmers are incapable of classifying poultry. They know very little in regard to the breeds, and although they recognize the importance of breed in animals, yet they permit their fowls to become inbred, and take no care regarding the uniformity of the flock, or of the eggs and dressed carcasses derived therefrom. Did any farmer ever calculate how much he loses by keeping scrub fowls? If we estimate the price of eggs for the entire year at 20 cents per dozen, and the flock to number fifty hens, the difference of only one egg per month from each hen (a dozen eggs per year) will entail the loss of \$10. Will it not pay, then, to use a breed that will permit of each hen laying one egg more in the month? Viewed from this standpoint the common hen is a costly luxury. We do not class grades or crosses with scrubs, but the common barn-yard fowl that is bred from any source, or by accident. The pure breeds can be made to perform the service characteristic of the breed selected, and when the farmer gives poultry the same attention in breeding as is devoted to larger stock, he will find that, in proportion to capital invested, poultry will prove the most profitable stock on the farm.

SUNFLOWER SEEDS.

Fortunate, indeed, is he who has a plenty of sunflower seed for his poultry. They are especially an excellent feed while the fowls are moulting. The oily nature of these seeds tends to assist the natural dropping out of the old feathers and their rapid replacement with the new, fresh growth. They are also useful for feeding in small quantities right along, as they keep the bowels regular and active and the plumage of the birds glossy and smooth, a very desirable condition in the case of fine exhibition stock.

MOULTING HENS.

As soon as the hens begin to show nakedness, and also to commence dropping their feathers,

but few eggs should be expected, as the hens will rest from their work until they take on new plumage. The sooner they put on their new attire the sooner they will begin to lay. The best food for them is lean meat, or fresh bones from the butcher, but as all oily foods hasten moulting of the feathers, a pint of linseed meal may be added to their food daily for twenty hens. Feed the moulting hens once a day, and give them liberty on the range.

STORE A SUPPLY OF DIRT.

Get in a supply of dirt before winter. Have it dry, and place it where it can be used conveniently. Dirt is important, as the hens use it for dusting. It also absorbs droppings, serves as a deodorizer, and makes it easy to clean out the poultry house. A bushel of fine dry plaster, mixed with ten bushels of dry dirt, will be an advantage. Keep the dirt in a dry place, free from dampness.

MILK AND BUTTERMILK.

Milk and buttermilk or whey may be given to hens at all seasons, but it should not remain in the vessels to be exposed to the sun, or to ferment and become sour. For chicks only the sweet milk should be used, and it is best to scald it. The proper way to give milk is to use it early in the morning, and remove all that is left over.

A man who combines poultry raising and dairying, and is not prejudiced in favor of either, says that twenty-five good fowls will earn as much as one cow.

This is worth the consideration of men with small capital.

The \$12 Chapman's "Ideal" Green ... Bone Cutter ...

CAPACITY 35 LBS. PER HOUR.

The most SUBSTANTIAL and PRACTICAL machine made. We have tried them all. They run Easy. Any ordinary child can run them. EVERY MACHINE WARRANTED. Weight of this cutter is 100 lbs., 22 inches high. Cylinder contains 112 square inches. It will cut bones $4\frac{1}{2}$ in. diameter by 7 in. long, which is a larger bone than any \$18 bone cutter on the market can take, excepting the "Ideal."

It has 3 knives with a cutting surface of $5\frac{3}{4}$ inches. The "Ideal" is made with Hardened Steel Roller Bearings, and is the only cutter in the WORLD made in that way. It cuts all kinds of bones, green or dry, and all kinds of vegetables. If you wish to improve the HEALTH OF YOUR STOCK, double your egg products, and at the same time lessen the food expense, secure one of these cutters. Ten Different Styles; prices range from \$10.00 to \$26.00.

Address DES MOINES INCUBATOR CO.

We Manufacture

A FULL AND COMPLETE
... LINE OF

Brooders

Hot Air,
Hot Water,
Indoor,
Outdoor,

... AND THE ...

Sectional Hot Water
System,

Ranging in Prices from

\$8 to \$30.

The illustration on the opposite page shows our 200 capacity Hot-Air Brooder, price \$12, and is of great value to every one who raises Poultry, even if no incubator is used.

It is an Actual Fact

that during the Season of 96-7 every Brooder sold gave the purchaser entire satisfaction.

We Manufacture

HOT WATER AND
HOT AIR

Incubators

From 50 to 800 capacity, combining the latest improvements known to the Incubator art.

Hot Water and... Hot Air Systems

A 208 SIZE HOT AIR INCUBATOR, WITH PATENT TRAYS.
264 WITH THE WIRE TRAYS.

Send 6 cents in stamps for our new Catalogue and Poultry Book combined, showing illustrations and describing the greatest line of Incubators and Brooders made by one firm.

ADDRESS

Des Moines Incubator Co.

DES MOINES, IOWA.

LIBRARY OF CONGRESS

0 002 866 840 5