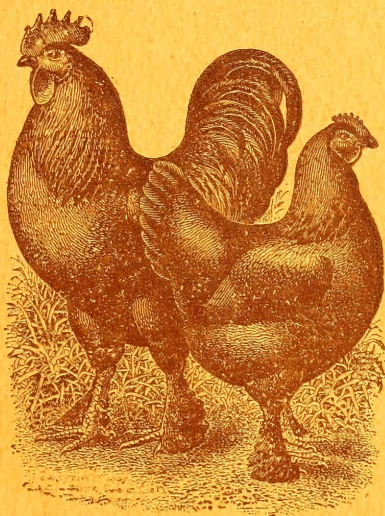


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POULTRY EXPERIENCE



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**THE EMPIRE
POULTRY BOOK**
DENVER, COLO.



POULTRY EXPERIENCE

THE EMPIRE
POULTRY
BOOK

A Practical Reference Manual
For Poultry Keepers



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BY E. GROSSER, DENVER, COLO.

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INTRODUCTORY

This book is written to advertise my poultry preparations and to give publicity to facts and theories which I trust will be instructive.

It has the merit, if merit it be, of truthfully recording the results of personal experience and observation. For over twenty-five years I have had to do with poultry. During this period I have tried to keep abreast of the literature and bulletins relating to the industry.

Upon the information thus gained is based what appears in the following pages.

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E. GROSSER.

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The Poultry Industry

The last United States census report gives the yearly value of eggs produced and fowls raised in this country in round numbers at \$600,000,000. This equals in value the annual wheat production. It is larger by far than the output of our silver and gold mines. It represents about five times the total tobacco crop. In dollars and cents it brings in as much as the crops of oats, barley, rye, buckwheat and sugar beets combined. The poultry industry is growing. Secretary Coburn of the Kansas Agriculture Board estimates that in his state in five years the output of poultry products increased from seven to eleven million dollars. This rate of increase may not be general over the entire country, but it is safe to say that wherever fowl are raised the business is increasing.

The reasons for this increase are not far to seek. The population of the United States is steadily growing. The supply of available land for agricultural purposes has about reached its limit. Hereafter instead of opening new lands the country will have to depend upon more intensive farming. Our Western ranges, where formerly roamed cattle by the thousands, are, many of them, cut up into small grain farms.

The United States Department of Agriculture in Farmers' Bulletin No. 575, issued Feb. 7, 1914, estimates a shortage of 8,536,000 head of cattle,

6,509,000 head of sheep and 3,214,000 head of swine. People who wonder at the high price of meat may find food for reflection in these figures. Conditions that increase the price of meat products are bound to stimulate the poultry industry.

An effective aid to urban and suburban poultry raising is the rapid transit street car system. Formerly the city was always congested. People were compelled to live close together so as to be able to get to their work. The trolley line has changed all that. It has enabled the city to spread out. People have more room. Many of them take advantage of this and put in a pen of their favorite fowl. They thus combat the high cost of living and provide a pleasant recreation. A thrifty flock of hens in the back yard adds a touch of nature to the surroundings. Strictly fresh eggs from his own flock and nice tender spring chicken are luxuries to the man, a good part of whose diet ordinarily consists of canned stuff.

Since intensive farming must become the rule in this country, we may safely conclude that the future development of the poultry industry will at least equal and probably exceed any growth it has made in the past.

Empire Poultry Powder

Empire Poultry Powder is a tonic compound that may profitably be fed to poultry of any age or stage of growth. The formula for making Empire Powder was originated by a veterinary surgeon who for many years was in the service of the United States government at various Western military posts.

The study of poultry was to him a recreation and diversion that took up most of his leisure time. He understood the anatomy and nature of our domestic fowl better than any other man I ever knew.

For over fifteen years I have used this powder with my own flocks. When I first began its use I had no idea of ever placing it upon the market as a commercial proposition.

When I went into the fuel and feed business in North Denver I had a good many customers who kept small flocks of poultry. Incidentally I heard a good many tales of woe. Hens wouldn't lay and chicks persisted in dying. I kept and sold the leading poultry preparations on the market. Often these seemed to help and just about as often they did not. To some of my customers I gave free gratis a quantity of the powder I was making and using for my own hens. Right there my trouble began. I soon had more requests than I could conveniently grant. But people were willing to pay, so I prepared a quantity of the powder and sold it

in bulk at twenty cents a pound. This sold so readily that I finally decided to put up the powder in regular package form, the same as other preparations of the kind were put up. My fuel and feed business was known as the Columbia Fuel and Feed Co., so I labeled my poultry powder Columbia Poultry Powder. A good many people in North Denver and in other parts of the city as well, will no doubt remember using Columbia Poultry Powder. It sold well. It brought people into my place of business who would buy a package of the powder and afterward would become regular customers for feed and coal. I also began putting out the powder through other dealers in Denver and surrounding towns, and then I ran into a snag. There is a concern in the East that for years has been marketing poultry remedies and preparations under the name of Columbia. When my product became known I was informed that I was infringing upon another man's name and trade-mark and that unless I desisted I might expect a damage suit and be enjoined in the courts. I was not looking for any trouble of this sort, so I destroyed my labels and after some deliberation decided I would name my preparation "Empire." There is no special significance in the name except that no other line of poultry and veterinary preparations that I know of is known by that name and the word Empire is frequently used as a name for business enterprises.

In addition to the Tonic Powder, I manufac-

tured an insect powder, a head lice ointment, a liquid lice killer and disinfectant, a germicide and roup cure, to be used in water, and a line of veterinary remedies. I make and sell these preparations under the name of The Empire Tonic Co.

It is readily understood that the kind of medicine used for any trouble should be governed by the nature of the disease to be treated. Different ailments require different treatments. The same disease often requires different treatment in different climates. The principle also applies to diet. The Eskimo would perish if compelled to subsist upon rations common in the tropics, and the man at the Equator would be equally bad off if limited to a polar diet. These facts should be remembered when giving condimental powders or foods to poultry or larger live stock. I do not believe that there is a condition powder made that is equally well adapted for all sections of the United States. My attention was first called to this when I was in the feed business and selling the leading brands of poultry and stock powders. People who perhaps for years had used a certain condition powder in the East would use it here and find that they were getting no results. Sometimes they seemed to doubt whether they were getting the same preparation. The powders were the same all right enough but the climate and conditions under which they were used were different.

Empire Poultry Powder is made in Denver

and is sold only in the mountain states. For the high altitude and dry climate of the West it is superior, I am confident, to any other preparation of the kind on the market. In making this claim I speak from personal experience with my stock and from the voluntary testimony of hundreds of pleased poultry keepers who are using the powder. Empire Powder fed to chicks from the time they are two or three days old will protect them against the diseases that lay such heavy toll upon chick life and it will keep the mature stock in health and prime laying condition.

EMPIRE LICE KILLER.

Empire Lice Killer, a powder, is certain death to insects. It is of most service with setting hens. The setting hen that is dusted two or three times with Empire Lice Killer will bring off her hatch without a louse. It will also keep chicks free from the lice pest. Dusted into the laying nests occasionally it will keep down lice and mites by killing them in one of their most prolific breeding places. The lice killer is harmless to chicks and larger fowl. It will also destroy insects upon plants and is frequently used for that purpose.

EMPIRE HEAD LICE OINTMENT.

As its name indicates, Empire Head Lice Ointment is a preparation designed to rid chicks of head lice, the large blood-sucking louse that bores

through the skin on the head and other parts of the body. The ointment destroys not only the head lice but absolutely kills every louse upon the body of the chick. The losses caused annually by insect vermin among chicks are enormous. Thousands of chicks die from this cause and many more thousands are stunted and retarded in their growth. Such losses are particularly regrettable when it is remembered that a little care and attention would avoid them. Empire Head Lice Ointment is safe and convenient to use. It is also an efficient remedy for scaly leg. Two applications one week apart will cure the worst case.

A good many poultrymen in treating their chicks for lice prefer to use an ointment rather than a powder. To all such I recommend Empire Head Lice Ointment.

EMPIRE CREO SOLUTION.

Creo Solution is a liquid prepared from coal tar and is an insecticide and disinfectant. It is diluted with water and used as a spray. It is especially efficient in destroying mites and as a disinfectant in quarters previously occupied by sick poultry or other animals.

EMPIRE ANTI-GERM.

Anti-Germ is a powder that destroys disease bacteria in water. It is also a healing agent for inflamed mucous membranes and open sores. The

most sure and rapid method by which infectious diseases of all kinds are transmitted through a flock of birds is by means of the water pan from which they all drink in common. Used as directed, Anti-Germ is a specific against diseases of the intestinal tract and mucous membranes, such as roup, colds, diarrhea, etc.

Poultry and "Dope"

"I give my poultry no dope," I occasionally hear someone say. Such people reason that poultry kept according to Nature's laws require no tonics or powders. The trouble with this reasoning is that it is based upon wrong premises. Domestic poultry either on the farm or in the city are generally kept under artificial conditions far from natural. In her wild native state the hen lays a clutch of eggs in the spring, hatches them, broods the chicks and that finishes her work for the year. So environed the hen has unlimited range, and finds roots, herbs, berries and whatever else may be needed for her well being. As with all wild life, she is normal and healthy. Nature takes care of her own. Under domestication conditions change radically. To start with, we have been breeding the hen for egg production until she lays nearly the year around. A good hen will produce each year from four to six times her weight in eggs. To do

such laying she must consume an unusual lot of varied nourishing food. This throws a heavy load on the digestive system. The hen has been appropriately compared to an engine running under high pressure. The rule holds good with her that the higher the pressure the more liability there is of trouble. Few people realize how prone poultry are to digestive troubles. Ailments affecting the nutritive functions of the fowl cause more loss to poultrymen than all other diseases together. Throughout its entire life the fowl is subject to sickness of this kind. In little chicks the commonest form of such sickness is diarrhea, sometimes the dreaded white kind. Mature fowls have liver trouble, gastritis, enteritis, aberated appetite, dysentery and even cholera.

For the prevention of such troubles the careful poultryman will find Empire Poultry Powder an invaluable adjunct. It is a digestive tonic and it prevents and cures diseases of the nutritive system. The surest way of developing healthy growth in chicks or getting abundant egg production from developed fowl, is to keep the stock in pink of condition.

Competition in nearly all lines of human effort is so strong that hardly any business is profitable when run so as to produce only half of its capacity. Where all the feed has to be bought the flock of poultry that averages only five or six dozen eggs per year per hen, is kept at a loss. The poultry

keeper with an eye to business should be satisfied with nothing less than an average production of eight dozen eggs a year for each hen. This should be the minimum. If production falls below this, better change the system or get more profitable stock.

Get the right kind of stock and handle them so as to get from ten to fifteen dozen eggs per hen per year. Then there is profit. Empire Poultry Powder fed as directed will enable you to get such returns.

A hen will live from five to ten years and do some laying nearly every year of her life. The practical poultryman does not keep his birds that long. He crowds them for egg laying for one, or at the most, two years, and then disposes of most of them for meat purposes.

Does Poultry Pay?

To the uncompromising enthusiast this may sound like asking, Does picking up good money pay? But poultry raising is not all velvet. I once received a letter from the editor of a poultry journal asking me to write a fifteen hundred-word story for his paper, for which he agreed to send me his check for ten dollars. I was to write on some matter of general interest to poultry keepers, choosing my own subject. I headed my story, "Exagger-

ated Poultry Profits." I tried to show that returns from poultry were moderate and questioned the claims of excessive production and profits.

Perhaps my story was a little raw. Anyhow, the editor returned it without delay. He politely informed me that his paper was trying to boost the poultry industry and not to knock it. Needless to say I did not get the ten dollars.

Contrary to the belief held by many, poultry farming as a business is not a get-rich-quick proposition. It is not a business of short hours or easy work. Least of all is it a vocation into which the inexperienced should rashly venture. I am referring now to poultry farms conducted along commercial lines, on which the stock and eggs are sold at current market prices. In the New England and Middle Atlantic states there are many such farms doing a prosperous business. The same is true in California. However, even here failures are not unknown and the returns upon investment and labor are in about the same ratio as in other lines of farm industry. Poultry farms thrive in these sections because of their proximity to good markets.

Colorado, which adjoins states unusually prolific in products of the hen, imports every year about \$4,000,000 in eggs and dressed and live poultry. Some of our patriotic boosters insist that this excess should be produced in our own state and the money thus kept at home.

In the state of Massachusetts it is estimated

by competent statisticians that the excess of consumption over production in poultry products is over \$40,000,000 annually. The whole state of Connecticut does not produce enough eggs to supply the city of Hartford. Approximately the same ratio of consumption and local production exists in all the North Atlantic states. The greater part of the eggs and fowl they consume is shipped in and shipped over the Alleghany mountains at that. This places a premium upon the fresh locally produced stock. California is somewhat similarly situated. The bulk of the eggs and poultry consumed there must be imported from the grain-growing states over 1,000 miles to the East. Such natural factors conduce to the advantage of the local producers in those sections. Conditions change after we leave the coast. All through the Mississippi valley, which is the great grain belt of the continent, nearly every farm has from a few dozen to several hundred head of chickens. All their feed is raised right on the farm, besides they live to a great extent on what would otherwise go to waste. They are, we may say, a by-product of the farm. And while in many cases, owing to neglect, they do not produce as well as the better kept city flock, except in rare instances, they always pay. From Western Kansas and Nebraska, clear across to Ohio and from Dakota, Minnesota and the Great Lakes, to the Gulf of Mexico, is embraced the territory wherein is produced the bulk of this country's poultry products.

At five cents a dozen, or fifty cents, the flood of eggs from this section, varying with the seasons, comes continually and determines the price in every market in the country. Distant markets, such as Boston, New York and San Francisco are not so strongly affected as points nearer adjacent and the local producer in such markets therefore gets better prices.

In Denver, during several months in the spring, the wholesale price of fresh eggs is generally around 20 cents a dozen or under. While in the fall medium hens are often a drug on the market at 14 cents per pound. At such prices it takes some financiering to buy feed at from \$1.25 to \$1.75 per hundred pounds, pay for help, rent, etc., and still leave a margin of profit for the producer. The man or woman who is figuring on going into poultry raising as a sole means of making a livelihood would do well to keep these figures and conditions in mind.

However, only a small part of the total product is produced upon poultry farms, exclusively run as such. It is safe to assume that over 97 per cent. of the eggs and poultry consumed in this country comes from farms and villages and city back lots where the industry is carried on as a side line. And thus carried on the business nearly always pays when properly managed. To start with, there is nearly always a greater rate of profit in a small flock than in a large one. They can be better at-

tended to. There is less danger from infectious diseases. The work can be done, incidentally, by members of the family, thus requiring no extra outlay for help and rarely does the item of rent enter. The table scraps that would otherwise be thrown away can be utilized, thus reducing the feed bill, and the city back-lotter, at least, does not sell his eggs at wholesale prices. He supplies, first, his own table, and even when the wholesale price is as low as 15 cents per dozen this still means 25 cents to the purchaser at retail. Known fresh eggs always top the market and the small neighborhood producer, when he has stock to sell, should and does get better prices than the best shipped in stock brings.

When poultry is handled under these conditions I am sure that the often estimated profit of "a dollar a year per hen" is none too large. Often it is considerably more. Two dozen hens on a city back lot should net, when properly looked after, \$25 a year. They can do so easily. The reason this is not oftener recognized is due to the fact that while returns come in daily in small quantities and are often overlooked or forgotten, the feed bill at the end of the month is an evident and tangible fact, which the feed dealer will not permit to pass from memory without the production of hard cash. The human mind is prone to underestimate the accumulative power of small items. Flocks that are supposed to be not paying, if given credit for every

egg laid and fowl consumed or sold, would often show a handsome profit.

The figures so far given apply only to stock used and sold for utility purposes. The breeding of thoroughbred poultry presents a wider field with correspondingly greater opportunities, both for profit and loss. It really is a business in itself. It requires patience, skill and all the arts of the experienced fancier. Fanciers of the highest type are born and not made, and not many of them are born either. Charles Darwin, in his "Origin of Species," says that "Not one man in a thousand has accuracy of eye and judgment sufficient to become an eminent breeder." Charles Darwin confessed that he could not acquire this accuracy of eye and judgment.

To breed and raise birds filling the requirements of the American Standard of Perfection is one thing; to advertise this fact so as to get the most out of it in dollars and cents is another. When the two accomplishments meet in the same individual who puts his skill to practical use, he occasionally acquires fame and easy money.

People who go off the beaten path a little often do well with poultry. I know a man and his wife running a poultry ranch near one of the larger cities of this state who do a nice business selling baby chicks, for which they receive an average price of 25 cents apiece. They have a strain of fowl that runs strong to broodiness and they hatch mostly

with hens. With the chicks they generally sell the mother hen, for which they receive from one to two dollars. They have all the business they can attend to and it provides them a comfortable income. One of the most successful small poultry plants I ever saw was operated by a lady in Denver on a vacant lot adjoining her home. She was a thorough poultry woman and acquired quite a reputation for her strain of fowls. Although she never took her birds to a show and advertised scarcely at all, she sold baby chicks for 30 cents apiece and eggs at \$2.00 a setting and had more orders than she could fill. When compelled to leave the city on account of her husband's ill health, she was making upwards of \$500 a year. In Massachusetts there lives a man who has made a fortune running a broiler farm. He hatches his chicks in October and November and markets them in December, January and February, when such stock is rare and brings the highest price.

With poultry keeping, as with other lines of business, initiative, perseverance and the ability to make the most out of conditions count for much.

Breeds of Poultry

Breeds of poultry may be divided into three classes: First, the heavy Asiatics; second, the small, active Mediterranean and similar breeds, and third, the general purpose breeds, which in most cases have been produced by crossing individuals of the first and second classes, and which, as may be expected, exhibit characteristics of both.

The different breeds vary in color, shape, size and disposition. The small breeds embrace birds of Italian, Spanish and Dutch origin. They are characterized by being active, sprightly, non-sitters and layers of white shelled eggs in goodly numbers. To this class belong the Leghorns, Anconas, Hamburgs, Campines, Minorcas, White-Faced Black Spanish and Blue Andalusians.

The Asiatic class is composed of Brahmas, Cochins and Langshans. The Asiatics differ from nearly all other breeds in having a growth of feathers on the outer side of their shanks. They mature slowly and are easily kept in low-fenced inclosures.

The leading general purpose breeds found in this country are the Orpingtons, which are of English origin, the Plymouth Rocks, Rhode Island Reds and Wyandottes. Each of these breeds is in many respects similar to other breeds of the same class.

The large breeds are docile and not prone to exercise or being nervous. The small breeds are

active and of a nervous disposition. This relation of size and nervous activity is not confined to fowls. It runs all through the animal kingdom. It is well illustrated among dogs by the fussy little terrier and the sedate Newfoundland and St. Bernard. It even applies to the human family. Large, fat people are proverbially good-natured and deliberate.

The lines between the different breeds of poultry are not drawn so hard and fast as is popularly supposed. As a rule breeds approaching each other in size, shape and weight, are similar in disposition, egg-laying and other characteristics. This is demonstrated by the fact that varieties of the same breed are sometimes wholly unrelated. Thus in the early nineties, when buff colored fowls became popular the late Dr. Aldrich of Fall River, Mass., in his day one of the foremost fanciers of the country, went into Rhode Island, where practically all the birds raised are red or buff colored, picked out some buffs that in size and shape matched the Plymouth Rocks, sent them to the Madison Square Garden Poultry Show in New York City, and, presto change, America's newest breed of poultry had appeared, namely, the Buff Plymouth Rocks. On the other hand, when fowl are bred so as to permanently change some of their physical features they also acquire new breed characteristics along other lines. I knew a man who bred successive generations of Leghorns for size until he had birds averaging seven pounds in weight. In name and blood

these birds were pure Leghorns, but that was all. In disposition and almost everything else that distinguishes breed, they were more like Wyandottes, or Orpingtons.

Of the different breeds nearly every one is divided into sub-breeds or varieties, the principle difference being a matter of color. Thus in Brahmas we have the Light and Dark Brahma. In this breed there is also a difference in weight. The light variety is a little heavier. It is the heaviest of all the breeds. Brahma hens weighing ten pounds or more are common. Brahmas are often accused of being poor layers, but when handled in a way that compels them to exercise they will lay with the best. They are great winter layers. When the sudden blizzard chills some of the smaller breeds to the bone and laying stops, the Brahma, protected by ample plumage and layers of fat and muscle, stays right on the job and keeps shelling out eggs.

The Cochins consist of three varieties, the Buff, White and Partridge, which are alike in everything except color. The Cochin, as it exists, today, has almost ceased to be a utility breed. The reason for this is excessive feathering and the awkward shape to which the Cochin has been bred. A hen must be active to be a good layer. When she is bred to conform to a type that discourages activity, egg-laying is interfered with.

The Langshan is the smallest of the Asiatics, being about the size of the Plymouth Rocks. Lang-

shans have deservedly held high favor in this country. They are good layers and mothers. They don't take on fat quite so readily as the other Asiatics, but are a fine table fowl nevertheless. Of the two varieties the Black is by far the most numerous, although flocks of White Langshans are frequently seen in this country.

Something like half a century ago there lived in Connecticut a minister, Rev. David Upham, who by making various crosses, produced a fowl that caught the popular fancy. He continued breeding this fowl along certain lines until he had established a new breed. Being a loyal Yankee, he sought to give this new breed a name that would forever associate it with the traditions of New England. He therefore named it Plymouth Rock. And Plymouth Rock it is to this day, one of America's greatest breeds of poultry. The breed was originally represented only by the barred variety. Since then there have been added, in the order named, the White, Buff, Partridge and Columbian Plymouth Rocks, none of which, however, has achieved the popularity of the original breed.

The first Wyandottes recognized by that name in this country were the Silver-Laced variety, which was admitted into the standard in 1883. Since then there have been admitted, in the order named, the White, Black, Buff, Partridge, Silver Penciled and Columbian Wyandottes. Some of these can trace their descent from the original Silver Laced

variety. Others have none of the original Wyandotte blood in their veins. "Poultry Weekly," published at Boston, Mass., says that the first Buff Wyandottes exhibited in this country were Rhode Island Reds.

The Wyandotte is slightly smaller than the Plymouth Rock. It has a rose comb and is of a compact, blocky build. The White variety has far exceeded all the others in popularity.

The Orpingtons were originated in England by the late Wm. Cook in the latter part of the last century, and have been extensively imported into this country. They are larger than any of the American general purpose breeds and differ from the latter also in having a white skin and pink shanks, these points in the American breeds being yellow. For meat purposes the English trade demands a bird with a white skin. As the Orpingtons approach the Asiatics in size, so they resemble them in disposition. They are docile and must be induced to exercise to keep in best laying condition. The American Standard of Perfection recognizes the White, Buff, Blue and Black varieties.

No other breed of fowl ever spread with the phenomenal rapidity of the Rhode Island Reds. Admitted into the Standard in 1904, within less than a decade in point of numbers and popularity they were the leading breed of the country. The Red craze has subsided somewhat and the field is open for some other breed as a candidate for popularity.

But it is safe to assume that the Rhode Island Red as a breed is here to stay. Their medium size, active habits, handsome color and prolific egg-laying commend them alike to the fancier and the man who is in the business for meat and eggs. There are two varieties, the Single and Rose Comb.

The Rhode Island Reds, as their name indicates, had their origin in Rhode Island. In that state and the adjoining parts of Massachusetts, poultry farming as an exclusive industry has been carried on for upwards of a century. Sea captains returning from China and other parts of Asia brought back large red roosters that were sold to farmers who used them to improve the native stock. In this way the Rhode Island Reds originated.

On the large poultry farms of the country the White Leghorns predominate. This is due to several reasons. In the first place Leghorns have quite a reputation as layers. They mature quickly. They can be hatched June 1st and be in laying condition beginning the following winter. While not a meat breed they can be disposed of at broiler size at good profit. There is no bother in breaking up broody hens and as they do not get over-fat they require less care in feeding than do larger breeds. There is, perhaps, no fowl whose appearance is more neat and trim than the Leghorn. White, Brown and Buff Leghorns are common in this country.

Next to the Leghorns the best known Mediterranean breed is the Minorca, formerly known as the

Red-Faced Black Spanish, to distinguish them from the white-faced birds of practically the same breed. The Minorca is the largest of the Mediterranean breeds. To fulfill standard requirements it should be almost as large as the Plymouth Rock. However, the Minorca, as commonly bred, is smaller than this. There are two varieties of Minorcas, the black and the white. The white is the smaller of the two and has never been generally bred in this country. The Minorca lays an extra large handsome white egg, that in most markets sells at a premium. The chicks are hearty and vigorous and, like the Leghorn, mature early.

Close akin to the Black Minorcas in color, habits and other characteristics, are the White-Faced Black Spanish. For some occult reason this breed in recent years has gone into eclipse and is rarely seen now except in the yards of some fancier. They are good layers and their white faces, together with their brilliant black plumage, give them a unique and distinguished appearance.

The French breeds in this country are represented almost exclusively by the Houdans. The Houdan is distinguished from most other fowl by having a heavy crest of feathers on its head. Its general plumage is black mottled with white. Fifty years ago when the breed was first introduced into this country its friends predicted for it great popularity. This, however, has failed to materialize. As a practical fowl the Houdan has never been able

to get much consideration from American poultry raisers.

Somewhat better success has followed the efforts of breeders interested in Hamburgs, the Dutch breed. Birds of this breed are hardy and vigorous; their delicate grace of form and carriage, together with their close-fitting, beautifully marked plumage will attract favorable attention anywhere. Hamburgs are small in size and are non-setters. As prolific layers they can't be beat.

Among the latest breeds to be recognized by the American Standard of Perfection are the Campines, which, in size, shape and disposition, resemble the Leghorns. People interested in the Campines predict for them a boom, which, however, so far has failed to realize.

What Breed to Keep

"What breed shall I keep?" asks the prospective poultry man. This question is often followed by the query, "What breed lays the best?" The latter question is asked only by the novice. The experienced in such matters know that egg-laying is more a matter of strain than of breed. Also that it depends more upon feed, care and attention given than either strain or breed.

In the Australian laying contest held several years ago the Black Langshans led. The famous hen at the Oregon Experiment Station that nearly

broke the world's record for number of eggs laid in one year, was a mongrel Barred Rock. In the Missouri state laying contest the Leghorns won, while in the Connecticut contest White Wyandottes carried off the prize. So you see egg-laying doesn't necessarily depend upon breed.

"Keep the breed you like the best" is the advice frequently offered the beginner. This senseless statement has been reiterated so often that some people really believe that there is something in it. Necessarily the beginner has only rudimentary ideas about breed characteristics. Likely as not he has taken a fancy to some breed least suited to his wants. The breed that may be kept to best advantage depends a good deal upon environment and conditions under which the birds are to be handled. Thus if you have low or poor fences and your neighbor adjoining has a garden, it's just as well not to keep Leghorns, or others of the light breeds. If your yards are small and liable to be dirty don't choose a white variety, otherwise your birds will look dingy always.

There are some general considerations that should be kept in mind when choosing a breed. It is easier to breed solid colored birds, true to standard requirements, than the multicolored ones, that is, birds whose plumage runs in patterns, such as the various silver or gold-laced or penciled varieties. Most anyone can take a flock of white or black birds and keep up the color through succes-

sive generations of breeding. But to take a flock of prize-winning Silver-Laced Wyandottes and reproduce the distinct outlines and delicate shades of color generation after generation requires an artist. The amateur who tries this often finds after several generations that his color patterns are inclined to become somewhat of a smudge.

It is generally recognized by experienced poultry raisers that the heavy breeds require more care. They should not be overfed and provision must be made to keep them at exercise. I constantly meet people who say the Brahmas are poor layers. So they are if not properly handled. But the man or woman who understand their birds and treat them accordingly will have no occasion to complain about poor egg returns from Brahmas.

For general utility purposes and all around usefulness, the American breeds, such as the Rhode Island Reds, Wyandottes and Plymouth Rocks, are well adapted. These breeds are good layers and excellent for meat purposes as well. They fatten readily when their usefulness as layers is over and they can't be beat when served as broilers or soft roasters. In this respect they are better than the Asiatics, which, while making their growth, run so much to bone and muscle that they are not ideal table birds until they are matured.

Breeds of poultry, like ladies' bonnets and other things, run in styles and nearly every breed of poultry has had its day of popularity. Sixty

years ago when the first great wave of poultry craze swept the country Cochins were the rage. These were followed by the Brahmas. Then came the Black Spanish and the Leghorns, to be succeeded by the Plymouth Rocks. Then came the Wyandottes and after these the Rhode Island Reds. Of all these breeds none has had any more general or as prolonged a popularity as the Barred Plymouth Rocks. At home and abroad, among utility breeders and fanciers for over a generation the Barred Rock has been a prime favorite.

However, the place so long held by the Rocks is now practically occupied by the Rhode Island Reds. Whether the Reds will retain popular favor for so long a time as the Rocks remains to be seen.

The easiest money in the poultry business is generally made by those who have birds of a breed that is just beginning to come in strong for popularity. In such cases demand for eggs and stock is generally far in excess of supply and the fortunate breeder having such stock is in the position of any other man who gets in on the ground floor.

Because a breed is popular it does not necessarily follow that it is the best one for everybody to keep. A good many discerning fanciers prefer an obscure breed and they do well with it. Competition is not so strong and to a good many people there is some satisfaction in not following the crowd. And after all is said, breed is of really minor importance. It's work mixed with brains

that brings results to the poultry keeper. Intelligent care and attention will be followed by success with almost any of the standard breeds.

Poultry House Construction

In deciding upon a plan for a poultry house keep away from fads and freak construction. By this I mean two or more story houses, houses wholly or partly underground, or with all canvas or all glass front, or monitor top houses and many other kinds I might mention. Nearly all of such houses have positive disadvantages which for lack of time and space can not be discussed here.

In poultry houses the simplest is often the best. Fifteen dollars will build as good a coop for a dozen hens so far as the health and comfort of the fowls go as one hundred and fifty. A convenient coop, shed style, may be built according to the following specifications: Size on ground, ten by five feet; front elevation, six feet; rear elevation, four feet. Have opening on one end for door and two openings for windows about two feet square on front side. On the same side, on bottom, have also small opening to permit exit and entrance of birds. In end of coop opposite the door have a platform of dropping boards five by five feet placed at an elevation of about two feet above the floor. Twelve

inches above the dropping boards have two roosting poles. Under the dropping boards may be placed straw or other scratching material which will cover entire floor. Plain earth is the cheapest and most sanitary floor to be had in a dry climate, as we have in the West. A house such as this will easily accommodate a dozen hens and male bird, together with necessary laying nests. Without the dropping boards platform it will house nearly twice this number. In the latter case provision must be made for scratching exercise outside of the coop. Windows should be entirely open throughout the summer and should not be completely closed at any season. Fowls will stand considerable coop crowding if they are only given sufficient ventilation. Fresh air they must have. They must have it without noticeable draft during cold weather. The most practical way of getting this ventilation is through openings in the south side of the coop. I have never seen a patent ventilator that I would give two cents for or have on my premises. During one whole winter and part of the following summer I once kept ten hens in a large dry goods box with a small run attached. At night time during the winter the side of the box facing south was closed by a frame covered with burlap. At all other times it was kept open.

Farmers' Bulletin No. 574, issued by the U. S. Department of Agriculture, has the following to say about poultry houses:

"The prime essentials in poultry houses are fresh air, dryness, sunlight and space enough to keep the birds comfortable. No particular style of house is peculiarly adapted to any section of this country. A house which gives satisfaction in Maine will also give good results in Texas or California, but it is preferable to build more open and consequently less expensive houses in the South than in the North. The best site for the house depends principally on the local conditions. The location should have good water and air drainage, so that the floor and yards will be dry, while the house should not occupy a low pocket or hollow in which cold air settles and it should be situated for convenience in management and adapted to the available land. Wherever possible a southern or southeastern exposure should be selected, although this is not essential if there is any good reason for facing the house in a different direction."

This paragraph, it seems to me, about completely states the case. The only change I would suggest is more insistence on the necessity of a southern exposure. No poultry house should be built that does not provide for the admission of direct sunlight at least part of the day, both for the comfort and warmth of the fowl during cold weather and for sanitary reasons at all seasons.

The bulletin just quoted describes a style of colony house used at the government poultry farm at Beltsville, Maryland, with a capacity for twenty-five hens. This house is shed style, ten feet long by seven feet wide, six feet two inches high in front and four feet in the rear. It has a door in one end and more than twice the window and other open space on the high side, than the house I have pre-

viously described. In the East with its hot nights poultry require more open space than they do in states where sleeping under a blanket is the rule for people.

The houses here described are of simple construction. People who have the means and esthetic tastes can add as many frills as they want to. Poultry houses should be in harmony with the surroundings. Manifestly a coop that would appear neat in the rear of a modest cottage might seem shabby on the back lot of a ten thousand dollar residence. A scratching shed partly inclosed is a great convenience. During cold weather and when snow is on the ground it adds to the comfort of the fowl and saves work for the attendant.

Poultry Hygienics

CLEANLINESS.

As the environments under which fowl are kept become artificialized they require more care. In her wild native state the hen looks after her own welfare. Sometimes under domestication she has nearly to do the same thing. On a good many farms little attention is paid to poultry. The farmer and his family have more valuable live stock to look after and besides are generally busy. But poultry on the farm with unlimited range and other favorable natural conditions require some care. They require more care with limited range and most looking after and attention of all when confined in small two by four plants. It is well to keep these things in mind in planning a routine of poultry chores. No set of rules or instructions can govern all cases. Some writers say that the droppings should be removed from the coop daily. In small box-like coops this may not only be necessary but the coop should be scrubbed out at least once a week. When the fowl have more rooms such extreme care is not necessary. In average sized coops removing the droppings once a week will do. Where there are no dropping boards, and there need be none where fowls have plenty of range, once a month may be sufficient. No matter how often the dropping boards are cleaned they become tainted and in order to avoid any danger from

this source the roosting poles should be at least ten inches above the dropping boards.

In order to make the work of cleaning easy as possible, roosts, dropping boards, nest boxes, etc., should be removable. Inaccessible spaces and corners are prolific breeders of lice and disease germs.

So we see that the poultryman with limited quarters has to work harder to keep his flock in good condition. However, as a recompense he generally gets better returns. The United States census report gives the average annual farm egg production at five dozen per hen. The back-lotter, with his flock of a dozen or two of hens who can't nearly double this, isn't much of a poultryman. Edward Brown gives an account of a man employed in one of the gas works in London, who, in the heart of the city, kept six hens upon a plot of ground about six by six feet, which included coop and all, and who got one thousand eggs annually.

The small coops, or boxes, where the growing chicks are housed, either when with the hen or afterward need close attention. These coops always have board floors, or should have. The droppings should not only be removed frequently, but it is a good plan to wash out the coop at regular intervals. The garden hose comes in handy for this purpose. In early summer when the chicks are sufficiently grown to be past the danger of getting chilled it is a good plan to keep the bottom of their coop covered with sand or loose soil, which should be regu-

larly removed and replaced. The soil absorbs the droppings and prevents the immediate contact which a bare board floor gives. It is also a pretty good preventative against lice. The dust in the soil kills the lice.

PURE DRINKING WATER.

Drining pans should be kept clean. Standing water always forms a sediment which gathers to itself not only the germs contained in the water, but microbes floating in the air and bacteria from diseased birds in the flock as well. The pans should be washed out daily. This takes but a few seconds and can be done at time of filling. It is also a good plan to scald them out occasionally with boiling water. In the fall if any of the flock begin sneezing or show other evidence of having a cold or becoming ropy, use Anti-Germ in the water as directed. Anti-Germ can be obtained from dealers handling Empire preparations.

If possible avoid the presence of stagnant pools of water within reach of your flock. A hen or chick will drink foul, stagnant water reeking with filth off the ground and out of puddles in preference to the purest water that may be placed into a drinking vessel. For countless ages the hen in her native state drank off the ground and she apparently still retains that instinct. In warm weather the drinking vessels should be placed in a shade covered position, not merely to keep the

water cool but to make it easily accessible to the fowl that would perhaps go without rather than venture into the blazing sun to quench their thirst. In winter water only moderately cold should be supplied. To do her best laying the hen must drink freely. She will hardly do this if the water supplied her is constantly ice cold.

THE DUST BATH.

I sometimes think that the term dust bath used in connection with poultry is not quite accurate. The popular theory has it that the hen dusts herself solely to get rid of lice. But is this a fact? I know from personal experience that you can take a hen, fumigate her, absolutely rid her of lice, lock her in a louse and mite-proof coop for a day, turn her out and the first thing she will strike for is the dust bath if one is conveniently accessible. I use the term dust bath here in its popular sense. As a matter of fact the hen will rarely take a dust bath if she has any choice in the matter. She takes her bath when such a convenience is accessible in loose, moist earth, that is anything but dust. The ground under bushes, hedges, etc., is a favorite wallowing places for fowl. Lousy or otherwise, the healthy hen apparently takes delight in settling down and with feet, legs and body, works the loose, moist dirt well into her plumage. She reminds me in this respect of the healthy horse that will roll as regularly as he eats.

Prof. Horace Atwood suggests that perhaps the hen when dusting gets a sensation somewhat similar to that of the small boy when he goes out barefooted and works his toes into the loose earth. I think we are warranted in assuming that the dust bath, or more properly speaking, dirt bath, helps to protect the hen against lice and conduces to her physical welfare in other respects as well.

When poultry is yarded part of the lot should be dug up regularly and the soil raked fine so as to give full opportunity for dusting. It is not good practice to throw ashes in the yard. Ashes deprive the plumage of luster and make the feathers brittle.

SUNLIGHT AND SHADE.

Sunlight is probably the best germicide and purifier we have. Dark, damp places foster the growth of disease germs and insect vermin. This is one reason why poultry houses should face the south. Direct sunshine is fatal to bacteria, but in moderate quantities is beneficent to higher forms of animal life. Nearly all animals, man included, do better when part of their lives is spent in open sunshine.

Most people know from experience the comfortable sensation furnished by the sunny side of a sheltering building on a cold day. Poultry enjoy this sensation. If you want to see this demonstrated watch your fowl on bright days during cold weather and see how they crowd into the sunshine.

Except during storms, windows and doors of poultry houses, during daytime, should be wide open, even in coldest weather. More sunlight is thus admitted and the hardening the birds get from being in the fresh, crisp air better fits them to withstand the cold when they are on the roosts at night. For this reason houses with all glass front, or nearly so, are objectionable. The glass radiates the heat into the house during the day time, making it excessively warm, and at night it radiates the heat out, making the house too cold. The birds softened by the unusual warmth during the day suffer from the cold at night.

In recent years canvas in place of glass has come into considerable use in poultry house construction. Canvas or burlap, which is much to be preferred, keeps out direct drafts and yet admits fresh air. It also keeps out sunshine, which some people seem to overlook. When all the windows are permanently covered with canvas the plan is highly objectionable. Canvas should be so used as to make provision for the admission of sunlight. This can be done by having special openings in the front of the coop, which may be covered with canvas, leaving the regular windows free, or by having the canvas attached to frames that can be taken out and inserted at will.

While in winter poultry should be provided with sunshine, in summer they must be protected against it. Shade is, if anything, more essential to

the welfare of poultry in summer than sunshine is in winter. This may be better understood when it is remembered that practically the same cocat of feathers that protects the hen during the coldest weather, she still carries on her back in the warm season. Therefore, if a hen is to thrive properly she must be given opportunity for getting into the shade during the heated months.

Hot weather is especially hard upon young chicks. When compelled to run around in the glare of mid-summer's sun their growth is stunted and the rate of mortality is high.

No place is better adapted for the health and comfort of poultry during the summer months than an orchard. Here it is always shady and cool. However, a tree or trees in the back yard will answer nearly as well.

In the absence of trees other provision must be made for shade. Most any temporary structure that will ward off the sun's rays will answer the purpose. Tame sunflowers can afford considerable shade during the latter part of the season. There are various kinds of vines that will grow along and over pole structures that also answer very well.

FRESH AIR.

One of the things people are slowest in learning is the value of fresh air. In a recent number of "Outdoor Life," Dr. W. P. Northrup of New York, a noted specialist of children's diseases,

writes of his pioneer experiences in the treatment of diseases in fresh air. When a dozen years ago he dared go against all current methods of treating pneumonia and placed a child in open air he was called crazy and threatened with dire punishment should his experiment fail. But after he demonstrated that fresh air was the best medicine for those suffering from pneumonia, measles, whooping cough and even for weak, sickly babies, balconies began to appear and now nearly every hospital in New York has its open sleeping provisions.

Tuberculosis, the great white plague, is losing some of its terrors since doctors are resorting to the use of sunlight and fresh air. But a large number of people still live in houses with closed windows and doors, deliberately depriving themselves of the most essential and cheapest requisite of physical well being, pure air. And as they treat themselves so they treat their poultry, if they happen to have any.

Birds are animals of the air. It is their element. The domestic turkey and guinea fowl will roost in the highest tree through snow storm and blizzard with apparent comfort and good health. Our other barnyard poultry will thrive under considerable more exposure than is popularly supposed. In my coops the windows are never closed and excepting a few months during the coldest weather the doors are open the year around. Just to see how much my birds could stand I have during different

seasons left doors and windows wide open the entire winter. I have at times, when there had been a snow storm during the night, gone into the coops the next morning and found a foot of snow inside the door entrance and snow on the backs of some of my hens. Rather hard on the stock, some may think. But my hens remained healthy through it all. Understand, I kept my birds thus exposed for experiment's sake. I demonstrated to my own satisfaction that poultry could stand a whole lot of cold and still do well.

I do not advocate such extreme methods of housing. With fair-sized coops, not over-crowded, I believe the better plan is to close the doors at night during the winter season, but leave the windows open, or at least partly open.

During summer poultry will do best with simply an overhead protection. However, as the average poultryman must make the same coop do for all seasons he should see to it that during warm weather his coops get as much ventilation as possible. I am writing now of stock that is matured, or at least partly so. Birds that are so young that they are not yet feathered out require more warmth.

Poultry kept in open coops during summer and fall will gradually get hardened to inclement weather and do better than when excessively pampered.

Nothing is more likely to cause sneezing, colds and resultant roup than insufficient ventilation. The

temperature of birds is high, the amount of carbonic gas exhaled is very large and rapidly poisons the air. When the birds are compelled to breathe and rebreathe this air, trouble generally follows.

While poultry will endure a good deal of exposure there is one inclemency against which they should be protected whenever possible. That is walking around in snow or even cold mud. Nothing will more quickly interfere with egg-laying than this. Poultry should always have a dry place upon which to exercise and feed. This may be either a roomy scratching shed or a plot of ground on the outside kept free from snow. It is also essential that the coops be kept dry. Here in the West we have little trouble from damp houses. However, in sections where humidity is greater considerable disease comes from this source. Concerning this a recent bulletin, issued by the Maine Experiment Station has the following to say:

“Of all unfavorable environmental conditions into which poultry may, by bad management be brought, a damp house is probably the worst. Nothing will diminish the productivity of a flock so quickly and surely as will dampness in the house, and nothing is so certain and speedy an excitant to roup and kindred ills.”

I want to give one word of caution on the subject of fresh air. Poultry that is accustomed to warm coops should not be changed suddenly to so-called open front, or cold houses. The principle is similar to that of a man working all his time in a

warm room. He can not endure the exposure of one constantly out of doors. To do so he must gradually accustom himself to changed conditions. So with poultry.

KEEP YOUR BIRDS DOCILE.

Egg-laying is a sexual function. Its proper performance depends somewhat upon environment. Everything else being even, the hen that has the fewest worries will lay the most eggs. Yes, a hen has worries. She is worried when she flees in terror at the approach of her owner or attendant, as I have seen hens do. The hen is worried by too frequent visits from strangers. These strangers may be people or dogs, cats or other animals. At the New York State Experiment Station no visitors are allowed to the pens from which record laying is expected.

Fowls are worried by being changed frequently from pen to pen. Fanciers sometimes take advantage of this fact to postpone the laying period of pullets. The fowl appears at her best as a pullet just before she begins to lay. At that time of her life she has reached the proportions of a mature hen and still retains her pullet bloom and symmetry. The pullet is generally less presentable as a show bird after she starts to lay. To prevent this some fanciers transfer their pullets intended for the show room frequently from one pen to another.

Fowl respond readily to kind treatment. If

the poultryman will spend a little time occasionally with his flock in simple observation, either in the yard or coop, he will accustom them to his presence and also get first hand knowledge about the real condition of his birds.

With poultry, as in other lines, the chief difference between the man who understands his business and the tyro, is the ability to discern. The novice looks into the yard and sees a flock of poultry. That is about all he does see, just chickens. The poultryman worthy of the name sees more. He takes in at a glance the health and general condition of the flock. He notes how in color, size, shape and symmetry the birds comply with standard breed requirements. Here is a bird with a sallow comb. Another has long, overgrown toe nails. Some of the flock may be sneezing and running at the nose. Or, perhaps, the whole flock stands huddled together with heads drawn in and feathers ruffled, looking dumpish. Such signs are warnings of breakers ahead. People with aptitude for handling poultry soon learn to recognize them and take steps accordingly. Practical knowledge of poultry can be obtained only by close observation and actual handling of the birds. When this is done in a kindly way it does much to keep the birds quiet and docile.

EXERCISE.

“Keep the hens busy,” is a maxim the poultryman should keep in mind. Continued failure to ob-

serve this maxim will result in decreased production. Regular egg-laying is a highly specialized function. To keep this up the hen must be healthy and vigorous. All animal life requires exercise to keep in this condition. On the farm, or wherever the fowl have unlimited range, the matter of exercise need be given little thought. About all that is necessary is to see that they are not surfeited with feed. Where poultry are confined in yards the grain ration should be buried in litter and the birds compelled to scratch for it. Owing to inclemency of weather and for other reasons it is hardly practical to have the litter in the open yard. An open scratch shed is a great convenience, but where this is not to be had the litter may be placed under the dropping boards in the coop. Straw, hay or leaves from trees may be used for litter.

In good-sized yards the grain may be scattered about and the fowl compelled to look for it. Or if the soil is light and sandy it may be buried underneath. The ingenious poultryman will find various ways by which he can induce his birds to take the needed exercise.

Hatching with Hens

The most essential factor in maintaining a poultry plant is renewing the flock. Failure here can not be retrieved. Inability to hatch and grow to maturity good, healthy, vigorous stock is a most prolific cause in putting people out of the poultry business. I will not dwell upon the necessity of vigorous, well-mated birds in the breeding pen. The need of good ancestry is almost universally recognized.

Having desirable eggs, shall they be incubated naturally or by artificial means? After all has been said on both sides the most that can be claimed for the incubator is that it does as well as the hen. The same is true of the artificial brooder. I am not deprecating the incubator. It has done wonders in advancing the poultry industry. But experienced breeders, as a rule, use the hen when a limited number of chicks are to be hatched, and of necessity resort to artificial means when doing business on a large scale.

In hatching by natural means, it is desirable to have a hen with the instinct to brood strongly developed. One that will stay on the nest the full term and that has sense enough to cover properly the eggs and to get on and off the nest without breaking them. There is a great difference among hens in this respect.

Some poultry breeders set their hens in a sep-

arate room or coop, place feed and water within reach, and then trust the hens to leave and return to the nests at will. With a little watching at the start this often does very well. The safer plan is to set your hens, close the nests and have an appointed time each day to release them. The setting hen should be off the nest from ten to thirty minutes each day, depending upon the condition of the weather. Her conduct while off the nest plainly shows two things necessary to her well being. First, she is very busy. She runs about spending a few seconds here and there. She apparently wants to stretch her limbs. This is natural. She has been in a somewhat cramped position for twenty-four hours and she needs exercise. The hen with plenty of room to exercise will bring off a better hatch than when confined in small limited quarters. Setting hens when closely confined often develop serious diarrhea. In the second place, the setting hen does a good deal of dusting. She does so even when free from lice. She shows evident satisfaction in rolling and wallowing in the dust or moist earth. Instinct teaches her to take no chances with lice. Unfortunately this lesson is not always conveyed to her owner. It should be a rule from which there is no exception to dust every hen at the time of setting and once or twice before she comes off with a good louse powder. In her native state the hen makes her nest in a secluded spot, free from the danger of lice. When handled by man she is often

compelled to endure the torture of bringing off a hatch in a coop and nest alive with lice, mites, bed bugs and other insect vermin. Small wonder that the ravages of these pests so often drive a hen from her nest or worse still, cause her death.

Corn is often recommended as an exclusive diet for setting hens. My experience has been that they will do better on a varied grain diet. There is no danger of the setting hen overeating. She should be encouraged in this respect. Corn and wheat given on alternate days will do very well. The setting hen relishes a little green food which she can eat with perfect safety. The hen that steals her nest ordinarily gets all the green food she wants. When a number of hens are set at the same time it is not necessary that each keep the identical nest during the entire hatch. Some poultrymen prefer that they trade nests. This for the reason that the amount of heat given off by different hens varies and by having them change nests the total hatch is more uniform.

As soon as the hatch is over remove the chicks and hen to some roomy box or coop, preferably darkened, that is if the chicks are to be raised by the hen. Otherwise break her of her broodiness, or if she is a robust hen and it is desired to set her again, clean out the nest, put in new straw, dust the hen and she is again ready for business. Ordinarily it does not pay to have a hen bring off two hatches in succession. It is good practice to set two

hens at the same time and after the hatch is off the chicks can be given to one hen, or better still, both hens and chicks can be placed into one box or coop and allowed to go that way, that is if the hens don't quarrel. The advantage in doing this is that if one of the hens weans her chicks early the other one is still left to take care of them.

Nowhere does the brooding of chicks require more attention than in the mountain states. Owing to the cool nights, which we have in every month of the year, chicks require to be kept warm at night until they are nearly two months old. During the day they should be protected from the burning sun. Most hens will desert their chicks before they are four weeks old and in that case artificial brooding should be resorted to. A good fireless brooder comes in handy for this purpose.

One of the most practical and safest ways of bringing up a brood of chicks is to confine the hen in a box about two feet square each way, slatted in front so that the chicks can come and go at will. In this way the hen will not tire out the chicks walking them around, and in case of storm the chicks readily find shelter. Also the hen will brood the chicks as long as you want her to. Not being able to get away she can't desert them.

In tending to setting hens always lookout for broken eggs. An egg broken and its contents smeared over other eggs will kill the germs in the other eggs. A fertile egg being incubated breathes

through the pores of the shell. It must have fresh air the same as any other organism. When the pores of the shell become closed and remain so for several hours fresh air is shut out and life becomes extinct. Eggs soiled from broken eggs or other causes should be washed as soon as discovered in luke-warm water.

Should the hen stay off the nest for several hours, the hatch is not necessarily interfered with. In cases of this kind never give up the ship. I once unknowingly shut a hen out of her nest from six o'clock in the evening until seven the next morning. The nest was in an open yard together with several others, and the temperature during the night, I am sure, was under sixty degrees Fahrenheit. When I discovered my mistake in the morning the eggs to all appearances were stone cold. Without any hope of getting results, I replaced the hen on the nest and in less than a week she hatched eleven chicks out of thirteen eggs.

Hatching with Incubators

The incubator has the advantage over the hen in that it is always ready. You don't have to wait for it to get broody. You can bring off the hatch early or late, as you choose, provided the eggs are at hand. Most of the specialized branches of the poultry industry have been made possible through the invention of the incubator. The baby chick trade, the production of broilers in mid-winter, the operation of large egg farms stocked exclusively with non-setting breeds, all depend upon the incubator for their existence. However, extensive egg and poultry farming can be carried on without resorting to artificial means. In the famed Rhode Island and South Shore districts, where for something like a century exclusive poultry farming has been carried on, the use of the incubator is almost unknown. Chicks are hatched and brooded there in primitive fashion with good results to the producer.

Artificial hatching and rearing of chicks has been carried on in Egypt and China for centuries.

In both countries eggs are hatched in ovens especially built for that purpose. These ovens are crude affairs and simple to operate, but they produce uniform results surpassing anything of the kind in this country. This is probably due to the fact that the climate in those countries is such that eggs can be hatched in almost any kind of a devise.

The man or woman intending to purchase an

incubator is often puzzled by the question of what machine to buy. All are advertised as best, although some cost twice what others do. Nearly all the cheaper machines are heated with water while the higher-priced ones use hot air. Both systems of heating have their advantages and disadvantages. When the lamp goes out a tank of water will hold its temperature longer than a body of hot air, but this is generally more than equalized by the heavier case which the hot air machine has. Water tanks frequently become leaky after a season or two of use and so interfere with the hatch.

What machine to buy should depend largely upon the conditions under which it is to be operated. When the incubator is to be set up in the kitchen or living room of the house, where it is under surveillance most of the time and the temperature of the room varies but little, most any kind of a machine will give satisfactory results. Under different environments, in an incubator cellar, for instance, or detached house, where the attendant only makes occasional calls and where there are prolonged changes of temperature, a machine with a substantial double walled case, such as the higher-priced ones have, is easily worth the increased cost.

Every manufacturer sends with his machine printed instructions, which it is well to follow. But there are some questions over which the manufacturers are at sea the same as everybody else. I once read an address by a manufacturer of incubators in

which he stated that he generally moulted in the fall the theories he had accumulated in the preceding spring. Take the question of moisture. We are no further along than when we started. All that is known, or supposed to be known, is that in artificial hatching, moisture in some form should be supplied. When the hen hatches no moisture need be supplied by the attendant. I long ago quit sprinkling eggs set under a hen and I think I get my share of 100 per cent. hatches. No one has ever discovered that dry or wet climate makes any difference in the hatches of wild bird life.

Having gotten a good hatch the real work begins. Many an ambitious poultryman has lost all the advantages of a successful hatch through improper handling of stock afterwards. First comes the question of brooding. Every manufacturer of incubators also puts out a brooder equipped for artificial heating, with which he sends full instructions. However, a lamp-heated brooder is not absolutely necessary. Under favorable conditions broods of chicks running up to fifty can be handled in a fireless brooder of simplest construction.

Take an ordinary cracker box, cut a hole 2x2 inches on one side at the bottom, nail cleats on the inside of the box six or seven inches from the bottom. Then make a frame of wood that will fit into the box resting on the cleats. To this frame tack a piece of flannel cloth with the center sagging so that it will rest upon the back of the chicks. Cover

bottom of box with a gunny sack, over which put chaff or alfalfa leaves and your brooder is complete. With such a brooder I have raised successive lots of chicks running as high as forty to a brood, with scarcely any loss. Chicks rapidly outgrow brooder capacity and as they increase in size more brooder space must be provided. A brooder that is just right when the chicks are hatched may be entirely too small when they are a month old. Every brooder artificially heated or fireless, to be practical, must be so arranged that it permits the chick to regulate the amount of heat it receives. In other words the object in building a brooder should be to make a shelter for chicks that permits them to approach or retire from the center of warmth at will. Every brooder that is not built according to this principle is faulty and will fail to give satisfactory results. In the practical artificially heated brooder the center of heat will be higher in temperature than the well being of the chicks demand. This excess of warmth will be neutralized by outer cooler circles. The chick guided by its senses will find the place and temperature suitable to its wants.

With a fireless brooder the center of warmth is formed at the point where the chicks huddle together. If the temperature outside of the brooder is too low or if the covering is insufficient the chicks are liable to smother one another in their efforts to keep warm. Equally bad results will follow if, owing to overcrowding, excessive covering, or high

outside temperature the brooder is excessively warm.

The results which he gets from brooding and rearing his young stock well measure the capacity of the poultryman. If he succeeds here the rest should be easy.

Feeds and Feeding

The broad rule for feeding, growing and laying stock is, *Give them all they will eat.* I place emphasis upon this because the notion that poultry must be partially starved to do well is still current in certain quarters. So far as quantity is concerned the principle governing the diet of healthy children applies with equal force to growing chicks. A healthy boy wants a square meal at least three times a day and often sustenance between meals. No sane mother thinks of sending her children from the table hungry. At least not while victuals are at hand. Whatever other foolish or injurious practices people may indulge in they generally make no mistake here. They realize that nourishing diet in ample quantity, is necessary for normal growth of bone, muscle and body.

Not only should chicks be fed according to this rule, but laying hens as well. This does not mean that food should be kept constantly before chickens. The stockmen who fatten cattle for market in the corn states of the Central West understand the principles of feeding. They realize that they must put grain and plenty of it into their animals to get fat and prime beef. To do this they do not give their stock access to feed at all times. As a stock feeder once told me, he tried to keep the appetite of his feeders on the wire edge. In this way they ate more and consequently put on more weight.

Chickens of all ages will eat more and do better when their appetite is kept a little on edge. There is another reason why poultry should not be surfeited with feed. No matter how fed, part of the feed is bound to be eaten off the ground or floor. When more is given them than they will clean up, the excess becomes mixed with droppings and other filth and is finally eaten, filth and all.

Mature stock held over for another season after they have quit laying should not be fed according to the rule just given. In another chapter I have compared the laying hen to an engine running under pressure. When a steam engine stops and the fireman keeps throwing in fuel just as before, something is liable to happen. When a flock of laying hens slackens up laying in the fall and their owner continues to keep them on full feed, something generally happens. What happens is that his birds get so lubberly fat that they become unsuited for layers and fit only for the meat block. As the hens cease laying they should be cut down on feed so as not to get over-fat. This is especially true of the general purpose and Asiatic breeds. With the Mediterraneans the case is somewhat different. They rarely get sufficiently fat to interfere with laying.

Sometimes during the laying season in a flock one or more hens become excessively fat. If such hens are closely watched it will be seen that they are not laying. Their owner may conclude that they are not laying because they are too fat, when the

trouble really is the other way. They have become over-fat because they are not laying.

In such cases give Empire Poultry Powder as directed, which will cause the digestive and ovarian functions to become normal and the hen will shell out eggs instead of putting on fat.

GRAIN.

In any practical ration for poultry the principle constituent is grain and its derivatives. By derivatives I mean bran shorts, middling, corn chops, or other clean mill stuff. Among grains wheat and corn hold first place. It seems hardly necessary to discuss the foolish idea occasionally advanced that corn is not good for chickens. The best answer that I can give to that is that something like one-half of the poultry raised in the United States gets hardly any grain except corn and they do well on it. After wheat and corn come barley and oats. Poultry will thrive upon any one of these grains when given together with other food. But there must be occasional change. No matter how nutritious or appetizing a food may be, poultry soon tire of it, if there is no variety of diet. So at least two grains should be fed.

Locality should determine the principle grain fed. A poultry plant, like any other business, should be run with an eye to economy. In the states where corn is cheaper than oats and generally half the price of wheat, corn is almost the universal

grain fed to chickens. In Bulletin 184, issued by the Maine Agricultural Experiment Station, it is said:

“Our results show that corn is a most valuable grain for poultry. Its palatability and high digestibility has brought it into much favor with all our poultrymen.”

In Colorado and other Western states, where most of the time wheat is as cheap or cheaper than oats and only a little higher than corn, wheat is the grain most used by poultry keepers. However, corn should be a close second. In winter these grains may be fed in equal parts. In summer it is well to have the corn constitute not over one-third of the grain ration, owing to its heating properties. Along with wheat and corn fowls will relish an occasional change to rolled barley and oats.

WET AND DRY MASH.

From one-fourth to one-third of the total ration consumed by the flock should consist of soft feed composed principally of bran. With the bran may be mixed corn chops, middling or other mill stuffs. Add also a tablespoonful of Empire Poultry Powder for every ten hens fed. The soft feed may be given wet or dry. In recent years dry mash feeding has been much in vogue. When thus fed the mash is kept before the fowls constantly. Some of the advantages of this system are that the birds never get

very hungry and the mash does not sour in summer nor freeze in the trough during the winter.

Wet mash feeding requires a little more care and attention on the part of the poultryman. No more than the flock will eat at a meal should be given at one time. The claim sometimes made that wet mash feeding causes white diarrhea is utterly without warrant. Chicks fed a wet mash sometimes get white diarrhea, just as they sometimes do when given the dry mash. The form in which the mash is fed has nothing to do with this disease except that a sloppy mash may cause bowel trouble. When fed wet, the mash should be moistened and stirred enough to become crumbly. It should not be sloppy.

Chickens prefer the mash wet and I believe a majority of poultry keepers the country over feed it in that form. In cold weather it is a good plan to scald the mash with boiling water and feed while still warm. Bran is wholesome for fowls, except setting hens, at every stage of growth and at all seasons.

GREEN FEED.

Green feed in the shape of alfalfa, clover, lawn clippings, vegetable tops or even certain weeds should be given in season. During that part of the year when green feed is not available dried alfalfa leaves make a good substitute. In a paper read before the American Poultry Association at Niagara Falls several years ago, Professor Horace Atwood,

of the West Virginia Experiment Station, stated that the experiments at the station demonstrated that a liberal supply, as compared with a scant supply, of green feed increased the egg production by two dozen eggs per hen per year.

LIME.

Lime in some form is absolutely necessary to the laying hen. It may be given as oyster shell, which also answers as grit, or it may be fed in ordinary lime and sand mortar. Air-slacked lime moistened with water until it has the consistency of paste, and then allowed to dry, answers very well. Lime should never be given in its raw state.

CHARCOAL.

A good many progressive poultrymen believe that charcoal is rarely needed in their yards.. Charcoal is an absorbent. As an agent for this purpose it is unequalled. It may be given with advantage to fowl suffering from sour crop, diarrhea, or kindred diseases. Before being used charcoal should be warmed in an oven. This drives out impurities. Only as much should be placed before the fowl as they will clean up in a few hours. Charcoal in hoppers placed around the yard or coop and constantly kept there, where it absorbs all kinds of impurities and filth, is worse than useless.

MEAT.

Poultry relish a little meat along with their rations, especially laying hens. Whenever possible it should be fed, either as fresh meat or in the dried and preserved form put out by the packing houses for poultry use. However meat is not absolutely necessary for the welfare of poultry. They will thrive without it if given a wholesome diet along other lines.

Chicks should not be fed until they are at least a day old. After that they require a diet similar to that fed older fowl except that grain for chicks should be broken small so that it can be easily swallowed and assimilated.

RATIONS.

The beginner often likes to know in stated terms just what quantity to feed his birds. So much depends upon the condition, environment and productivity of the stock, that it is practically impossible to lay down a hard and fast rule governing the number of pounds, pints or bushels of grain to be fed a flock of poultry under all circumstances. The poultryman must learn to feed according to appetite, condition and results and this he can learn only from experience. However, as a rough guide, I would suggest the following ration for a flock of twelve medium-sized fowl. Morning, a mash composed of four parts bran, two parts corn chops, one-half part

meat scraps and one part alfalfa leaves. Mix with water until whole mash is crumbly. In winter use boiling water and feed while still warm. At least three times a week add a heaping tablespoon full of Empire Poultry Powder. Feed as much of this mash as the birds will clean up in thirty minutes. At noon give a quart of cracked corn and at night one pint of wheat. In feeding by measure always remember that cracked corn, rolled barley or oats are bulkier than whole corn or wheat and therefore measure up more. I know from experience that for the number of fowl mentioned this ration about fills the requirements. But as before stated the quantity and kind of feed given depends upon the condition of the stock. Professor J. C. Graham, who is in charge of the poultry work at the Massachusetts Agricultural College, in discussing this matter, says:

“Our rations are varied, depending somewhat upon the condition of the hens. We go into the houses occasionally at night and feel of the hens to see whether or not they are over-fat. If they are, more wheat and oats and less corn are given.”

Poultry Pests

THIEVES.

The hardest pest to deal with is the human biped who prowls around at night and robs the roosts of his neighbors. I have heard of communities where thievery of this kind was so common that people quite generally refrained from raising poultry. It is discouraging to have the results of your effort, time and money unlawfully appropriated by someone else. Part of the trouble is due to the fact that our laws and the public sentiment behind them are too lenient in dealing with poultry thieves. To steal a bolt of calico may mean a term in the penitentiary. But if the culprit steals instead fowls, let us say, worth \$50, if caught and convicted, he will generally get off with a jail sentence not exceeding thirty days. Several years ago chicken thieves became so bold and persistent in Eastern Kansas that a number of fanciers drafted a bill making poultry stealing a felony, punishable by imprisonment in the state penitentiary. When the bill reached the legislature its demise was early. One member remarking that no jury could be found that would send a man to the penitentiary for merely stealing chickens. That seemed to settle it. The bill did not pass. However, the State Poultry Association took up the matter and a succeeding legislature did place such a law upon the statute books. Under that law

Judge Smart, during the June, 1914, session of the District court at Ottawa, Kansas, sentenced a man to a term in the penitentiary from one to five years for stealing five chickens after night. I believe that despoiled poultry keepers who have gone out in the morning to find the door of their coop broken open and their stock gone will quite generally say Amen to such a sentence.

At one time in the early days of the West, horse stealing was common, but after it became the fashion to hang every horsethief upon apprehension depredations of this kind practically ceased. We are past the stage when people are supposed to take the law into their own hands, but a strict enforcement of existing laws, even though sometimes inadequate, will make poultry property more secure.

CATS.

Our household friend, the domestic cat, causes much loss and annoyance, especially to the city backlotter. The cat does not practice race suicide and in any well settled community its tribe is numerous. It's well-known fondness for young chicken often creates havoc in the luckless brood found in its vicinity. One active chicken-hungry cat can well nigh drive a poultry owner desperate, while three or four can put him out of business.

On the farm a shotgun might end the career of a marauding feline, but in the city this is impractical and forbidden by law. A good dog, prefer-

ably of the terrier breed, properly trained, can afford almost complete protection against losses of this kind. I know people who raise chickens without loss in thickly settled neighborhoods abounding with cats, that molest every other yard. The family dog protects the stock and woe to the feline that appears on the premises. Where it is not desirable or practicable to keep a dog the most convenient protection against cats is a wire-covered run. If the place is small the entire yard can be covered, otherwise a small separate pen for the chicks may be built. A satisfactory collapsible pen for this purpose is described under the chapter on "Handy Appliances."

RATS.

There is no greater menace to chick life than a neighborhood infested with rats. While a cat will take perhaps a chick or two a day, rats frequently clean out an entire flock of young stock in one night. As a precautionary measure every poultryman should see that his premises are so constructed as not to harbor rodent vermin. Among other things, where wooden floors are used, have the floor at least several inches from the ground and use concrete construction where practical. But unless your neighbor makes similar efforts your work may be largely neutralized. In that event it becomes necessary to make the coops and houses rat-proof. As ventilation must be had at any cost, if stock is to remain healthy, it won't do simply to close windows and

doors. To provide fresh air and still have windows and doors secure against invasion of rats, small mesh woven wire should be used. This can be nailed over the window openings and nailed on light wooden frames which are inserted into the door openings. Then dig a trench a foot deep all around the coop and place woven wire in the trench, nailing top of wire to the sill or bottom of coop. This prevents the rats from burrowing in. As rats commit most of their depredations at night, a coop so protected will minimize the damage they may do.

LICE.

The losses from thieves, cats and rats are slight compared with the havoc wrought by insect vermin. While the former slay their thousands, lice and mites slay ten thousands. Instructions to beginners, poultry literature and bulletins teem with admonitions against these pests. Some writers go so far as to say that overcoming lice on his premises and flock is the poultryman's greatest task. Often this is the case. Coops, roosts and nest boxes are literally alive with vermin. Under such conditions the birds themselves are lousy, of course, and when they go to roost at night mites literally suck the life blood out of them. Even the ubiquitous bedbug does his full share in making life miserable for the feathered tribe. Needless to say, the hen that has constantly to fight insects won't thrive.

Chicks raised under such conditions become

stunted and many of them die. The weaker the animal is, the less resistance it can offer to parasites and the more it suffers in consequence.

The belief that lice are spontaneously generated from accumulations of filth and dirt is still quite general. However, this theory has been thoroughly exploded. Today scientists are agreed that all living things are descended from living parents of the same nature. Filth and dirt furnish convenient breeding places for parasites, that is all, but then that is enough. No matter how clean fowls may be when conditions are favorable for their development, lice will appear. They are in this respect like weeds that constantly grow on cultivated land, even though we are unable to imagine how the seeds got there. Our wild birds are sometimes the means of infecting the domestic flock. Dr. N. W. Sanborn, the noted contributor to poultry journals, says that sparrows convey red mites.

There are many varieties of lice, mites and flees which afflict poultry, but the kind oftenest in evidence may be placed into two general classes, namely, the so-called mite, or blood-sucking parasite, and the common six-legged body louse, which lives upon the body or among the feathers of the fowl. Of the two the mite creates much the greater havoc. It lives in accumulated droppings or other filth, or in convenient hiding places in the coop and attacks the fowl at night. It's natural color is a dull gray, but it appears red after having filled itself

with the blood of its victim. For this reason it is commonly known as the red mite.

Dr. D. E. Salmon, in his work, "Diseases of Poultry," estimates that the second generation from a louse may number twenty-five hundred individuals and the third generation may reach the enormous number of one hundred and twenty-five thousand, and all of these may be produced in the course of eight weeks. This prolificness, together with the indifference of so many poultry raisers, is responsible for most of the loss caused by parasites. One of the hardest things is to convince people of the menace from lice. Nearly everyone is certain that there are none on his flock. Dr. P. T. Woods, in his work, "Parasites Affecting Poultry," says:

"Ask almost any poultryman whether his fowls are lousy and the answer will be cocksure no. Ten times out of ten he is mistaken. I never saw an adult fowl that I would be willing to guarantee to be free from lice."

The losses from lice and mites, enormous as they are in the aggregate, can be avoided. For the intelligent poultryman the lice problem is the least of his troubles. A few things done at the right time will keep the parasites down. See that the interior of the coop is kept clean and has plenty of sunlight. Treat all setting hens and laying nests with lice powder. And in this connection let me remind you that Empire Lice Killer is made to kill lice and it does so. It is put up for convenient use and is

harmless to chicks or larger fowl. A setting hen well dusted twice during the hatch will bring off her chicks without a louse. After the chicks are a week old, as a precautionary measure, treat them with Empire Lice Ointment, which will absolutely keep them free from insect vermin of all kinds.

The quickest way to rid a coop of insects is by fumigation. To do this place in the coop or building to be fumigated an iron kettle containing live coals, over which throw two or three pounds of sulphur. Close all windows, doors and crevices and keep closed for several hours. The fumes of sulphur are certain death to all insects and larger animals as well. Mites do not confine themselves to poultry but live freely upon the mammalia. They will attack horses stabled near the poultry roosts and cause them to rub and bite themselves. This may cause an eruption similar to that which occurs in the common mange. Professor Schumacher reports a case of a cow in Germany which became mad and had to be killed, owing to colonies of mites in her ears. Her stall was separated from a hen roost by only a plank partition.

How to Tell the Laying Hen

I might start this chapter after the manner of the man who delivered a discourse upon the snakes in Ireland and who began by saying that there are no snakes in Ireland. There is no sign that infallibly distinguishes the laying hen. Systems based upon the anatomical structure of the fowl and warranted to tell the layers from the non-layers, come and go with other fads in poultrydom. A few years ago it was quite generally believed that the position of the pelvic bones gave this information. If the width between these was sufficient to lay three fingers between, the hen was a two hundred-egg-a-year layer, or was it three hundred? With the advent of the Rhode Island Reds came the claim that a long deep body was a sure sign of prolific egg production, and birds of this description were hailed as certain layers. People who make this claim seem to overlook entirely the Wyandottes, which have a compact, blocky frame and are rather short in body. As layers, Wyandottes rank with the best.

It is often said that egg-laying varies according to size of the comb. That is the larger the comb the better the hen will lay.

Out in California there lives a man who has written a book in which he says that he can tell about a hen's laying by feeling of the bumps on her head.

All of these signs distinguish the good layer

sometimes. And it is just as certain that sometimes they don't.

Probably the most reliable and easiest recognized sign of a good layer is the condition of her comb. A productive hen carries her certificate of health and vigor right on the top of her head. When her comb is a bright red and rosy the hen is generally laying. But there are exceptions. To my knowledge I have owned at least two hens with beautiful combs that were absolutely sterile.

The laying hen is active. She is among the first to leave the roost in the morning and the last to get back at night. She must necessarily be a hearty eater to produce her quota of eggs and this keeps her busy foraging. When she is properly handled her toe nails are worn from scratching. I had one fall about forty Barred Rocks that I hated to dispose of because they were laying quite well. But I needed the room to provide for growing stock so I sold the half of my Rocks that were last in getting off the roost in the morning and found that egg receipts were not seriously interfered with.

The laying hen shows intelligence and smartness. I think the best layer I ever owned was a cross between a Barred Rock and a Light Brahma. She had the comb, head, size and shape of the Brahma and the plumage of the Plymouth Rock. Owing to the color of her head we called her Silver Top. Silver Top was a wise old hen. She did not like to be confined and unless care was taken she

would slip out when anyone opened the gate to enter the pen. She hid her nest in an old pile of lumber in one corner of the pen. It was this that first attracted my attention to her laying. Every day as certain as the sun rose she would lay an egg. Any hole in the fence she was sure to find and crawl through. This finally was the cause of her undoing. While foraging in a neighbor's garden one day she came in contact with an unfriendly dog and that ended her career. Last, but not least, the laying hen by her habits, carriage and general appearance gives evidence of having a healthy and vigorous constitution. Her plumage is bright and sits well in place. Her head and tail are carried well up. She shows pleasure in being alive.

We may assume then that a bright comb, activity, intelligence and vitality are the signs of a good layer. Occasionally a hen has all these and won't lay. But the rule is the other way and is safe to follow.

How Many Eggs Should a Hen Lay?

What can the man who puts his money into a poultry venture expect a year in the way of egg returns? The cost of buildings, fixtures, feed and stock can approximately be ascertained. All these constitute outlay. How about the income? There are several factors that conspire to mislead the beginner. On the one hand are the boosters who talk

glibly of 200-egg strains, 90 per cent. hatches and unlimited profits, and on the other hand is the pessimist who possibly has not found poultry keeping the snap he expected and who proclaims that there is no money in chickens. The seeker after accurate information need not take the word of either. Many of our state experiment stations have made accurate observations which have been published in bulletin form.

Thus in 1907 Professor Horace Atwood of the West Virginian station took 600 White Leghorn pullets, kept them for a year, made a daily record of eggs laid and found that at the end of the year he had a total of 67,769, or an average of 113 eggs for each hen.

Under the supervision of the late Professor Gowell of the Maine Agricultural Experiment Station, a record covering a period of ten years was kept of a flock of Barred Rocks. The receipts varied from 113 eggs per hen per year to 135.

The University of Minnesota recently issued a bulletin, No. 119, in which the returns were given for a flock of 48 Buff Leghorns for twelve months. One hen laid not an egg while the rest varied from 12 to 220, the average for the flock for the year was 115 eggs.

At the Poultry Experiment Station run in connection with Cornell University, at Ithaca, New York, Professor James E. Rice has been for a number of years conducting interesting experiments.

They keep there from 400 to 600 layers. In a statement issued a few years ago, Professor Rice said that they had pens that averaged 166 eggs per hen per year and that the average for all the hens at the station was about twelve dozen per year.

The United States census for 1900 reports the average annual farm production of eggs the country over at five dozen eggs per hen. This seems excessively low, but in 1912, as I remember the year, the Indiana Agricultural Commission sent inquiries to 250 farmers, to which about two-thirds responded, stating that their yearly egg receipts were about 70 eggs per hen. On many farms in the way of food, shelter and care poultry must absolutely rustle for themselves, hence such low averages.

The most glowing reports, however, come from Australia. In that country they have for years been having egg-laying contests. In a laying contest held several years ago by the Daily Telegraph, a newspaper of Sidney, New South Wales, the winning pen, Black Langshans, laid an average of 247 eggs per hen for the year. In the same contest, out of twelve pens of White Leghorns, picked up at random, the winning pen averaged 246 eggs per bird, while out of the twelve pens not a bird laid under 200 eggs. A phenomenal record, sure! In the 1913-14 report of the laying competition at Parafield, South Australia, held under the management of Mr. D. F. Laurie, the government expert, the winning pen, composed of White Leghorns, laid

1,444 eggs, an average of a little over 240 eggs per hen.

When reports from these contests first began to be published ten years ago they created some stir in the poultry world. After the discovery was made that they were fostered as an aid to prove the desirability of certain localities for poultry farming and thus to attract settlers, interest in the contests slackened. Since then reports from Australian laying contests are generally taken in this country with several grains of salt.

For large flocks an average yearly production of ten dozen eggs per hen is regarded as good laying. An average of 100 eggs is not bad. For small flocks these figures can easily be exceeded. It is a general rule in poultry keeping, that the smaller the number of birds kept the greater is the rate of profit that can be obtained from them.

The State Experiment Stations are in charge of high-priced experts, but the actual work of feeding and attending the stock is done by ordinary help employed at month's wages. It is safe to assume that the stock does not always get the same care that a thorough poultryman, looking after his own birds, would give them. For this reason the man or woman who understand their business and keep a small flock can often get egg yields that far surpass the average. There are plenty of back lot flocks that year after year yield their owner an average of from twelve to fifteen dozen eggs per hen.

Handy Appliances

COLLAPSIBLE PEN.

One of the handiest things around a poultry yard is a small pen that may be moved from place to place. Such a pen is useful in sheltering the newly-hatched brood, or in taking care of sick stock, broody hens, surplus males, etc. As generally constructed, these pens are solidly built and the greatest objection to them is that they take up too much room when not in use. They are often in the way and for this reason easily broken and made useless.

To avoid troubles of this sort use a collapsible pen made as follows: Take two pieces of board, 1x4, six feet long, and lay them on the ground parallel to each other, two feet apart, outside measure. Nail board across each end. You then have an oblong frame, 2x6 feet. Make three of these frames, lay them in a row, leaving about three inches between the frames. Then take a strip of woven rabbit wire, eighteen inches wide and about eighteen feet long, and nail it onto the frames. Your pen is then complete and you can set it up in almost any shape you desire. If a cover is wanted, and it is generally essential, make three more frames and cover with wire but have them disconnected. These covers can be covered with burlap and used as doors or shields in front of small coops during inclement weather. The best feature of this pen is that when

not in use it can be folded together and placed out of the way. If a smaller sized pen is wanted it can be built accordingly. In this case half-inch boards are sufficiently heavy.

During the hot months if no other shade is available the pen may be used to protect the birds from direct sunlight.

FEEDING TROUGHS.

Do you use in your yard so unsanitary a utensil as the open V trough? If you doubt that such a trough is filthy and unsanitary watch the fowl as they eat from the trough and notice what filth gets mixed with the food. To anyone using such a trough I want to make the following suggestion: Saw your trough in two in the middle, nail a board across each open end, thus making two troughs. Nail one trough over the other, leaving about four inches between. This can be done by means of two short pieces of boards. You now have a trough into which the hens can insert their heads, while body, feet and droppings remain outside. This trough also keeps rain, snow and a good deal of dust out of the food.

A convenient trough for chicks may be made by taking a piece of galvanized iron, five and one-half inches wide by two feet long, bending it into a half round, or moon shape, and then nailing a short piece of board across each end. You now have a round trough which is divided into two compart-

ments by nailing a piece of board three inches wide running lengthwise through the center, to the bottom of the trough. A tinsmith can make the trough entirely of galvanized iron, thus doing away with the wood parts. The edges of the iron should be turned over to prevent the chicks from injuring themselves. This style of trough was described and illustrated in a bulletin issued by the Agricultural Department several years ago.

EGG BOX.

Eggs saved for hatching, if kept over three days, should be turned daily. When there are several dozen or perhaps several hundred eggs this becomes somewhat of a job. This work can be facilitated by using an egg box, a convenient sized one, having the following dimensions: Use boards one inch thick and ten inches wide. Make box thirteen by thirteen inches square, outside measure, nailing the sides of box together solidly. Adjust boards with hinges and hooks and eyes to top and bottom of box. You now have a box with the sides nailed fast together and with ends fastened with hinges. That is instead of having a box with one lid, as is generally the case, you have two lids, one on the top and the other on the bottom. The two lids enable you to use or sell the older eggs out of one side of the box and place the fresh, newly-laid-ones in the other side. By this system you are constantly working off your oldest eggs. The box must be fitted

with straw board fillers such as are used in ordinary egg cases. It will then hold twelve dozen eggs and every time you turn the box you turn every egg in it.

Home Methods For Preserving Eggs

The high cost of living seems to be one of the troubles that follows in the wake of modern progress. To store your eggs during the summer when they are twenty-five cents a dozen, using them later on when the prices approach the half-dollar mark, may help some in this matter. Fresh eggs may be preserved and kept wholesome and sweet from six to ten months with little trouble or expense. The reason that storage eggs are not always in this condition is not necessarily due to the fact of their having been stored. Storage eggs upon being exposed deteriorate rapidly. The commercial product after leaving the storage room, in some instances, is in the hands of the dealer for two or three weeks before finally reaching the consumer. This delay and exposure does not improve them any.

Eggs to be stored should be perfectly fresh. A stale egg will assuredly not freshen any while stored. A decayed egg or one that has begun to decay is likely to taint all the surrounding eggs. In this country eggs stored for commercial purposes are

placed in large rooms or buildings where the temperature is reduced to a point slightly above freezing by artificial means. In most of the countries of Europe where cold storage is little in vogue, eggs for storage are preserved in lime water.

For storing eggs at home a dry, clean cellar is the most suitable place. However, any moderately cool room where the temperature may be kept fairly constant, will do. In placing eggs in the preservative care should be taken not to crack the shells.

Lime Water.—Farmers' Bulletin No. 287, issued by the United States Department of Agriculture, gives the following recipe for making a good lime water preservative:

“Thirty gallons of water, ten pounds of salt, one-half bushel of finely slacked lime. After mixing thoroughly allow the mixture to stand two or three days and then remove the clear liquid in a tub or other suitable receptacle and place the eggs therein, or the eggs may be placed in the vessel first and the lime water poured over them. Have about two inches above the eggs.”

Edward Brown, in his English work on poultry, gives the following as a method much used in England, and says eggs so preserved will keep better than in water glass:

“Twenty gallons of water, four gallons of fine slacked lime, one pound of salt. Let stand six or seven days, then pour over eggs. Add from time to time a little more lime or keep a cloth of lime on top, touching the water, so that as the lime in solution is absorbed or loses its effect more can be taken up.”

I have found the following very practical: Place air slacked lime in some vessel large enough for the purpose, to about one-third of its capacity, and then fill up with water. Stir thoroughly and allow to stand for nearly a week. Then pour the lime water into an earthen jar, into which place the eggs, leaving not less than two inches of the liquid over tops of eggs. For every gallon of water used add a small handful of salt. Securely tie a piece of burlap, drawn taut, over top of jar. Over the burlap spread some of the lime taken from the first vessel and set to one side in the cellar. In a few days, when the lime on top of burlap has dried, add a little more to fill up cracks, which will keep contents of jar nearly airtight. I have kept eggs in this manner in first-class condition from April to the following January.

Water Glass.—Probably the simplest and easiest way of preserving eggs on a small scale is by means of sodium silicate, commonly known as water glass, which is kept on sale, put up in suitable sized quantities, by nearly all poultry supply houses. Eggs can be preserved this way at a cost of about two cents a dozen for the water glass used. Pure water that has been boiled and then cooled should be used in the proportion of about twelve parts of water to one of water glass. The solution should be made or poured in an earthen jar, into which the eggs are placed. If sufficient fresh eggs are not at

hand to fill the jar, others may be added from time to time.

Bran.—Eggs may be preserved a few months in bran. An ordinary wooden box will do as receptacle. In the bottom of box or other container place a layer of not less than two inches of bran. Place thereon a layer of eggs, cover with bran and place another layer of eggs. Continue this process until box is full, being careful that eggs at no place come closer than two inches to the wood. Box should be shaken thoroughly so as to get eggs and bran well settled. Eggs preserved in this way will keep in good condition for three or four months.

Salt.—In my experience I have found salt a less satisfactory medium for preserving eggs than bran. The process is about the same for each except that not as much salt is needed.

“The American Poultry Book,” the first work relating to poultry written in this country, published in 1843 by Harper & Brothers, relates the following:

“In 1820 a tradesman of Paris asked permission of the prefect of police to sell in the market eggs that had been preserved in a composition, of which he kept the secret. More than 30,000 of these eggs were sold in the open market without any complaint being made, or any notice taken of them, when the board of health thought proper to examine them. They were found to be perfectly fresh, and could only be distinguished from others by a pulverulent stratum of carbonate of lime on the shell. It was discovered that they had been preserved in a highly saturated lime water.”

Turkeys

The turkey is America's most distinctive contribution to the poultry world. It is also one of the latest, if not the latest, animals to become domesticated. Prior to the discovery of America the turkey was unknown to civilized men. The early explorers of this continent observed the turkey and noted its size, strength and beauty.

The turkey was imported into Europe early in the sixteenth century and is extensively raised there, especially in England and France. The turkey still possesses many of the traits common to its race in the wild native state. It likes to roam and thrives but indifferently when even moderately confined. It is wholly unsuited to back-lot poultry culture. People sometimes make the mistake of trying to raise poults, as turkey chicks are called, in small pens or yards. So far as my observation goes the poults generally die. They seem unable to stand either the confinement or the tainted ground over which other poultry have run. The mature birds are at their best when constantly out of doors, even during the severest weather. In Rhode Island, at the Experiment Station, turkeys keep in the best health when strictly without housing of any kind.

The inability of the turkey to accustom itself to the environments of intensive poultry farming has given it the reputation of being delicate and

hard to raise. However, when handled according to their natural requirements they are extremely hardy.

The turkey hen likes to steal her nest and often succeeds best when allowed to sit in a nest of her own choice. Owing to the danger of depredations from dogs, wolves and other animals, the safer plan is to have the turkey hen do her hatching in a nest provided by her owner. The hatching nest should be so arranged and placed as not to excite the suspicions of the turkey hen by showing too plainly that it is the work of man. Old weather-beaten barrels or boxes bedded with grass or leaves secured nearby, in which are placed two or three decoy eggs, will often be adopted by the turkey hen. These nests should be placed in quiet, secluded places. It is a good plan to confine the hen to the nest when the hatch is due to come off. Some turkey hens leave the nest with the first few poults hatched, leaving the remaining eggs to chill and the poults to die in the shell. As a precautionary measure, dust the setting turkey two or three times with Empire Lice Killer before the hatch comes off and use Empire Head Lice Ointment on the young poults as directed.

Little poults should be kept out of wet grass and rain for this is likely to be fatal to them. They require feed similar to that fed little chicks.

When poults with hens are confined in coops, care should be taken to keep the quarters clean. They

sicken easily when kept on ground even slightly tainted with droppings.

There are six standard varieties of turkeys grown in this country, viz.: Bronze, Narragansett, Buff, Slate, White and Black. Of these varieties the Bronze is the largest. There is not much preference shown in the open market for any particular variety. Plump, well finished specimens of any variety always command top prices.

Ducks and Geese

Some of the most successful poultry farms in this country are devoted entirely to duck raising. In the eastern part of the United States such farms are numerous. Ducks have fewer disease than chickens and mature quicker. They stand up well under methods of intensive culture. Thousands of ducks can be raised on a farm of comparatively small area. On a chicken farm the principal output is generally eggs. On a duck farm it is dressed young ducks. Young ducks, or green ducks, as they are called, can easily be fitted for the market in ten weeks, weighing five pounds.

The American Standard of perfection recognizes twelve varieties of ducks, but the Pekin and Indian Runners are the only kinds extensively raised in this country. The Pekin duck was introduced into this country from China in 1873, and as a

hardy, quick maturing table fowl it is unsurpassed. Incubators are used almost exclusively for hatching duck eggs and used entirely on all the large plants. The process of hatching duck eggs and hen eggs is similar, except that for the duck eggs four weeks are required and generally more moisture towards the end of hatch. Clean, reasonably warm, well ventilated quarters should be provided for the young ducks and care should be taken to protect them against being chilled during the first two weeks. During the warm season they should also be provided with plenty of shade as they are easily affected by the hot summer sun. When so affected they sometimes stiffen out flat on the ground and are apparently dead. When in this condition they may occasionally be saved by placing in a cool spot and moistening their heads with cold water. The duck has no crop and its ration should consist largely of soft food. Young ducks should not have access to water until their entire plumage has been taken on. For the first few days stale bread crumbs moistened with milk or water make a good food for the young ducklings. The food should never be sloppy, but just damp enough when pressed in the hand to stick together. Green food in some form should always be provided. Ducks will not eat grit as hens do out of a box, therefore it should be placed in their mash along with the regular food.

Geese, like turkeys, prefer large ranges. They are a grazing fowl and will pick a large part of

their ration if allowed the freedom of a good range. In mating geese, not over three females should be given to one male and two will generally produce better results. A goose will lay from twelve to twenty eggs before becoming broody, but twelve is about the right number for a setting for best results. Twenty-eight days are necessary for incubation. A good many people prefer to set their goose eggs under hens. The hens are more docile and can be easier looked after. It's no fun fooling around a setting goose. Both goslings and ducklings should be fed only damp mashes for the first two weeks. Unlike little chicks, they do not seem to do well on dry grains. When setting a hen with goose eggs four or five eggs should be given her.

The American Standard of Perfection recognizes six varieties of geese, of which the Toulouse is the most popular in America. The Toulouse is popularly supposed to have originated in France and transplanted from that country to England. The Toulouse found in the United States come from English stock.

In most of the countries of Europe ducks and geese are highly prized for their meat and are almost a staple article of diet in the households of the well-to-do. In this country the demand for these fowls is not so general but it is constantly growing and we may safely look for a marked increase in the culture of water fowl.

Poultry Diseases

The limited space of a book like this allows only a brief discussion of the commonest ailments. The diseases most frequently met with in the poultry yard are those affecting the alimentary tract and diseases of the respiratory organs. A good many of these are contagious and it is well to remember that prevention is always better than attempted cure. The first requisites for prevention are sanitary conditions, essential to which are plenty of fresh air, hygienic housing, feeding, etc. Tainted soil is sometimes the cause of serious loss. Heavy clay soil, upon which poultry is closely confined years after year finally becomes so impregnated with droppings that it is unfit for poultry culture and can only be purified by planting or sowing to some crop. Badly tainted ground is fatal to young chicks. Upon it they can not be raised to maturity. The only salvation lies in removing the birds to fresh soil. Many a poultryman has been put out of business from this cause who never knew the reason for his trouble.

Contagious diseases are conveyed from bird to bird by germs, often through the drinking water. Dr. G. B. Morse, of the United States Department of Agriculture, the well-known authority on poultry diseases, has the following to say regarding this point:

“Water-borne diseases are frequent in the poultry yard. Clean your drinking fountains ever so well. If you

are permitting to run at large one bird sick with any of the contagious diseases of the head parts or with bowel diseases you may count on that water supply being contaminated in less than one hour's time."

As a safeguard against contagion of this kind, Dr. Morse recommends the use of antiseptics in the drinking water.

For this purpose Empire Anti-Germ is unexcelled. It has been tried and proven. A small quantity of Anti-Germ placed in a pan of water destroys all bacteria in the water and such water as it comes in contact with afflicted mucous membranes either in the mouth, nostrils, throat or intestinal tract, soothes and heals them.

Following are some of the diseases common to poultry:

WHITE DIARRHEA.

Of diseases dreaded by the poultryman white diarrhea stands first. It generally comes unexpectedly. In its virulent form it takes toll of as much as three-fourths or more of the flock exposed to its ravages.

Professor B. F. Kaup, veterinary pathologist at the State Agricultural College, Fort Collins, Colorado, distinguishes two forms of this disease. However, the symptoms and percentage of fatalities are about the same for each. White diarrhea is more common among artificially incubated and brooded chicks than among hen-hatched. But it is by no means unknown among the latter. So far as serious

mortality is concerned the disease is generally limited to the first three weeks of the chick's life. It is doubtful if a chick having white diarrhea can be cured. But much can be done to prevent the disease from spreading through the entire flock. Anti-Germ placed in the drinking water destroys the disease germs and thus stops infection from this source, and Empire Poultry Powder strengthens the entire digestive system. These two remedial agents, along with proper sanitation will stop the spread of white diarrhea in any flock.

ROUP.

Roup is an acute contagious disease affecting the respiratory organs of poultry. Scientists are disagreed as to whether roup is simply the result of a bad cold or a distinct disease, depending upon a separate germ for its propagation.

Dr. D. E. Salmon, formerly chief of the United States Bureau of Animal Industry, makes a distinction between ordinary roup, or contagious catarrh, and diphtheritic roup. Dr. Salmon says that diphtheritic roup is always recognizable by the presence of diphtheritic patches upon the mucous membrane of the afflicted fowl.

However, most writers class all these afflictions under the generic term of roup, claiming them to be the same disease exhibited in different degrees of virulence. The average man or woman who raises chickens is little interested in these distinc-

tions. When a hen has a swollen head with discharges at the eyes and nostrils she is said to have roup.

The early symptoms of roup and a cold are similar and for all practical purposes and for lack of any definite knowledge that we have to the contrary, we may assume that roup is an aggravated case of cold.

The disease, in many instances, is due to improper ventilation. When the coop is closed tight either during the day time or night, with the chickens inside they often develop roup. In such cases, throw open the doors and windows. Keep the latter open partly at least in all seasons. There is nothing more essential to the well being of fowl than fresh air.

Roup in all its stages is contagious. The contagion is spread chiefly through the drinking water. The surest way to check the spread of diseases of this kind would be to isolate the afflicted birds as soon as they show any symptoms. As this is not always practical the best that can be done is to give the drinking water antiseptic treatment. Use Empire Anti-Germ as directed in the drinking water and the danger of contagion is obviated and the sick birds will recover.

BRONCHITIS.

Bronchitis is due to catarrh of the trachea and bronchial tubes. It is indicated by a rattle or bub-

bling sound when the bird breathes. In a majority of cases the symptoms are not serious. Sometimes the disease becomes chronic and may terminate in malignant roup. As a preventative and cure use Empire Anti-Germ.

CHICKENPOX, OR SORE HEAD.

This is a contagious disease which rarely attacks full grown birds, but is usually seen in the fall of the year on partly matured stock. It is most prevalent during warm, damp weather and consequently is most fatal to late hatched chicks. Sores appear upon the face, head and sometimes under the wings and upon the outer surface of the thighs. Birds afflicted with the disease should be separated from the rest of the flock. The afflicted parts should be bathed with soap and water to loosen the crusts and subsequently washed with a solution of Empire Anti-Germ.

PIP.

Pip is a hardened condition of the tip and sides of the tongue which is often found in birds having cold, roup or catarrh. These diseases, by stopping up the nostrils, cause the birds to breath through the mouth, which in turn causes the dry and hardened condition of the tongue. Do not tear off the hardened end but treat the original disease and apply glycerine to the tongue.

GAPES.

This disease receives its name from the fact that chicks affected with it extend the head frequently and open the beak widely, that is they gape. They do this every minute or two, more frequently as the disease progresses. Gapes is caused by a parasitic worm which fastens itself to the chick's windpipe. These worms, or their eggs, are picked off the ground by the birds and thus find lodgment in the throat.

Gapes usually occur only between the second and fifth week of the chick's life. The sick birds should be separated from the others and when the ground is badly infected it is best to remove all stock and seed to grass for two or three years. There are various ways of removing the parasites from the throat. Causing it to breathe lime dust or the fumes of strong vinegar, or inserting a feather moistened with kerosene down the throat will do this. Birds thus treated should recover while the strong, vigorous ones generally recover without any treatment.

CROP-BOUND.

This is a condition readily recognized by the external appearance of the bird. The crop is greatly enlarged, pendulous and constantly filled or partly filled with remnants of food and other things eaten. Birds so affected may be relieved by pouring down their throat a tablespoon of sweet oil, after which

the crop should be gently manipulated. While doing this suspend the bird head downwards from time to time and press the loosened contents of the crop towards the throat so that they will escape from the mouth. After the crop has been emptied keep without food for a day and then feed sparingly on soft feed until recovery is complete. When crop-bound is caused by the presence of some indigestible object as a nail, piece of wood ,etc., it may be necessary to operate, which consists in cutting open the crop, removing the obstruction and sewing up again.

BUMBLE FOOT.

This is caused by an external injury to the sole of the foot, causing it to become swollen and painful, thus laming the bird. If an abscess has formed this should be opened, the pus washed out and the incision treated with some antiseptic preparation. Empire Anti-Germ dissolved in water is well adapted for this purpose.

When bumble foot is neglected the inflammation often extends to the joints higher up, in which case recovery is doubtful.

SCALY LEG.

The form of scabies caused by a mite burrowing under the epidermis on the feet and shanks of the bird is known as scaly leg. The disease is readily recognized by the rough and unsightly appear-

ance of the fowl's legs. It is contagious and unless checked spreads slowly through the flock.

Two applications of Empire Head Lice Ointment used one week apart will effect a cure.

EGG-BOUND.

When a hen is unable to extrude a fully formed egg we say she is egg-bound. Such a hen will be found walking around with tail depressed and frequently going to the nest. Closely watched while on the nest it can easily be seen that she is straining. Often the egg can be felt in the body of the hen.

The best that can be done for cases of this kind is to inject a little sweet oil into the vent. Another good treatment is to hold the bird for half hour with vent in water hot as she can stand it.

APOPLEXY.

Sometimes a bird that has to all appearances been in the best of health is found dead on the nest, under the perch or out in the yard. Likely as not death has resulted from the bursting of a blood vessel in the brain, commonly called apoplexy. Apoplexy is due to a weakness of the arteries or to over-excitement or exertion. Arterial weakness is generally one of the results of over-fatness. To prevent such a condition, compel the bird to exercise and regulate the diet.

RHEUMATISM.

The cause, symptoms and treatment of rheumatism in fowls and humans are quite similar. With each the disease is usually brought on by exposure to cold and dampness. The fowl afflicted with rheumatism shows a disinclination to walk or stand. It spends most of its time sitting on the ground. Often the feet are drawn out of shape and the limbs swollen. The best that can be done in the way of cure is removal to dry and warm quarters.

THE CAMPBELL BROS.' COAL CO.,
Wholesale and Retail Dealers in Fuel and Feed.
Yards, 1400 W. 32nd Ave.

Office, 1401 W. 38th Ave.
Telephone Main 473.

MR. E. GROSSER.

Dear Sir:—In reply to your inquiry concerning our experience with Empire Poultry Powder, I will say we handle the leading brands of poultry preparations and sell what is called for. Customers who fail to get results from other powders, or who express no particular choice, we generally induce to use Empire Powder. So far as my knowledge goes people who use it are highly pleased with results and continue buying it. I am convinced Empire Powder does what you claim for it.

THE CAMPBELL BROS.' COAL CO.,
By J. C. CAMPBELL, Pres.

Campbell Bros. is the oldest and largest independent feed and coal company doing business in Denver. All who know "Joe" Campbell, the founder and still active head of the business, will readily understand that he would not put his O. K. to any proposition or statement of which he could not honestly approve.

EMPIRE TONIC CO.:

I have been using Empire Poultry Powder for the past year and am sure it is a great egg-producer. Besides I fed it to my little chicks and I never before had such success in bringing them through.

WM. PETTIS,
2372 10th St., Denver, Colo.

EMPIRE TONIC CO.:

Last spring severe diarrhea broke out in my flock. Out of eighteen hens three died. Half of my flock was droopy. I bought a package of Empire Poultry Powder, using it as directed, and within a week my birds were feeling better and in less than a month they were laying splendidly. I am sure that your poultry powder is the best thing I ever gave my chickens.

ORANGE TALTON,
3921 Blake St., Denver, Colo.

EMPIRE TONIC CO.:

I want to say that nothing ever did my chickens so much good as the package of Empire Powder I fed them last summer. I am using it now and hope that as long as I have chickens I may be able to get it.

SADIE BUFORD,
2428 Emerson St., Denver, Colo.

EMPIRE TONIC CO.:

I have been using your Poultry Powder with gratifying results. My birds are in pink of condition and have increased materially in laying.

MRS. H. E. HENDERSON,
1600 So. Washington St., Denver, Colo.

EMPIRE TONIC CO.:

I can not speak too highly of Empire Poultry Powder, which I have been using for two years. Last year, out of 38 chicks hatched, I lost but one and this year, out of 64, I lost five, but of these three were out in a rain storm and were chilled to death.

I feed Empire Powder to all my poultry and use Empire head lice ointment on my chicks. My poultry never were in better shape.

R. M. WILSON,
Ft. Collins, Colo.

EMPIRE TONIC CO.:

I fed Empire Poultry Powder to my hens the past spring and summer with the best of results. My hens kept in fine condition and could not have laid better.

MRS. S. M. BALL,
1218 Ames St., Denver, Colo.

EMPIRE TONIC CO.:

I have used Empire Poultry Powder and recommend it to all my friends. It certainly does make the hens lay.

MRS. MAGGIE CASEY,
767 Vallejo St., Denver, Colo.



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*It keeps chicks healthy and fills
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